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Lot 104 James Creek Road, James Creek

(Described as Lot 104 on DP751388)

The Village at James Creek

Statement of Environmental Effects

Prepared for MPD Investments Pty Ltd

November 2023

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1 Project Team

TABLE 1: PROJECT TEAM	
Applicant	MPD Investments Pty Ltd
Planner	Place Design Group Peter Bell (07) 5591 1229 peter.b@placedesigngroup.com
Engineering	GeoLink Michelle Erwin 02 6687 7666 michelle@geolink.net.au
Landscape	Place Design Group Naomi Cole (07) 5591 1229 naomi.c@placedesigngroup.com
Architects	Rust Architecture Design John Rust (07) 5554 6798 jrust@rad.net.au
Development Costings (RPEQ)	Burchills Engineering Solutions Jonathon Cuell Jonathon.cuell@burchills.com.au 0429 056 347
Childcare Needs Assessment	Business Geographics admin@businessgeographics.com.au (07) 3118 5036

2 Introduction

Place Design Group ('PDG') has been engaged by MPD Investments Pty Ltd (the applicant) to lodge a Development application in accordance with Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) for a subdivision for 281 residential lots and balance area, a child care centre, a commercial lot, a medium density lot, open space (recreation and stormwater) and road works at Lot 104 James Creek Road, James Creek.

A summary of the site details is outlined in Table 2 below.

TABLE 2: SUMMARY OF SITE AND APPLICATION DETAILS	
Title Details	Lot 104 DP751388
Site Address	James Creek Road, James Creek
Registered Owner	Kahuna Pty Ltd
Applicant	MPD Investments Pty Ltd C/- Place Design Group
Total Number of Lots	One (1) allotment
Existing Site Area	33.49ha
Easements	Nil.
Existing Land Use	Grazing [previously sugar cane production]
Local Government Authority	Clarence Valley Regional Council
Local Environmental Plan (LEP)	Clarence Valley Local Environmental Plan 2011
LEP Zoning	R3 - Medium Density Residential R1 - General Residential E1 – Local Centre Zone

The following report is to be read in conjunction with the following **Enclosures**:

1. Clarence Valley application forms (completed NSW Planning Portal)
2. Owner's consent
3. Subdivision Layout and Civil Engineering Drawings prepared by GeoLINK dated 22 November 2023.
4. Preliminary Water and Sewer Servicing Plan report prepared by GeoLINK dated 27 November 2023.
5. Traffic Impact Assessment report prepared by GeoLINK dated 24 November 2023.
6. Gardiners Road Upgrades letter prepared by GeoLINK dated 22 November 2023.
7. Stormwater Management Report prepared by GeoLINK dated 24 November 2023.
8. Flood Emergency Plan prepared by WEP dated 24 November 2023.
9. Bushfire Provisions update letter prepared by GeoLINK dated 2 November 2023.
10. Biodiversity Assessment report prepared by GeoLINK dated 7 November 2023.
11. Development Capital Cost Calculation prepared by Burchills Engineering Solutions dated 2 November 2023.
12. Master Plan and building typologies report prepared by RAD Architects dated November 2023.
13. Childcare centre architectural package prepared by RAD Architects dated 21 November 2023.
14. Childcare centre need report prepared by Business Geographics dated November 2023
15. Contaminated Land Assessment prepared by EAL dated 13 April 2011.
16. Contaminated Land Assessment Review GeoLINK dated 4 November 2019.
17. Land Use Conflict Risk Assessment prepared by GeoLINK dated 23 November 2023.
18. Statement of Landscape Intent prepared by Place Design Group dated 23 November 2023.
19. Geotechnical Report prepared by Regional Geotechnical Solutions dated 29 July 2021.
20. AHIMS Search Results dated 21 October 2021.
21. Aboriginal Cultural Heritage Assessment prepared by Ron Heron dated July-August 2009.
22. Yaegl Local Aboriginal Land Council letter dated 6 November 2023.

3 Background to application

This site has been the subject of previous applications. A key application was a planning proposal lodged in 2011 to rezone the land in line with the Mid North Coast Regional Strategy and the Maclean Urban Catchment Growth Management Strategy. This culminated in LEP Amendment 12 dated 20 July 2014 which rezoned the land to its current residential and commercial zoning. A subsequent subdivision application was lodged in 2020 but this was withdrawn.

A development application to subdivide the land was lodged in October 2020. [SUB2021/0042]. This application was for 336 lots and was refused by the Planning Panel by its Determination and Statement of Reasons dated 4 July 2023. The Reasons for the Decision as set out in the determination are as follows.

The development application was refused for the reasons attached to the Council's assessment report.

The Panel agrees with the Council assessment that the proposed inward facing urban structure, density, and proposed lot design relates poorly to the existing topographical form and presents a stark change to surrounding rural and semi-rural setting and character.

The Panel considers there is inadequate social infrastructure and services to support the proposed development including bus services and given the distances to local shops and facilities.

The Panel also concluded there was insufficient consideration of flood evacuation, but notes the verbal advice provided by Council staff of an offer by the Applicant to upgrade Gardiners Road to enable evacuation in a 1:100 year flood event.

The Panel agrees with Council's view that additional information and design amendments which might result in a more integrated 'village' style settlement may resolve these and other issues addressed in Council's assessment report.

The Council assessment report referenced in the Planning Panels Determination set out the following reasons for refusal.

That development application SUB2021/0042 (PPSNTH-137) for subdivision of Lot 104 DP 751388 to create a 336-lot staged residential subdivision at James Creek Road, James Creek be REFUSED pursuant to Section 4.16(1)(b) of the Environmental Planning and Assessment Act 1979 subject to the reasons for refusal outlined below.
The recommendation is provided for the following reasons:

1. *The proposed development is inconsistent with the following clauses of the Clarence Valley Local Environmental Plan 2011:*
    a. *Aims of the Plan – "(e) to provide adequate access and services to development carried out in accordance with this Plan", as the proposal has not satisfactorily demonstrated the proposal incorporates adequate stormwater management and sewer services to the development."*
    b. *7.8 Essential Services – "Development consent must not be granted to development unless the consent authority is satisfied that any of the following services that are essential for the proposed development are available or that adequate arrangements have been made to make them available when required". Clause D5.20(4) of Part D5 NR Design Guidelines as referred to by the DCP in Clause J10.2 item (f), specifies that "At points of discharge of gutters or stormwater lines or at any concentration of stormwater from one or on to adjoining properties, either upstream or downstream, Council will require the Developer to enter into a Deed of Agreement with the adjoining owner(s) granting permission to the discharge of stormwater drainage and the creation of any necessary easements with the cost of the easement being met by the Developer." A Deed of Agreement with the adjoining owner has not been obtained and easement not provided. Insufficient information and assessment of Council's existing sewer system has been provided for Council to accept the proposed gravity sewer network to service the proposal.*

2. *The proposal is inconsistent with the following Parts of the Clarence Valley Residential Zones Development Control Plan 2011:*
    a. *C3 Site Assessment Requirements - Clause C3 requires consideration of the existing site conditions and an assessment of the impact of the proposed development on the surrounding area. The proposal presents a stark change in character and density from its surroundings. A refined subdivision proposal which incorporates greater integrated housing outcomes, fosters a stronger sense of place and community, incorporates larger setbacks along its edges, lower density and facilitates a sensitive transition into the surrounding rural and large-lot residential context is warranted.*
    b. *C5 Building Design Requirements - Clause C5.2 limits cut and fill to a maximum height of 1.2m. The subdivision design indicates typical retaining wall detail with a maximum height of 2.0m. Insufficient information has been provided to justify a variation of this control.*
    c. *C24 Provision of Essential Services - Council's Pressure Sewer Policy 2008 notes areas where Council has resolved that pressure sewerage will provide the centralised reticulation. This currently includes James Creek. A conventional gravity sewer system with pump stations is proposed to service the proposed development. Insufficient information and assessment of Council's existing system has been provided for Council to accept the proposed gravity sewer network to service the proposal.*
    d. *J10 Stormwater Management - In accordance with J10.2(f) stormwater design shall be in accordance with Section D5 of the NR Design Manuals. Specifically, Section D5 requires:*
    e. *At points of discharge of gutters or stormwater drainage lines or at any concentration of stormwater from one or on to adjoining properties, either upstream or downstream, Council will require the Developer to enter into a Deed of Agreement with the adjoining owner(s) granting permission to the discharge of stormwater drainage and the creation of any necessary easements with the cost of the easement being met by the Developer.*
    f. *A Legal Point of Discharge and Easement for discharge of stormwater on downstream private property has not been obtained.*
3. *The proposed development is inconsistent with the Local Strategic Planning Statement objective to "Protect agricultural land and increase opportunities for access to locally produced fresh food and economic growth" and State Government policy, such as the 'Right to Farm Policy', published by the NSW Department of Primary Industries. The proposed subdivision does not incorporate appropriate land use buffers in response to the adjoining rural character and amenity of the locality to ensure a suitable edge/interface is achieved and potential land use conflict is mitigated. A 50m buffer treatment should be applied to all boundaries adjacent to rural zoned land (the north, east and west).*

Following this determination, the applicant has taken the opportunity to review the matters raised by the Planning Panel, the Council assessment and the community in arriving at the refusal decision. The grounds of refusal have been addressed with this fresh application and every effort made to satisfactorily resolve them. The key changes to the proposal when compared with the previous application, while more fully described in the various reports and plans which form this application, are summarised as follows.

1. The design of the development has adopted key considerations of the Planning Panel and the Council report to have a more integrated village style development. This has been achieved through the following measures.
    - To achieve greater integrated housing outcomes more use of the density opportunities afforded by the R3 zoning is proposed with greater density product within this area.
    - The proposal emphasises housing diversity with a variety of different lot sizes and planning for duplex and townhouse sites.
    - Housing diversity also brings with it the ability to provide affordable housing and this proposal has 35% of the housing product on small lots or within a duplex or a townhouse.
    - The previous proposal to salt and pepper density has been replaced by working within the planning parameters of the R1 and R3 zones.
    - The proposal is for a more integrated housing outcome with a variety of different housing opportunities focused within the zoned areas.

- In addressing the stark change in character and density from the previous application external interfaces have been reduced in impact with the use of the rural separation areas with a minimum dimension of 50m which will be landscaped to create a vegetated and green edge to the development significantly reducing the stark change to the surrounding rural and semi-rural setting.
- A transition of density with larger lots [minimum 600m2] on the periphery of the subdivision.
- A stronger sense of place is created by the introduction of community facilities which will be accessible to all the surrounding community. This includes a commercial centre, child care centre [part of this application], neighbourhood parks, and the establishment of community focused shelter structures within the open space to act as a gathering place for the public.
- Internal circulation within the site have been retained including an internal bus route opportunity.

2. Interfaces with neighbouring rural uses to the west, north and east have been addressed through a 50m wide separation area between the rural uses and the residential lots.
3. The applicant will accept a pressure sewer system to Councils requirements.
4. Stormwater discharge onto neighbouring rural land in the north -west corner of the site has been addressed by the removal of this catchment from the residential subdivision. This area will be created as a single lot which is described within the application as a Balance lot. This removes the need to have downstream owners' consent or Deed of Agreement as discharge will be unchanged from the existing arrangement.
5. The treatment of retaining walls was raised in the previous application and has subsequently been discussed with Council. The site contains a high point roughly in the middle which requires earthworks to create a functional development. The site planning intent is to minimise the need for inter-allotment drainage with all of the lots free draining to the street and the road stormwater network. The engineering design seeks to minimise the use of retaining walls but where used the following principles apply.
    - Maximum retaining wall height is 1.5m although the majority of retaining walls will be less than 1.0m.
    - Retaining walls are along back and sides of lots and not the front.
    - Larger retaining walls [eg 1.5m] are generally to the rear of the lots. They are not located on the lot boundary but are set back 1.5m from the boundary.
    - Any additional level differences are achieved by batters above or below the retaining wall.
    - The area between the retaining wall and the boundary will be capable of being densely planted.
    - Any screen fence on the lot boundary will be separated from the retaining wall by 1.5m thereby avoiding the potential for a single high blank wall.

    More detail is provided in the engineering plans, the Statement of Landscape Intent, and the Urban Design Statement.
6. The flood free access from the site using Gardiners Road is addressed with this application. The applicant proposes that in addition to the requirements under the James Creek Urban Growth Area Road Infrastructure Developer Contribution Plan [effective 6 March 2020] to contribute to a Q20 flood resilience, the road will be further upgraded to a Q100 immunity in accordance with Councils latest flood modelling. Details of this proposal are contained in the Geolink engineering drawings and Traffic report. This will mean that over 100 existing lots in the James Creek area, in addition to the proposed subdivision, will benefit from this improved safety.
7. We have consulted with Council officers regarding the possibility of connecting the subject land by pathway and bikeway to external areas such as Townsend. This has raised many design issues including vegetation removal, land acquisition, driveways, etc. As a result, Council has indicated they are more favourable disposed towards a pedestrian connection to the school bus stop at the corner of Gardiners Road and James Creek Road. While this has a number of design challenges the applicant is prepared to work with Council to achieve this and will accept a condition accordingly.
8. Stormwater management has been a matter of concern to the community and Council. While the removal of the north west corner of the site from residential development overcomes the question of downstream owners consent there remain three stormwater treatment areas. These have been designed to exceed engineering requirements by over treating and detaining stormwater thereby improving the stormwater management beyond industry standards.

4 Site and Surrounding Context

Lot 104 DP 751388 ('the site') is rectangular in shape and has an area of approximately 33 ha. It is situated mid-way along James Creek Road in James Creek, bounded by James Creek Road to the east and Austons Lane to the south, with large rural lots to the north and west. The lot to the north is densely vegetated. Approximately 650 metres further to the west flows James Creek and approximately 1.3km to the east flows Palmers Channel. Both waterways flow north, discharging into the Clarence River approximately 1.7km north of the site.

Figure 1: Aerial photograph of subject site

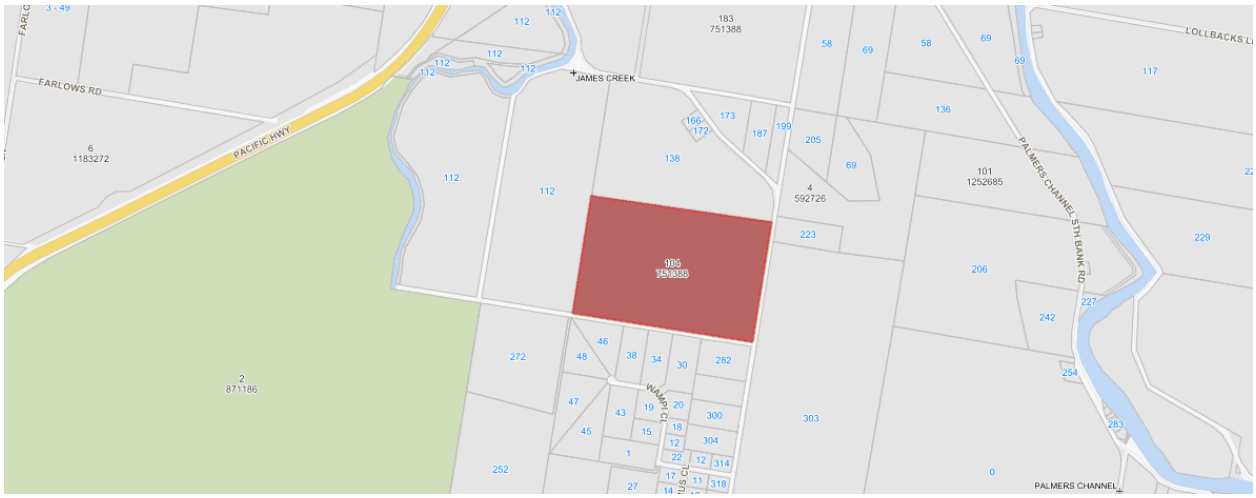


Figure 2: Locality Plan of subject site

James Creek is a small, rural locality on the north coast of NSW. The nearest townships are Maclean and Yamba, and are within 10-15 minutes' drive of the site. Grafton is the nearest larger centre, located 45 minutes' drive south west.

The site has been historically cleared and modified for agriculture, sugar cane production and cattle grazing. It is currently clear of vegetation other than grass. The crest of a small hill is located slightly to the north-west of the centre of the site. From this crest, the land falls away in all directions with slopes on the site typically in the range of 3% to 10%.

Figure 3: Context Plan

place design group.

5 Proposed Development

The applicant is seeking a Development Approval for a Subdivision (281 Residential lots, a child care centre lot, a commercial lot, a medium density lot, open space (Stormwater and Recreation) lots, balance area and roads). The Child care centre is also incorporated in the application.

The proposal incorporates a number of features which represent best practice subdivision design but also results from consideration of the matters of concern to the community, Council and the Planning Panel. The key elements of the application derive from addressing the existing zoning of the land and to use the planning provisions of the R1 and R3 zone. This has resulted in increased housing diversity and affordability by including 51 lots greater than 350m2 in area within the R3 zone. Additionally, a townhouse development site has been provided which indicatively can contain 38 units [subject to separate application].

The remainder of the development has a more traditional housing style with larger lots and in particular lots exceeding 600m2 are located on the periphery of the development. This assists with providing a transition to the neighbouring rural and semi-rural areas adjoining the site. This transition has been further assisted by the inclusion of a 50m separation area between the neighbouring rural uses to the north, east and west of the site. This area separates rural activities from the residential lots and included open space areas, stormwater management and roads for access. The open space areas will be vegetated but managed as usable open space adding to the recreational opportunities for the local community. These interfaces will be fenced with chainwire fencing to prevent domestic animals from crossing into rural property.

The street pattern consists of a series of interconnected through roads. No dead-end roads are proposed. This design allows for traffic to be dispersed through the development while increasing opportunities for connected paths, walkways and access to open space. The layout also includes an allowance for a bus to transit through the development. This is directed in part towards criticism of the lack of public transport opportunities. In this regard the bus companies have been approached and their response is that if there is sufficient warrant to review existing bus routes this will be considered at a future date when growth has occurred. [refer Geolink traffic report]

The proposal also seeks to strengthen the sense of place and community, particularly with creating increased opportunities for the local community to be actively involved with the future residents. This will be achieved by

- Retaining and planning the use of the zoned neighbourhood centre site for commercial purposes.
- Establishing a child care centre which is part of this application. Strong local demand supports this proposal, and this will be an invaluable addition to the local community.
- Incorporating diversity of housing product which includes opportunities for affordable housing including rental properties in accordance with the Clarence Valley Affordable Housing Policy.
- Creation of a neighbourhood park which will be available for all the community to enjoy. It will include active and passive recreation facilities.
- Provision of a community space within the open space area fronting James Creek Road. This space will include shelter structures which can be used for meetings, gatherings, markets, birthdays and the like. It will be a roofed but open community building accessible to all. Additional on street parking is proposed to assist community members who do not reside within the estate.
- All lot layouts have been architecturally tested to ensure the homes to be built on the land will be able to satisfy the Clarence Valley Residential DCP.
- Walkways and pathways will travel through the site allowing circulation within the estate and external connections are proposed in consultation with Council.

Support for the application and the design is to be found in the reports and plans accompanying the application. In particular the Master Plan and Dwelling Typologies report prepared by RAD Architecture which incorporates the Master Plan Design Intent Statement is informative in identifying key planning and design principles which underpins the fresh

approach adopted with this application.

Figure 4: Proposed Subdivision Plan

5.1 Residential Subdivision (R1 and R3 Zoned Land)

The proposed subdivision, as per **Enclosure 3,** includes 281 residential allotments. Specifically, the proposed lot size breakdown is included in Table 3 below:

TABLE 3: PROPOSED RESIDENTIAL LOT SIZE BREAKDOWN		
Lot size	Number of Lots	%
>450m2	113	40%
>600m2	78	28%
>800m2	16	6%
>350m2 [R3 zone]	51	17%
>600m2 [R3 zone]	22	8%
Medium Density Lot	1	1%
Total	281	

Key elements of the proposed residential subdivision are outlined in detail below:

- A single-entry point to James Creek Road which is designed as a heavily landscaped entrance to the estate comprising extra width in the road alignment for the establishment of a single-entry road and two exit lanes to James Creek Road [refer Statement of Landscape Intent];

- A circular road and internal circulation provide a high level of internal connectivity as well as opportunities for a future bus route through the site;

- The use of the different lot sizes throughout the estate provides a superior mix of housing style and affordability within the estate. In several cases, smaller lots have been clustered with the intention to allow project builders to purchase a group of lots and efficiently development and construct housing product;

- The R3 Medium density zoned land has been the focus of seeking to provide a wider range of housing opportunities including a townhouse or medium density lot. This site is proposed to contain 73 lots plus a medium density lot;

- The subdivision exceeds Council's requirement for affordable housing lots. The proposal includes 49 lots less than 450m2, together with 15 duplex lots (30 homes) and a multi-unit lot (38 homes) for a total of 117 affordable housing sites in accordance with Council's policy. These are mainly located within the R3 zoned area [except for some duplex sites]. With a total housing product of 334 dwellings this represents 35% of the housing product [townhouse and duplex sites subject to future application] ;

- Most of the duplex product is located on a street corner to allow each unit to address a different street frontage, to allow for improved residential amenity and character to be established within the estate;

- The majority of the lots have a depth of 30-32 metres, this allows compliance with the Clarence Valley Residential DCP [refer architectural typology report] and for the construction of retaining structures at the rear of the lots as required;

- A 5 metre wide road widening to Austons Lane is proposed which will be externally landscaped with buffer planting to provide an improved interface to the development. This land is proposed to be transferred to Council for ownership and maintenance;

- All proposed lots achieve a workable building envelope which will allow for a range of housing designs to be achieved while in accordance with the Residential DCP;

- The development complies with the bushfire separation distance from neighbouring fire sources of 25m. In many cases this distance is exceeded; and

- This application proposes a balance area in the north-west corner of the land with an area of 5.4ha. This area drains into the neighbouring rural land and has been removed from the application so there is no change to the stormwater runoff characteristics.

5.2 Child care centre

The application includes a child care centre. This inclusion is in part in response to the Planning Panels concerns about the lack of community facilities in the first application, but also importantly there is an existing demand for child care facilities in the locality and this will be increased with the proposed development. Therefore, the introduction of a child care centre early in the development is seen as an important community asset and viable commercial opportunity.
The child care centre lot has an area of 3391m2. It will be a single storey building proposed to cater for 103 children. The centre will also require 26 staff members. The centre will cater for all preschool ages. This proposal has been designed in accordance with the NSW Child Care Design Guide under the Education SEPP and the Clarence Valley Residential DCP. A full analysis of the various criteria and their compliance is contained within the child care centre RAD Architecture plans and illustration package.

The proposal for the child care centre is driven by an existing need in the area for child care services. The existing centres are reportedly at full capacity with wait lists and this situation needs to be urgently addressed. Our client has extensive experience in the child care sector and is proposing this new centre which is intended to cater for the existing community as well as the people who will take up residence on the site. To this end a report on need for the proposed centre has been prepared by Business Geographics and is attached.

5.3 Commercial lot (E1 Local Centre zoned land)

Proposed Lot 3, with a site area of 2189m2 is proposed as a commercial lot in response to the existing E1 Local Centre zoned land. Whilst this is not located wholly within the land zoned as E1, the lot size provides an equivalent area as demonstrated in Figure 5 below. In accordance with Section 5.3 of the Clarence Valley LEP, the adjustment of the zone boundaries is less than 20 metres from the current zoning.

The intention for this land is for it to be developed in accordance with its zoning when the time is right to provide commercial facilities for the area. Its expect that this use is likely to be a general store and coffee shop or similar servicing the local community. Its colocation with the child care centre and the open space will assist the early establishment of the commercial uses.

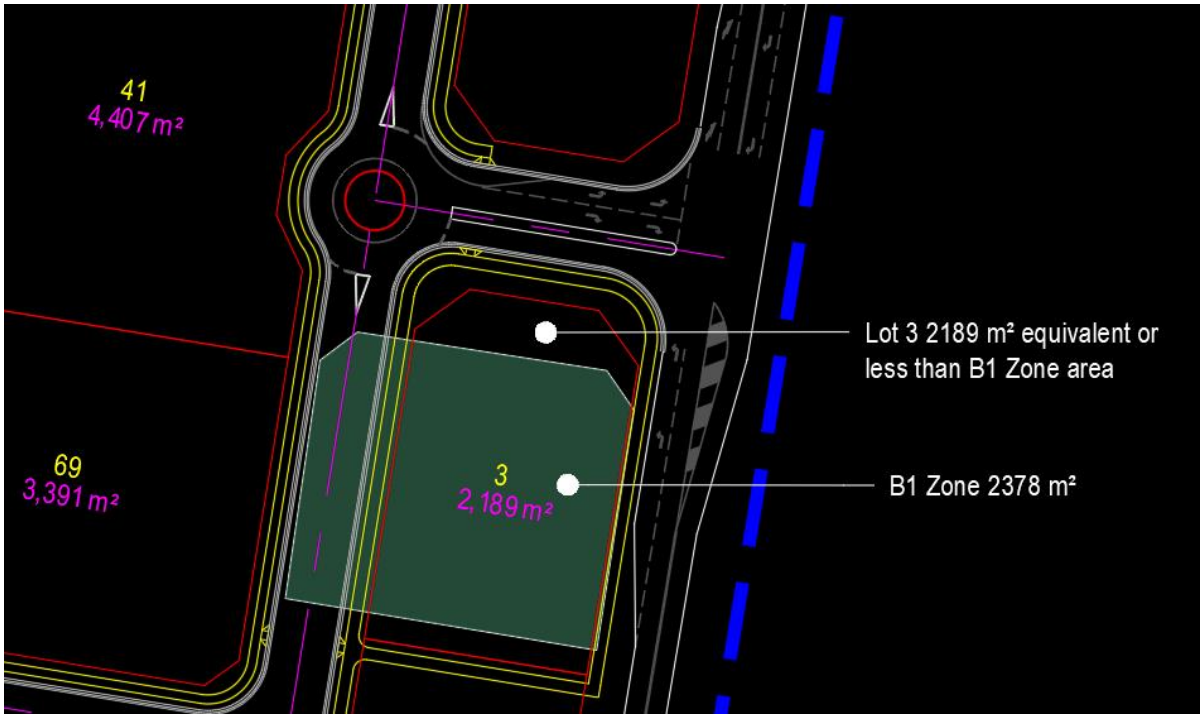


Figure 5: E1 zoning over subdivision layout and commercial lot.

5.4 Subdivision Staging

The subdivision is proposed to be delivered in 5 stages (which may include sub stages subject to construction staging) as detailed in Table 4 below. Staging lot count includes R1, R3, E1 zones, parks and basin lots (total 290 lots).

TABLE 4: Staging plan	
Stage	Lots
Stage 1	69
Stage 2	25
Stage 3	46
Stage 4	87
Stage 5	63

Separate stage boundaries may be adjusted as part of the detailed design of the subdivision therefore these calculations may change.

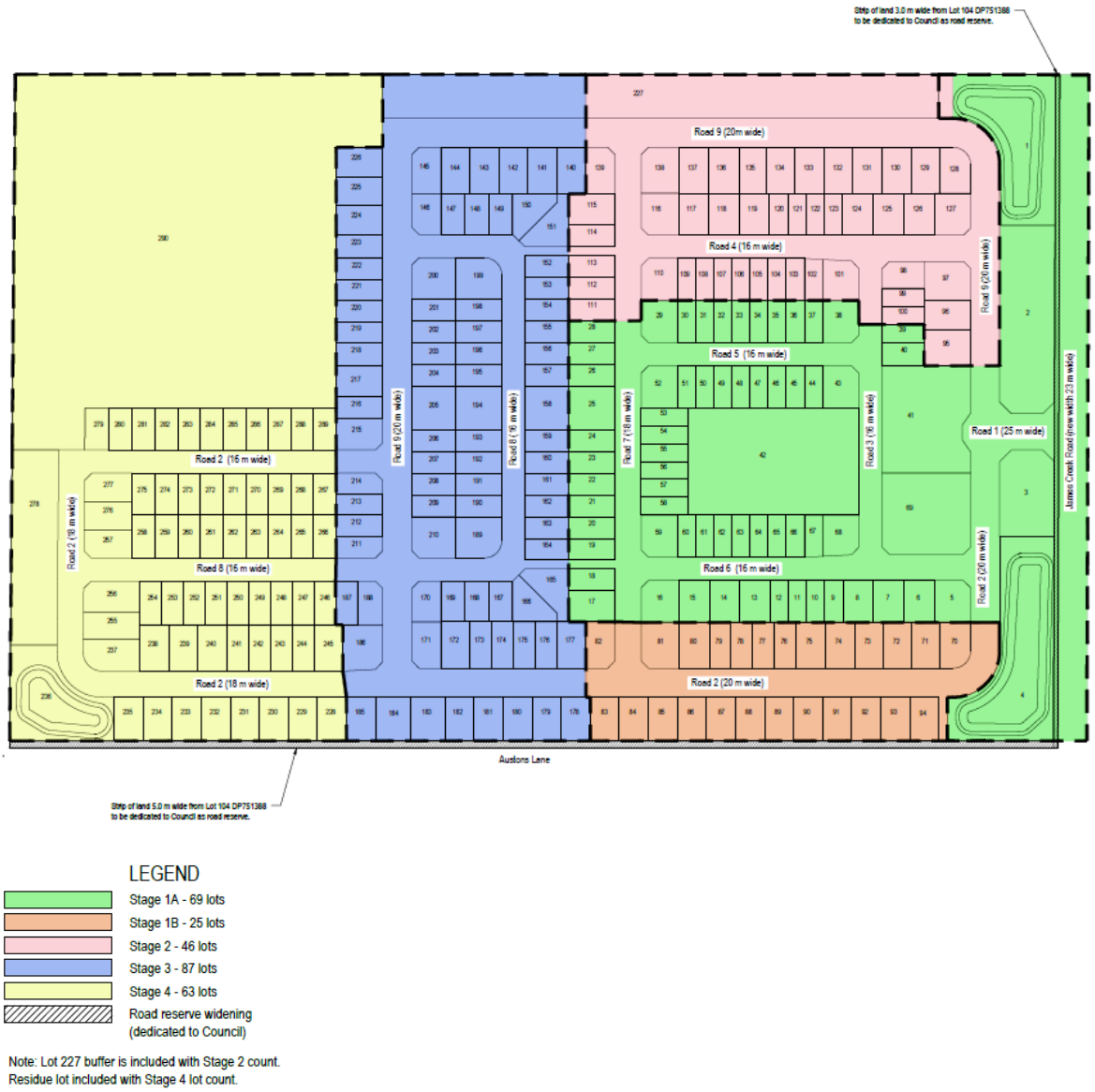


Figure 6: Proposed Subdivision Staging Plan

5.5 Open Space

The landscape works and open space for the development enhances the overall residential amenity of character of the future residential estate by providing improved streetscapes, and parks and open space within walking distances of all lots. The subdivision pattern has been designed to promote safe walking and cycling networks, with high level of landscape amenity for users to promote active travel and use of spaces within the development.

A Village Green is proposed at the entrance to the estate together with publicly accessible open space areas around the eastern, northern and western boundaries of the site. These open space areas are accessible from within the estate and in the case of the larger eastern park, are highly visible and accessible. The intention is that the village green be created as an essential amenity facility for the local community.

The Village Green "local park" will be a vibrant space and will provide significant amenity for the new community as well as enhancing the entrance experience. It consists of a large circular multipurpose lawn, shelter, BBQ facilities, seating and feature playground.

Opposite the Village Green is the Entry Parkland which in addition to an open space function is proposed to contain a community shelter building. This structure will be roofed but open with a large covered open space and fixed park style furniture. The lawn allows for community gatherings as well as structured (e.g. markets/stalls, concerts, group exercise, etc.) and non-structured (e.g. small gatherings, picnics, play) activities to occur. Additional street parking will be provided to cater for the local community who are not residents within the estate.

The entry boulevard is also a key feature and will enhance a sense of arrival to the development using feature trees and groundcover planting. The landscape will draw upon the existing character of James Creek using endemic native plant species.

Figure 7: Proposed Village Green SLI

A copy of the proposed Statement of Landscape Intent is provided in Enclosure 18.

5.6 Pedestrian Connections

The Circulation and Recreational Analysis within the Statement of Landscape Intent shows the key linear pathways within the proposed subdivision layout. They also show important inter street connections and the general movement layout of the parks.

The northern, eastern and western boundaries contain the minimum 50m separation distance from the neighbouring rural uses and include road areas and open space which address the LUCRA recommendation for land use separation but also provide usable open space, enhanced visual amenity and bushfire separation requirements.

The cross section of the roads is provided in the enclosed Statement of Landscape Intent. The sections show Lots on one side of the road, a parking lane, and two trafficable lanes, with the remainder of the road cross section dedicated to

open space including a linear pathway. This pathway also carries through the site along Road 2 and 9 to provide a complete circulation around the site.

The extensive pathway network will allow for connectivity throughout the development, providing the residents with a variety of safe links and opportunities to access the open space network and site in general. It will be enhanced via street tree planting providing both shade and landscape character.

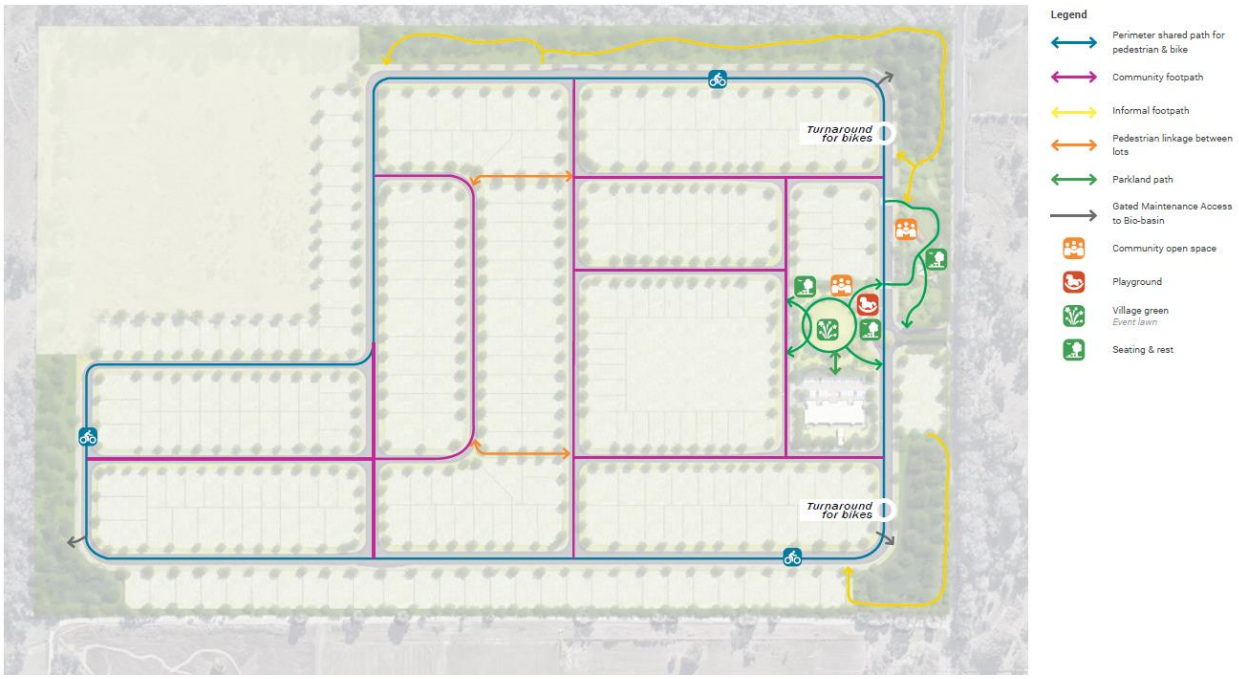


Figure 8: Pedestrian Connections

A copy of the proposed Statement of Landscape Intent is provided in **Enclosure 18**.

5.7 Landscape Interfaces

Road widening is proposed along the southern property boundary to Austons Lane , to provide a 5 metre landscape buffer that will be transferred to Council for on-going ownership and maintenance. The purpose of this area is to provide a visual separation from the large lot residential development to the south of Austons Lane.

A 50m separation area is also proposed along the property boundaries to the north and west. These areas will include an access road and the inclusion of landscape buffers to ensure a suitable interface with the development and the surrounding properties. Some of these areas, particularly the western boundary, will have a 20m densely planted buffer. The proposed treatment of boundaries of the estate has occurred to address potential land use conflicts as addressed in the Geolink LUCRA report.

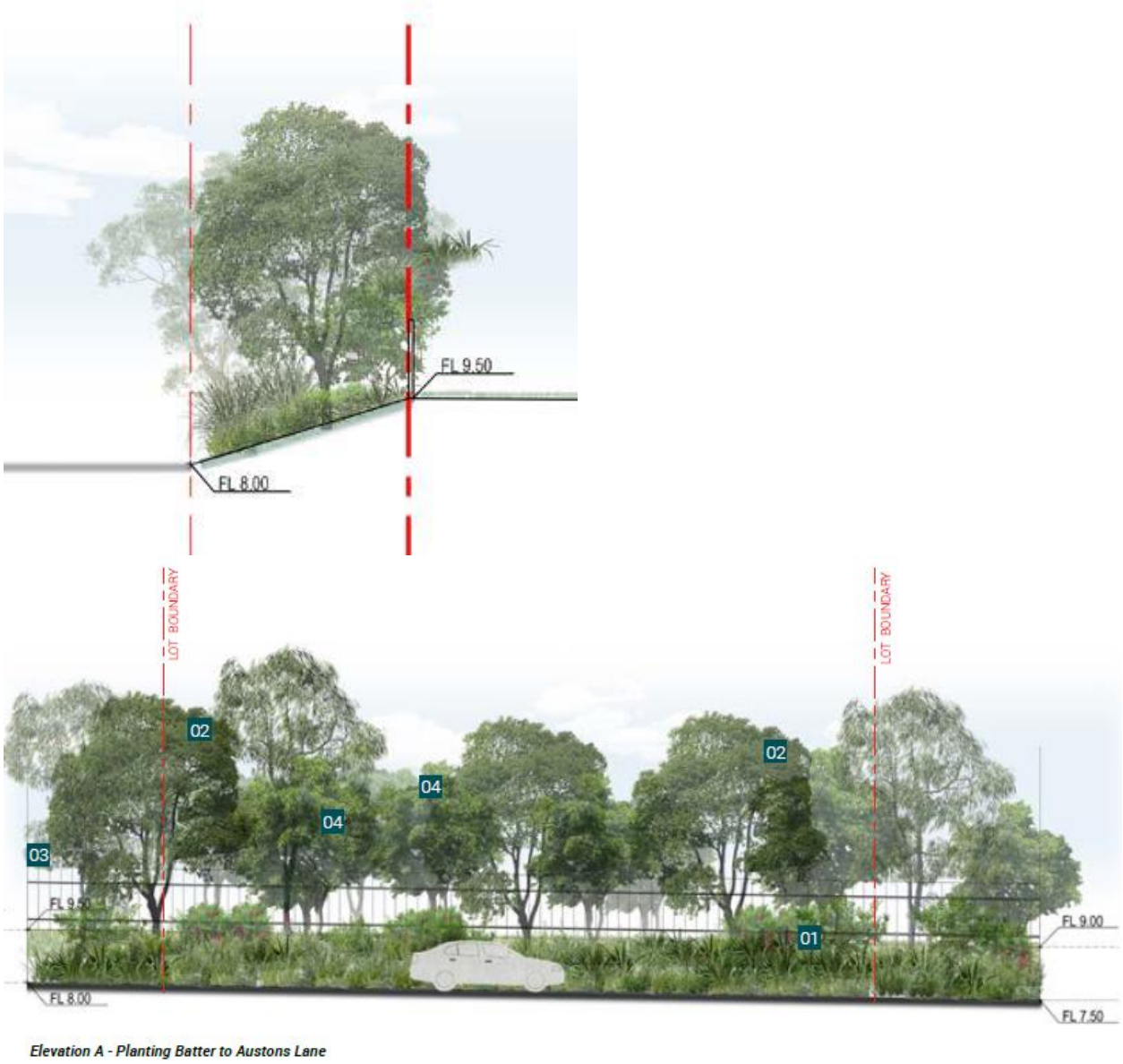


Figure 9 Sections of Landscape Interfaces

5.8 Road Network & Access

A Traffic Impact Assessment prepared by Geolink [Enclosure 5] addresses the traffic and road network matters. Key among the considerations is the use of a single access point to James Creek which, with its one lane in and two departure lanes provides a safe and effective access arrangement and provides the additional space required for the landscape treatment of the estate. A further temporary access point is provided between lot 94 and the stormwater basin which allows the eastern end of Austons Lane to be used as a short term emergency access.
This proposal is also subject to the James Creek Urban Growth Area Road Infrastructure Contribution Plan [effective 6 March 2020] The approval of this application will require compliance with this plan which sets out a funding mechanism for this site to contribute to road upgrading in the area.

In addition to these requirements the applicant makes the following offers:

- To upgrade the flood affected part of Gardiners Road to allow for safe access at a Q100 event. [refer Geolink drawing 3204/SK101-1]. This arrangement benefits not only the future residents of the estate but also approximately 100 lots at James Creek which are presently isolated at flood times. This improvement will be

further assisted by the proposed commercial development on site and at Gulmarrad which, when developed will provide accessible services to the residents of James Creek in flood times.

- To assist Council with the design and development of a walkway / bikeway to the school bus stop at the corner of James Creek Road and Gardiners Road. This connection has a number of design challenges however the application is committed to working with Council to achieve an acceptable outcome.

Figure 10: Entry Road – Statement of Landscape Intent

5.9 Stormwater Management

The subdivision falls into four distinct stormwater catchments however this application proposes the creation of a balance area lot in the NW stormwater catchment to remain undeveloped, so the runoff characteristics in this area are unchanged. This balance lot has an area of approximately 5.4ha. As discussed with Council the fact that the runoff characteristics of this catchment will not be changed by the proposal does not give rise to downstream owner's consent or a Heads of Agreement with the neighbouring owner.

The remainder of the site is served by three catchments all of which have a lawful point of discharge. Details of the stormwater management are contained in the Geolink Stormwater Management Report. [Enclosure 7} An important outcome of the report, based upon comments raised by submitters, is that the stormwater treatment areas are to be oversized and overtreated so there can be no doubt the downstream stormwater impacts are mitigated to exceed Councils requirements.

5.10 Water

The Geolink Water and Sewer Servicing Plan [Enclosure 4] makes the following statement with respect to water supply.

In order to fulfil the criteria in Section 2.2, [of the report] the site will need to be serviced by the new section of DN225 PVC main approximately 1,500 m in length that connects to the DN250 water main on James Creek Road at a point approximately 1 km from the intersection with Yamba Road. The trunk water main connected to the DN250 water main runs along Yamba Road and is serviced by the Maclean 21 ML Reservoir, which is reported to have 55 m head at the

connection point. Refer to Figure 11 [of the report] for the water main alignment extent. This will adequately service the minimum flow and pressure requirements of the site whilst accounting for system pressure losses.

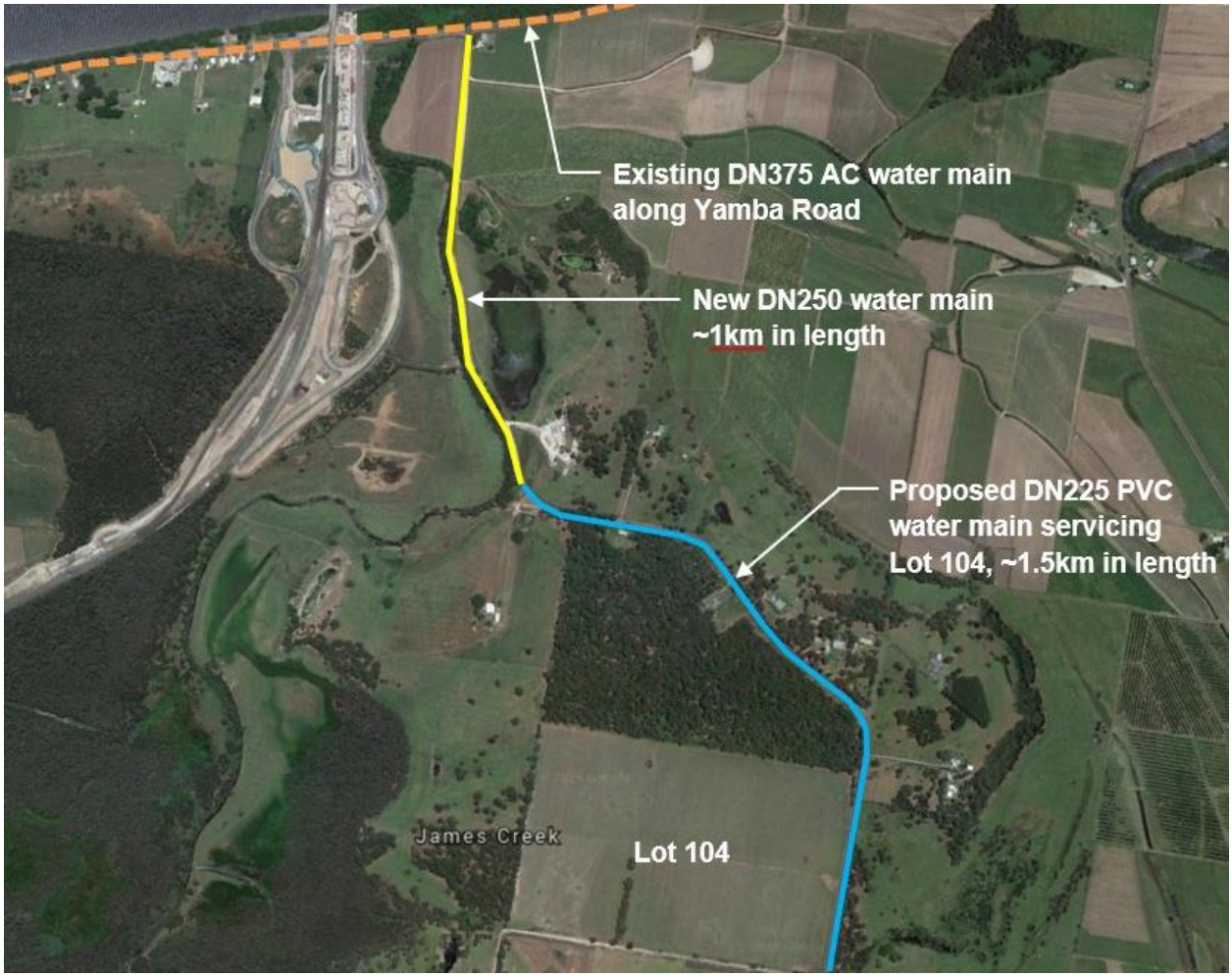


Figure 11: Water Schematic Plan

5.11 Sewer

One aspect of the previous application was the proposal to install a gravity reticulation sewerage system and this drew criticism within the Planning Panel and Councils consideration of the application. Therefore, this application has abandoned the gravity sewer proposal and will provide a low pressure sewerage system in accordance with Councils specification and requirements.

The proposal also proposes a 5km rising main to Townsend and this is discussed in the GeoLINK report as follows.

A DN110 PE100 PN16 SRM has been determined to be the most suitable for the transfer of all sewage generated from the site. This has been sized to accommodate required design flow. The alignment of this main is shown in the attached SRM design prepared by Willow and Sparrow (refer Appendix C of the report). Note, however that the sizing of the main shown in these plans was for the previous proposal whereby the site was to be serviced by gravity sewer reticulation. The current proposal is to service the site a via low-pressure sewer system.

The above design assumptions will need to be confirmed during subsequent SPS design.

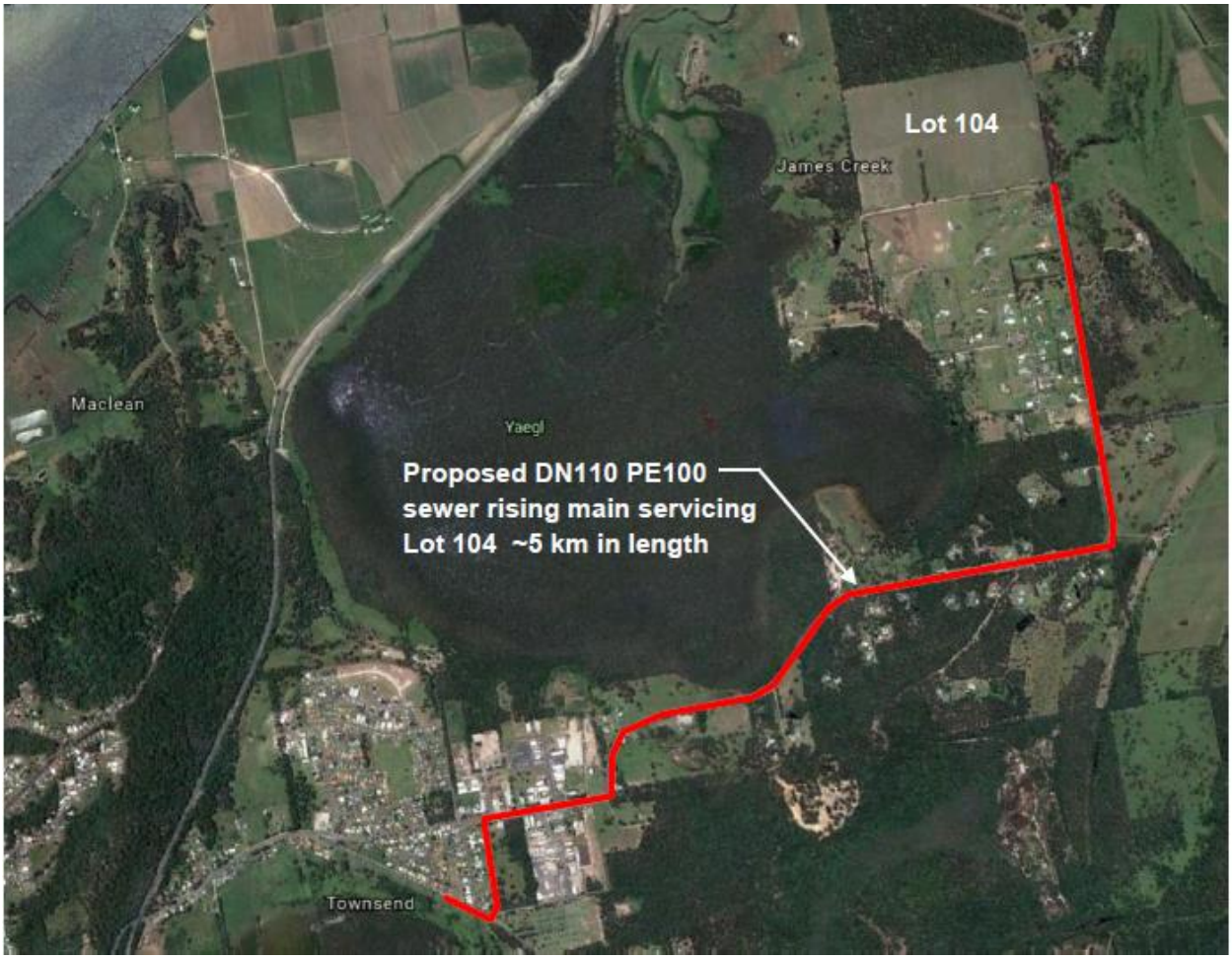


Figure 12: Sewer Schematic Plan

5.12 Change to Ground Level

The proposed development will require earthworks to shape the land in order to achieve the following.

- Functional level usable lots which increase affordability by removing the need for addressing level changes as part of a building approval.
- Lots primarily drain to the street.
- Road grading in accordance with Council standards
- Convenient access to lots on both side of each road
- Stormwater drainage and management.
- Lots with slopes < 5% falling towards the road

The last point above will require a number of retaining walls and earthworks within the lots to ensure each lot falls gently towards the road frontage. This is to reduce the need for services and interallotment drainage running along rear lot boundaries, and to provide a building pad suitable for slab-on-ground dwelling construction.

Retaining walls will generally be no higher than 1.5 m at the rear of lots and 1.0 m at side boundaries. Concrete sleeper walls will be used due to their structural stability, aesthetics, low maintenance requirements and minimal horizontal space requirements. The illustration below shows the proposed arrangement. The image below shows the approach which has been adopted to the treatment of retaining walls. Note for walls 1.5m high they are not located on the boundary but a minimum of 1.5m within the lot.

It's also important to acknowledge that the 1.5m high walls are a worst-case situation and will occur relatively

infrequently in the estate. As the need for large retaining walls changes the location of the wall in relation to the boundary will reduce. For example, a 0.5m high wall does not need to be located 1.5m from the boundary. Therefore, these details, which will be the subject of the detailed design of each stage, will be assessed at the Construction Certificate stage.

Further information on the retaining walls is provided in the Urban Design documents and the Statement of Landscape Intent.

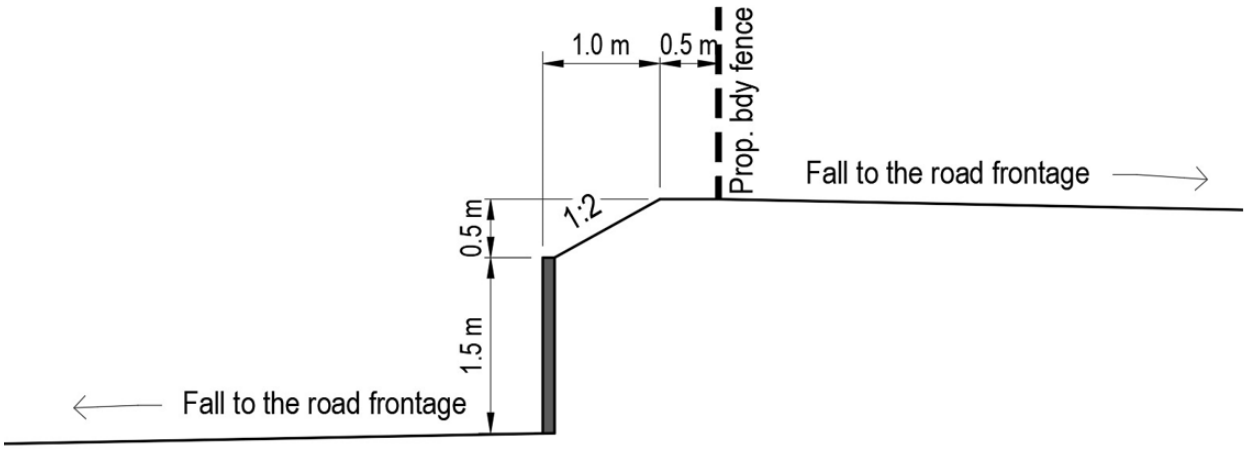


Figure 13: Retaining Wall Arrangement

Cut and fill will be balanced as close as possible to avoid disposal of excess spoil or importing fill to the site, thus reducing truck movements within the surrounding road network.

6 Statutory considerations

The following section establishes referral requirements and the Environmental Planning Instruments and Development Control Plan(s) that apply to the proposal. The proposed development is being assessed under the provisions of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The proposed development has been prepared and will be determined under Part 4 of the EP&A Act with the Northern Planning Panel being the consent authority.

Section 4.15 of the EP&A Act outlines the matters for consideration for development applications prepared under Part 4. These are identified as follows:

> *Matters for consideration—general*
> *In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application:*
> *(a) the provisions of:*
> *(i) any environmental planning instrument, and*
> *(ii) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved), and*
> *(iii) any development control plan, and*
> *(iiia) any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4, and*
> *(iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph), and*
> *(v) any coastal zone management plan (within the meaning of the Coastal Protection Act 1979),*
> *that apply to the land to which the development application relates,*
> *(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,*
> *(c) the suitability of the site for the development,*
> *(d) any submissions made in accordance with this Act or the regulations,*
> *(e) the public interest.*

The following assessment is provided against these matters.

6.1 Concurrence

The proposal does not trigger any of the Concurrence requirements listed in the Clarence Valley LEP or other Environmental Planning Instrument although SEPP [Transport and Infrastructure] 2021 requires Council to consult with Transport NSW.

The proposal is considered consistent with the Transport and Infrastructure SEPP.

The following Environmental Planning Instruments are relevant to this:

- *State Environmental Planning Policy (Biodiversity and Conservation) 2021;*
- *State Environmental Planning Policy (Planning Systems) 2021;*
- *State Environmental Planning Policy (Resilience and Hazards) 2021;*
- *State Environmental Planning Policy (Transport and Infrastructure) 2021; and*
- *Clarence Valley Local Environmental Plan 2011.*

A summary of the key matters for consideration arising from these State Environmental Planning Policies considered in more detail below.

TABLE 5: SUMMARY OF APPLICABLE ENVIRONMENTAL PLANNING INSTRUMENTS		
EPI	Matters for Consideration	Comply (Y/N)
State Environmental Planning Policy (Biodiversity & Conservation) 2021	Chapter 2: Vegetation in non-rural areas Chapter 4: Koala Habitat Protection 2021	Y
State Environmental Planning Policy (Planning Systems) 2021	Chapter 2: State and Regional Development • Section 2.19(1) declares the proposal regionally significant development pursuant to Clause 2 of Schedule 6 as it comprises general development that has a capital investment value of more than $30 million.	Y
SEPP (Resilience & Hazards)	Chapter 4: Remediation of Land • Section 4.6 - Contamination and remediation has been considered in the Contamination Report and the proposal is satisfactory subject to conditions.	Y
State Environmental Planning Policy (Transport and Infrastructure) 2021	Chapter 2: Infrastructure • Section 2.48(2) Determination of development applications—other development – development carried out within 5m of an exposed overhead electricity power line - the proposal is satisfactory subject to conditions. • Section 2.121(4) - Traffic-generating development	Y
Proposed Instruments	No compliance issues identified.	Y
LEP	• Clause 2.3 – Permissibility and zone objectives • Clause 7.1 – Acid Sulfate Soils • Clause 7.2 – Earthworks • Clause 7.8 – Essential Services	N

Consideration of the relevant State Environment Planning Policies is outlined below.

State Environmental Planning Policy (Biodiversity and Conservation) 2021

Chapter 2 Vegetation in Non-Rural Areas

Chapter 2 of *State Environmental Planning Policy (Biodiversity and Conservation) 2021 ('the* Biodiversity and Conservation SEPP') applies to land zoned R1 General Residential, R3 Medium Density Residential and E1 Local Centre and as such is applicable to the subject site. The chapter regulates clearing of native vegetation below the Biodiversity Offset Scheme (BOS) threshold where a proponent will require an approval from the Native Vegetation Panel established under the *Local Land Services Amendment Act 2016* and vegetation below the BOS threshold where a proponent will require a permit from Council if that vegetation is identified in the Council's Development Control Plan (DCP). Of note, a permit is not required, as consent is being sought.

A Biodiversity Assessment prepared by Geolink is included to assess potential biodiversity impacts from a proposed residential subdivision. The report includes information regarding Coastal Emus as raised with the previous application.

The site has been previously used for sugar cane farming and therefore has been cleared of all vegetation and does not contain any areas of biodiversity value (as per the Biodiversity Values Map and Threshold Tool) and the proposal does not exceed clearing thresholds as per Part 7.2 of the *Biodiversity Conservation Regulation 2017* and does not result in significant impacts assessed by the 5-part test. A Biodiversity Development Assessment Report (BDAR) is included with the application.

Part E of the Clarence Valley Residential Zones Development Control Plan (DCP) 2011 notes that development consent is required for the actions of interfering with or destroying trees or other native vegetation on Residential zoned land. Approval has been sought as part of the application however the limited remaining vegetation which is on site is proposed to be retained and incorporated within the landscaping. The proposed development is considered complaint with this Policy.

Chapter 4 Koala Habitat Protection 2021

Chapter 4 of the Biodiversity and Conservation SEPP applies to the subject site. The policy aims to encourage the consideration and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline.

A Biodiversity Assessment Report prepared by Geolink is submitted with the application. The report included a Koala Assessment Report which finds no evidence of a Koala population currently residing in the locality and identified that the site provides poor foraging and refuge habitat based on the lack of trees and relatively poor resources for Koalas. Core Koala habitat was not identified on the subject site and no fragmentation of consolidated areas of potential habitat would occur as a result of the proposal. The assessment concludes that impacts to Koalas and their habitats are negligible. A Plan of Management is not required to support the proposal. The proposal is considered consistent with this Policy.

State Environmental Planning Policy (Planning Systems) 2021 ('Planning Systems SEPP')

Chapter 2: State and Regional Development

The proposal is *regionally significant development* pursuant to Section 2.19(1) as it satisfies the criteria in Clause 2.19(1) of Schedule 6 of the Planning Systems SEPP as the proposal has a capital investment value of more than $30 million. A report prepared by Burchills Engineering Solutions [Enclosure 11] is included with the application and examines the project costings. Accordingly, the Northern Regional Panel is the consent authority for the application. The proposal is consistent with this Policy.

State Environmental Planning Policy (Resilience and Hazards) 2021

Chapter 4: Remediation of Land

The provisions of Chapter 4 of *State Environmental Planning Policy (Resilience and Hazards) 2021 ('the* Resilience and Hazards SEPP') have been considered in the assessment of the development application. Section 4.6 of Resilience and Hazards SEPP requires consent authorities to consider whether the land is contaminated, and if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) the purpose for which the development is proposed to be carried out. In order to consider this, a Preliminary Site Investigation ('PSI') has been prepared by EAL and Geolink [Enclosures 15 and 16] and forms part of the application.

The PSI consisted of a search of historical records, a site walkover, soil sampling and analysis. This research found that the land was not cleared until 1969 when it was cleared in three stages. Clearing was completed by 1973 and by 1975 the entire allotment was planted in sugar cane. The cane farming continued until 2005. Subsequently the site has been grassed and grazed by cattle and sheep.

The potential sources of contamination were considered to be fertiliser, fungicides, herbicides, pesticides and solvents associated with the agricultural activities.

The report says that no indications of obvious contamination were observed during the site inspection. The results from soil testing indicate no soil contamination of the site by any of the broad range of metals and pesticides targeted. No pesticides were present above analytical detection limited in the samples analysed.

The report concluded that a detailed site investigation or site remediation was not required. Based on the findings of the PSI, the site was not considered to represent a significant risk of harm to end users of the proposed rezoning.
The report was reviewed by Geolink in November 2019 who concluded the report still has relevance compared to current guidelines and assuming no contamination has occurred since 2011 the report would be a valid appraisal of the land exhibiting no contaminates of those substances tested.

The proposal is considered to be consistent with the Resilience and Hazards SEPP.

State Environmental Planning Policy (Transport and Infrastructure) 2021

The previous application was referred to Transport for NSW (TfNSW) because the proposed development is defined as traffic-generating development in accordance with clause 2.122 and schedule 3 of *State Environmental Planning Policy (Transport and Infrastructure) 2021 ('the* Transport and Infrastructure SEPP'). Similarly this application will require referral.

The current application is for a development of similar scale to the previous application. The previous application was for 327 residential lots compared with the current proposal for 281 residential lots. Both proposals included duplex lots and a townhouse site. An additional land use being the child care centre is proposed and the traffic implications of that are included in the Geolink Traffic report. [Enclosure 5]

TfNSW has previously reviewed the information provided and raised no objection to the then proposed development. A Road Safety Review undertaken by Abbotsford Solutions on behalf of TfNSW was provided for Council's consideration in determining the development. The Road Safety Review noted at the time that the Yamba Road intersection is to be upgraded to a channelised right-turn (CHR), and this be included as a condition of consent for the development.
TfNSW further then advised that should Council approve the proposed development and condition road works on Yamba Road, TfNSW concurrence would be required in accordance with Section 138 of the Roads Act as the roadworks required affect a classified Regional road. As such, the works would need to be designed in accordance with the current Austroads Guidelines, relevant Australian Standards and TfNSW supplements to the satisfaction of both TfNSW and Council.
The previous proposal was also referred to Essential Energy in accordance with Clause 2.48(2) given the proximity of overhead electricity power line along James Creek Road. Essential Energy advised it has "has no comments to make as to potential safety risks arising from the proposed development". A similar referral will be required because of this fresh application.

6.2 Integrated Development

The proposal is not integrated development for the purposes of Council's assessment.

6.3 Water Management Act 2000

It has been identified that the locality contains two (2) streams on neighbouring land to the east but within 40 metres of the subject property.

Pursuant to the Water Management Act 2000, land within 40 metre of a stream is classified as waterfront land and the carrying of works on that land are "controlled activities". Examples of controlled activities include cut and fill works; construction of stormwater outlets; and laying pipes and cables.

The Water Management (General) Regulation 2018, Schedule 4 Exemptions (Clause 31) includes:

> *Controlled activities on certain waterfront land*
>
> *Any controlled activity that is carried out on waterfront land in relation to a minor stream or third order stream, where the activity is separated from the bed of the minor stream or third order stream by one or more of the following that has been lawfully constructed—*
>
> *(a) a public road,*
>
> *(b) a hard stand space (such as a car park or building),*
>
> *(c) a levee bank, but only if the levee bank is in an urban area, was the subject of a development consent under the Environmental Planning and Assessment Act 1979 and is located within a designated high risk flood area (within the meaning of clause 45 of this regulation).*

Under the Regulation, a minor stream means:

> *(a) any stream or part of a stream—*
>
> *(i) the location of which is specified in the hydroline spatial data, and*
>
> *(ii) that is identified as a first or second order stream, or part of such a stream, as determined in accordance with the system set out in Schedule 2, and*
>
> *(iii) that does not maintain a permanent flow of water, being a visible flow that occurs on a continuous basis, or would so occur if there were no artificial abstractions of water or obstruction of flows upstream, and*
>
> *(iv) that does not at any time carry flows emanating from a third or higher order stream as determined in accordance with the system set out in Schedule 2, or*
>
> *(b) any stream or part of a stream the location of which is not specified in the hydroline spatial data.*
>
> *For the purposes of paragraphs (a)(i) and (b), a stream is specified in the hydroline spatial data if it is identified as a watercourse (however described) in accordance with the legend or terms of that data.*

The consequence of the proposed development is described as follows (refer to Figure 14 below):

1. The stream (stream 1 as identified in Figure 14) to the north-east within 40 metres of the subject property is a first order stream, however is separated from the property by James Creek Road (public road); and
2. The stream (steam 2 as identified in Figure 14) to the south-east is separated from the property by James Creek Road and Austons Lane.

The site is separated from the steams by a public road in both circumstances. Therefore, the proposed development is not a controlled action.

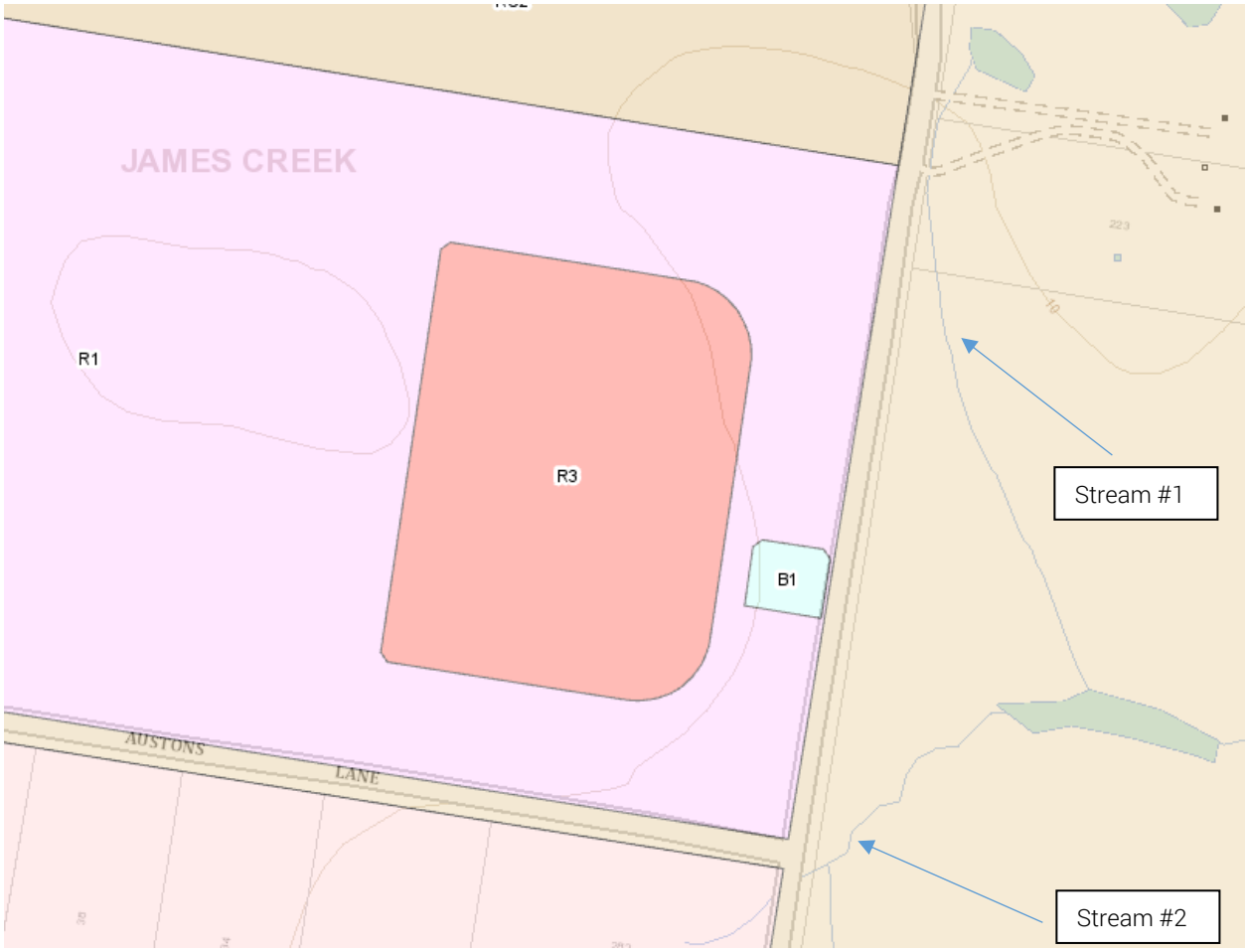


Figure 14: Overlay Map identifying streams on adjoining properties

6.4 Local Environment Plans

Clarence Valley Local Environmental Plan 2011 ('CVLEP') provides the local environmental planning provisions for land in Clarence Valley in accordance with the relevant standard environmental planning instrument under section 3.20 of the Act. Pursuant to Section 2.6 of the CVLEP, *'land to which this Plan applies may be subdivided, but only with development consent.'*

Pursuant to the CVLEP (and Figure 15 below), the subject site is situated within the:

- R3 - Medium Density Residential Zone;
- R1 - General Residential Zone; and
- E1 – Local Centre Zone.

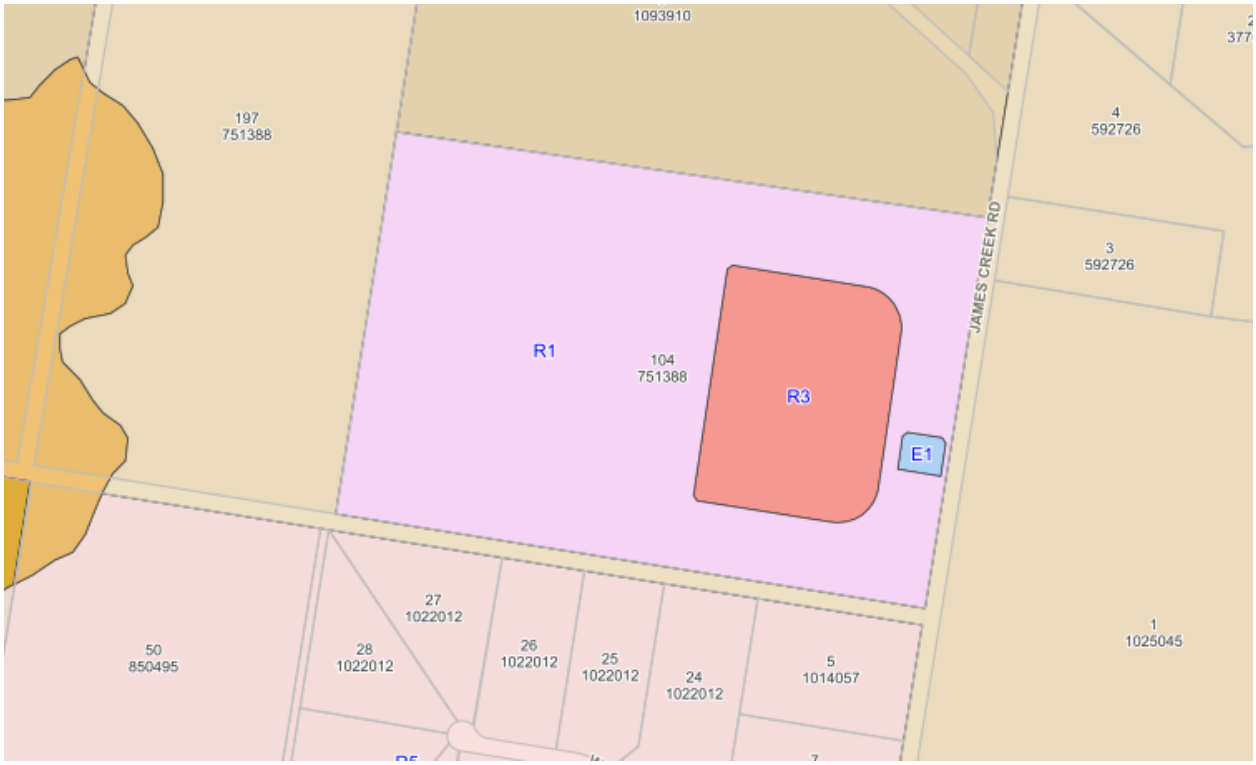


Figure 15: Zoning Map subject site.

The objective of the R3 – Medium Density Residential Zone is to:

- To provide for the housing needs of the community within a medium density residential environment.
- To provide a variety of housing types within a medium density residential environment.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.
- To enable serviced apartments while maintaining the medium density residential character and amenity of a locality.

Applicant's comments in response to the objectives of the R3 Zoning Designation:

The proposed subdivision and mix of lot sizes provides for housing needs within the community to meeting the R3 designation. Specifically, the proposal includes 73 residential lots in the area including 51 lots with areas in the range of 350m2 - 525m2, [with the majority 360m2-400m2] together with a multi-unit lot (38 homes). This creates an opportunity for affordable housing sites in accordance with Council's policy. Facilities including the open space and pedestrian networks, and the inclusion of a commercial lot at the entrance of the site assists in meeting the day to day needs of future residents. The smaller lots [less than 450m2] are only located within the R3 zoned land together with the townhouse site. This reflects the change of approach with the fresh application of better using the R3 zone. This housing is also located with proximity and good accessibility to the open space area to provide an appropriate level of residential amenity.

Furthermore part of the R3 zone is used for the child care centre and the park reflecting the provision of services expected for resident.

The objective of the R1 – General Residential Zones is to:

- To provide for the housing needs of the community.
- To provide for a variety of housing types and densities.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.

Applicant's comments in response to the objectives of the R1 Zoning Designation:

The proposed subdivision provides a diversity of housing choice and lot sizes for future residents, with the subdivision achieving an overall average lot sized generally between 450m2 and 600m2. This area also includes the 16 duplex lots.

The development addresses a housing need and provides appropriate services, including open space, and pedestrian connections as well as opportunities for future commercial offering to serve the needs of the future residents.

The typology assessment prepared by RAD Architects [Enclosure 12] reviews the proposed lot sizes in the context of the Clarence Valley residential DCP and determines that the lots will accommodate complying residential development.

The objective of E1 – Local Centre Zone is to:

- To provide a range of small-scale retail, business and community uses that serve the needs of people who live or work in the surrounding neighbourhood.
- To reinforce the neighbourhood centres of Coutts Crossing, Glenreagh, Lawrence and Ulmarra as the locations for commercial premises.
- To minimise conflict between land uses within the zone and land uses within adjoining zones.
- To enable other land uses that are compatible with and do not detract from the viability of retail, business and community uses within the zone.

Applicant's comments in response to the objectives of the E1 Zoning Designation:
The proposed subdivision includes Lot 3 with a site area of 2189m2 is proposed as a commercial lot in response to the existing E1 Local Centre zone land on the subject site. Whilst this is not located wholly within the land zoned as E1, the lot size provides an equivalent area, and ensures the future use of this land is compatible and does not detract from surrounding residential amenity, or viability of other commercial precincts. In accordance with Section 5.3 of the Clarence Valley LEP, the adjustment of the zone boundaries is less than 20 metres from the current zoning. Lot 1 provides a future opportunity for all-scale retail, business and community uses to be established within the residential estate to serve the needs of people who live or work in the surrounding neighbourhood.

The below sections outline what we believe are the applicable Clauses to be considered as part of the DA made to Council, and an assessment against each provision in the context of the subject proposal.

TABLE 6: ASSESSMENT AGAINST LEP		
LEP Part	Applicable Provision	Applicant Response
Principal Development Standards (Part 4)	4.1 Minimum subdivision lot size	The proposed minimum lot size within the subdivision is 350m2.
Miscellaneous Provisions (Part 5)	5.11 Bush fire hazard reduction	Refer to detail within the Bushfire Hazard Assessment in Enclosure 9.
	5.1.16 Rural zone land conflict	Significant consideration has been given to the treatment of the property interfaces and associated treatment to ensure the relevant planning considerations are suitably addressed. A 50m wide separation area including landscaped area is proposed along the northern, eastern and western property interfaces (specifically given the above commentary provided with respect to the rural land use conflicts under Clause 5.1.16 of the Clarence Valley LEP) In the case of the lots North of Austons lane, a five (5) metre wide landscape buffer is proposed to be dedicated to Council (and form part of the existing Austons Lane) road reserve.
Additional Local Provisions (Part 7)	Acid Sulphate Soils	The subject site is identified as Class 5 Acid Sulphate Soils (being Acid Sulphate Soils not

		typically found on sites mapped as Class 5). As identified within the Contaminated Land Report prepared by Geolink (refer to Enclosure 11), Acid Sulfate Soil Management Plan will be developed following testing on site, to manage any potential or actual acid sulfate soils that may be encountered prior to the commencement of works on site.
	Earthworks	The engineering documentation accompany this application considers the requirements for earthworks as per the CV LEP and Residential DCP and demonstrates that the proposed development and earthworks will not result in the disruption of, or any detrimental effect on, existing drainage patterns and soil stability in the locality, the effect of the proposed development on the likely future use or redevelopment of the land (for residential subdivision) , the quality of the fill or the soil to be excavated, or both, the effect of the proposed development on the existing and likely amenity of adjoining properties, the source of any fill material and the destination of any excavated material, the likelihood of disturbing relics, the proximity to and potential for adverse impacts on any watercourse, drinking water catchment or environmentally sensitive area. Refer to associated technical attachments for details of how these matters have been addressed.

Part 6 – Urban Release areas since the change to zoning of the land under recent approvals has considered the housing development needs as required by the State, and therefore is not required to be addressed as part of the subject application.

6.5 North Coast Regional Plan 2041

The North Coast Regional Plan 2041 is the regions blueprint for the next two decades that reflects community and stakeholder aspirations and opportunities from leveraging the North Coast's position between two of the fastest growing population corridors in the nation. In the context of Clarence Valley, the North Coast Regional Plan 2041 has the following regional priorities:

- Involve First Nations People in decision making and caring for Country.
- Develop Grafton's importance and role in the region through placemaking improvements, growing the economy and providing job opportunities, housing and services.
- Support the growth and diversification of the Valley's agricultural base and support sustainable industries and value adding processes to encourage new opportunities for agribusiness, agritourism and associated manufacturing and transport.
- Expand sustainable nature-based, adventure and cultural tourism by leveraging Clarence Valley's natural and heritage assets.
- Foster stronger strategic relationships with the Northern Rivers and Mid North Coast subregions, and with the NSW Government.

In the context of housing, the Regional Plan prioritises delivering housing in Grafton, Clarenza, James Creek, Junction

Hill and West Yamba to support population growth. The subject site itself was identified as a 'future urban release area' in the *North Coast Regional Plan 2041.*

Figure 16: Extract from Urban Growth area map for Clarence Valley LGA.

The site as a consequence of the Regional plan rezoning is reflective of this strategy's intent for the site. The primary purpose of the Regional Strategy is to ensure that adequate land is available and appropriately located to accommodate the project housing and employment needs of the Region's population over the next 25 years.

6.6 Clarence Valley Local Housing Strategy and Affordable Housing Policy

Council is developing its Local Housing Strategy has exhibited a document which contains key messaging. It acknowledges the lack of housing availability, increased housing costs, barriers to housing delivery and lack of housing affordability, including rental accommodation availability and affordability. The subject land at James Creek is identified as land available for development and goes as far as to provide a theoretical capacity of 331 dwellings.

In the report it acknowledges the previous Planning Panel decision and points out that part of unlocking the potential of the land is sewer infrastructure. And roads and traffic upgrades, all of which are incorporated in the application and Councils James Creek Urban Growth Area Road Infrastructure Developer Contributions Plan. Additionally provision of water supply, stormwater drainage, footpaths and open space are integral components of this application.

In this context we consider that the provision of new diverse housing in a preplanned location is a positive contribution to the local housing supply and this is recognized by the Councils own forward planning.

The Clarence Valley Council Affordable Housing Policy was adopted by Council on 20 October 2015 and is currently under review. The focus of the latest version of the policy is to require, through planning mechanisms, that new large-scale development [more than 10 lots] provide appropriate housing stock that is more likely to be affordable and appropriate to the future demographic needs of the Clarence Valley Local Government Area. In order to achieve this the policy seeks to maximise opportunities for housing diversity including smaller lots.

The diversity of housing types which can be accommodated with the proposed subdivision, including the smaller lots and duplex and townhouse product meets Council affordable housing criteria and will see a large number of product types which are affordable.

6.7 Development Control Plans

The Clarence Valley Development Control Plans (DCPs) applies to the subject site and guides future development within the area. The following DCPs apply to land within residential zones, and will be applicable to the proposed subdivision:

<table>
<tr><th colspan="3">TABLE 7: PART C – GENERAL DEVELOPMENT CONTROLS FOR RESIDENTIAL ZONES</th></tr>
<tr><th>Clause</th><th>Requirement</th><th>Applicant response</th></tr>
<tr><td>C3 – Site assessment requirements</td><td>The site assessment should be included as part of the development application. The site assessment should consider the existing characteristics, opportunities and constraints of the site and the surrounding area, which should form the basis for site layout and building design. The site assessment should identify;
(a) topography and slope.
(b) drainage pattern.
(c) existing vegetation.
(d) aspect and prevailing winds.
(e) location of all services
(f) views (to and from the site).
(g) existing buildings (structures) on the site and adjoining land.
(h) heritage and archaeological features.
(i) access (pedestrian and vehicular).
(j) contaminated soils.
(k) easements.</td><td>The site is a single large unconstrained parcel of land. The proposal is a residential subdivision which is consistent with the zoning of the land. The application incorporates a variety of lot sizes thereby supporting housing diversity. Additionally, the interfaces on the boundaries of the land have been designed with a 50m setback to adjoining rural uses and a 5m buffer to the large lot subdivision to the south. The development can be fully serviced, and provided with stormwater management which exceeds Councils requirements.

The lots are all usable and form part of an integrated village with softer edges to transition to the surrounding rural and large lot subdivision in the area.</td></tr>
<tr><td>C8 – Different types of residential development</td><td>TABLE C1
<table><tr><th>Permitted with consent</th><th>R1 General</th><th>R2 Low Density</th><th>R3 Medium Density</th><th>R5 Large Lot</th></tr><tr><td>Attached dwelling</td><td>√</td><td>X</td><td>√</td><td>X</td></tr><tr><td>Dual occupancy</td><td>√</td><td>√</td><td>√</td><td>√</td></tr><tr><td>Dwelling house</td><td>√</td><td>√</td><td>√</td><td>√</td></tr><tr><td>Multi dwelling housing</td><td>√</td><td>X</td><td>√</td><td>X</td></tr><tr><td>Residential flat building</td><td>√</td><td>X</td><td>√</td><td>X</td></tr><tr><td>Secondary dwelling</td><td>√</td><td>√</td><td>√</td><td>√</td></tr><tr><td>Semi detached dwelling</td><td>√</td><td>√</td><td>√</td><td>X</td></tr><tr><td>Seniors housing</td><td>√</td><td>√</td><td>√</td><td>X</td></tr><tr><td>Serviced apartment</td><td>√</td><td>X</td><td>√</td><td>X</td></tr></table></td><td>The proposed residential subdivision is situated within the R1 and R3 zones and accommodates residential types as per Table 3 including lot sizes that provide opportunities for attached dwellings, dual occupancies, dwelling house, multi-unit, residential flat, secondary dwelling, semi-detached dwelling, senior housing and serviced attachments in the future.

There is a diversity of lot sizes which will assist housing affordability. The R1 and R3 zones have been used in the design to ensure they provide housing choice as anticipated by the DCP

It is therefore considered that compliance with C8 of the DCPs is achieved.</td></tr>
<tr><td>C9 – Minimum site area for dwelling houses
• C9.1 - R1 General Residential, R2 Low Density and R3 Medium Density zones</td><td>In the R1 General Residential, R2 Low Density and R3 Medium Density zones a minimum site area of 400 m² for dwelling houses applies.

Within this area it must be possible to fit a rectangle suitable for building measuring 10 metres by 15 metres behind the building line. For lots less than 560m2 special requirements apply to development applications for subdivision. See clause J8</td><td>Most of the lots exceed 400m2 except for 49 lots within the R3 zone which have a minimum lot size of 350m2. Clause J8 requires plans to show the lots can accommodate a complying dwelling. Included in the application are various housing typologies prepared by RAD Architects which show the lots can accommodate a dwelling which complies with the DCP.
It is therefore considered that</td></tr>
</table>

	Subdivision Requirements for lots less than 560m2.	compliance with C9 of the DCPs is achieved.
C10 – Minimum site area for dual occupancies and semi-detached dwellings in R1, R2 and R3 zones • C10.1 - R1 General Residential, R2 Low Density and R3 Medium Density zones	The minimum site area for dual occupancies and semi-detached dwellings in the R1, R2 and R3 zones are as follows: In the R1 General Residential and R2 Low Density Residential zone: ♣ 600m² in Grafton and South Grafton ♣ 800m² in unsewered localities. ♣ 800m² in Angourie, Iluka, Maclean, Townsend, Wooloweyah and Yamba In the R3 Medium Density Residential zone: ♣ 500m² in Grafton and South Grafton. ♣ No minimum site area applies in Angourie, Iluka, Maclean, Townsend and Yamba.	All lots proposed for dual occupancies have a minimum site area of 800m2 as per the requirements of C10 of the DCPs. It is therefore considered that compliance with C10 of the DCPs is achieved.
C19 – Landscaped Area Requirements in R1, R2 and R3 zones • C19.1 – R1 and R2 (45% landscaping) • C19.2 – R3 (35% landscaping) • C19.3 – all zones	All development on land in the R1 and R2 Low Density Residential zone must have a minimum of 45% of the site area as landscaped area, unless a landscaped area requirement is identified in another clause of this DCP. C19.2. All development on land in the R3 Medium Density Residential zone must have a minimum of 35% of the site area is landscaped area. C19.3. A Development Application must clearly indicate the area designed to meet the landscaped area requirements. Dimensions must be shown on the plans.	The RAD Architecture typologies show compliance with the landscape area provisions including 45% of landscaping can be achieved on the proposed lots.
C22 – Landscaping	Concept Landscaping Plans are to contain the following information: (i) Lot boundaries, dimensions and area; (ii) North point and appropriate scale (e.g. 1:100 or 1:200); (iii) Legend; (iv) Date, version and draftsperson's name; (v) Location of any utility infrastructure and easements; (vi) Indicative planting areas (indicated as trees, shrubs, groundcovers) and indicative plant species; (vii) Calculation of landscaped area, demonstrating compliance with any minimum landscaped area required by clause C19; (viii) Fencing, retaining walls and other structures; (ix) Location and botanical name of any existing trees that are to be retained as well as any existing trees that are to be removed.	A concept landscaping plan and building typologies plan showing landscape areas has been submitted with the application that contains the information as required under C22 of the DCP
C24 – Provision of Essential Services	Council is satisfied that all essential utility infrastructure is available or adequate arrangements have been made for: - Supply of water - Disposal and management of sewerage	Refer to details with technical reports attached to this application to demonstrate compliance with C24. Water supply and a pressure sewer system will be provided as part of the development. All urban services will be

	- Supply of electricity - Provision of suitable road access - Stormwater management - Telecommunications - Street lights.	provided.

Part H – Sustainable Water Controls for Residential Zones

The Stormwater Management Report addresses the considerations of the Sustainable Water Controls for Residential Zones.

Part I – Erosion and Sediment Control

Erosion and sediment control drawings layout are prepared and provided in the Geolink drawings.

PART J – Subdivision and Engineering Controls

Clause	Requirement	Applicant response
J6 – Road network / street pattern	Relevant road widths are: - Access street: 6m carriageway, 14m road reserve - Local street: 7-9m carriageway, 15-17m road reserve - Collector street: 11m carriage way, 18m roadway reserve - Distributor road: 13m carriage way, 20m road reserve	The proposed subdivision includes the following road widths across the development: - Local streets: 7m carriageway, 16m reserve (roads 2, 3, 4, 5, 6 and 8) - Collector streets: 9m carriageway, 18m reserve (roads 2 and 7) - Distributor roads: 11m carriage way, minimum 20m reserve (roads 2 and 9).
J7 – Lot layout	- A variety of sizes to meet market demand - Battle axe blocks should be avoided and will only be considered under exceptional circumstances - No minimum frontage or lot dimensions apply in residential zones. - Designed to maximise solar access	Residential lots range in size from 350m2 to 600m2. The proposed lots can accommodate a variety dwelling types as allowable in C8 of the DCPs including attached dwellings, dual occupancies, dwelling house, multi-unit, residential flat, secondary dwelling, semi-detached dwelling, senior housing and serviced attachments in the future. No battle axe allotments are proposed The development has been designed to maximise solar access by seeking to orient lots with a focus toward a northerly aspect, ensuring future homes will feature good daylight & sunlight penetration in backyard and open space areas where possible.
J8 – Subdivision Requirements for lots less than 560m2	- For lots less than 560m2 but greater than 450m2 a development application for subdivision must include a plan showing a concept design for a dwelling demonstrating	Refer to typologies analysis plans prepared by RAD Architects

	full compliance with the DCP.	
J9 – Subdivision Access	Vehicular access driveways from a public road must comply with Australian Standard 2890	Refer to Traffic Impact Assessment Report.
J10 – Stormwater management	Stormwater management and drainage systems should be an integral part of the subdivision design	Refer to Stormwater Report.
J11 – Street planting	Where a subdivision includes road construction, street landscaping and tree planting must be provided.	Refer to Statement of Landscape Intent.
J12 – Provision of services	Subdivisions of land in residential zones are required to provide services and infrastructure to all lots	Refer to Subdivision Layout Plan and Conceptual Engineering Drawing.

6.8 Planning Agreement(s)

There are no voluntary planning agreements applying to the site.

6.9 Environmental Planning & Assessment Regulation 2000

The following additional matters are prescribed for consideration under Section 4.15(a)(iv) of the EP&A Act 1979.

Clause	Applicant response
Clause 92(1)(b) Applications for Demolition	The proposal does not require any demolition as the site is vacant.
Clause 92(1)(c) Application for carrying out subdivision development made under Schedule 7 of the Act	The proposal does not involve subdivision for the purposes within Schedule 7 of the Act.
Clause 92(1)(d) Development included in Schedule 4A of the Act, State Significant Development or Designated Development on land less than 200km from Siding Spring Observatory	The proposal does not involve development for the purposes outlined above.
Clause 92(e) Application for development for the purposes of manor house or multi dwelling housing (terraces)	The proposal does not involve development for a manor house or multi dwelling housing (terraces).
Clause 92(f) Application for development for building residential purposes on land in Penrith City Centre	The proposal is not located within Penrith City Centre.
Clause 93 Fire safety and other considerations	Not applicable as the development does not propose a change of building use.
Clause 94 Consent authority may require buildings to be upgraded	Not applicable as the development does not propose the rebuilding, alternations or additional, enlargement or extensions of an existing building.
Clause 94A Fire safety and other considerations applying to erection of temporary structures	Not applicable as the development does not propose any temporary structures.

6.10 Coastal Zone Management Plan(s)

The subject site is not situated within a Coastal Zone Management Plan area and therefore further assessment of this provision is not applicable or required.

6.11 Likely Impacts of development

The application has been informed by the earlier refusal of the previous application. Therefore, the focus of this application is to minimise any adverse impacts while providing some positive improvements to the community. This includes consideration of the proposed built form and its context together with economic and social outcomes.

- Housing supply and affordability – The subdivision design responds to the existing R1 and R3 zonings by creating a development outcome which better aligns with the intent of each of the zones. More particularly the R3 zone area now contains lots to a minimum lot size of 350m2 and a townhouse site capable of accommodation 38 units. The use of this area better aligns with the Clarence Valley Local Housing Strategy and the Clarence Valley Affordable Housing Policy. This proposal helps to address the lack of housing availability by activating latent zoned supply to bring housing to the market. Additionally, this proposal incorporates greater diversity of lot size which will support better community outcomes including assisting with affordable housing and rental supply.
- Retaining walls - The revised proposal does respond to the topographical context however that part of the site which is capable of being developed has been designed to derisk the building process and assist affordability by creating level lots which are available for builders to commence work on without additional and subsequent earthworks. This is important in driving down building costs and has been achieved by ensuring lots are level and drain to the street [no inter allotment drainage]. Retaining walls assist in achieving this and special consideration has been given to the treatment of the higher walls [max 1.5m] by ensuring they are not located on the boundary but are a minimum of 1.5m from the boundary and use landscaping to soften the interface. This is the worst-case situation and as wall heights are reduced the management of the interfaces will respond accordingly. This will be examined on a lot-by-lot basis at the Construction Certificate stage
- Relationship with surrounding land – As a result of adopting the considerations from the previous application this proposal incorporates a minimum 50m separation distance from the northern and western boundaries with rural land, and an 80m separation from the James Creek frontage to rural land. The Austons Lane boundary will be widened by 5 metres and densely planted to screen the development from the nearby large lot residential development. These measures, together with the treatment of the interfaces as identified in the LUCRA report and the Statement of Landscape Intent will ensure the development will coexist comfortable with the neighbouring land uses and looks outwardly with landscaped transitions between the residential uses and the rural area. All housing at the periphery look out towards the open space and rural areas. All of the site will be fenced to control domestic pets impacting neighbouring rural activities.
- Stormwater management – the key important aspect of stormwater has been to remove all development from the northwest catchment of the site where it drains to the neighbouring rural land. Therefore, this stormwater discharge will remain unchanged and downstream owners consent is not required. The land will be contained in a single balance area lot. Further stormwater management has been provided to the other three catchments where the treatment devices have been oversized so that quality and quantity exceeds Councils requirements.
- Integrated village design – This proposal incorporates a stronger focus on the mix of opportunities which should accompany a residential development. Therefore a greater emphasis is provided in the application to supporting the existing and future community by locating open space along the James Creek frontage, retaining and bringing forward plans for the commercial centre, develop a child care centre [part of this application], creating a neighbourhood park containing active and passive activities, collocating R3 density with these features, and importantly in the park along the James Creek frontage developing a community space including community shelters which will be available for all of the local population.
- Access and traffic – The access is proposed at a single point to James Creek Road. This has the advantage of minimising roadworks in James Creek Road to access the site. However the design includes two exit lanes to

allow traffic to distribute more readily and also allows traffic to access the site in the event of an unlikely accident. In the event of a major issue an emergency access is provided to Austons Lane.

While external road upgrades are addressed in Councils adopted James Creek Urban Growth Area Road Infrastructure Developer Contribution Plan there are the following points to consider.

- Concerns about flood access and risk have been raised particularly in relation to the section of Gardiners Road which is flood prone. While the James Creek Urban Growth Area Road Infrastructure Developer Contribution Plan proposed contribution to bring Gardiners Road to a Q20 immunity the applicant has offered in addition to this to provide a Q100 flood free access to the site. This will allow safe and free access in a major flood event and provide practical access to Townsend and the proposed commercial centre at Gulmarrad. These works will not only advantage the future residents of the development but there are currently around 100 lots, many of them occupied with housing, which at present are isolated during a major flood and these works will remove a flood hazard and improve community safety.
- Discussions have been held with Council regarding the development of footpaths and bikeways to connect the site to other areas. In these discussions it has been accepted that a connection to Townsend is not practical without extensive detailed design and will involve land resumption and tree removal. Current thinking is to reduce this to providing a connection to the existing school bus stop at the corner of James Creek Road and Gardiners Road. While this in itself has some design challenges the applicant is prepared to work with Council to arrive at an acceptable condition of approval to address the proposal.
- The applicant has been in discussions about the upgrading of the Yamba Road / James Creek Road intersection. The following is an extract from the traffic engineers report.

  Under current conditions, the minimum recommended turn treatment for the Yamba Road intersection is a CHR(s) and AUL(s). Currently the intersection comprises a BAR and a full length AUL. Analysis indicates that a full length CHR should be provided at the Yamba / James Creek Road intersection at approximately the 6-year mark, although this depends quite heavily on how quickly the land is developed and lots released. However, given that the intersection is already in need of an upgrade, it is recommended that a full length CHR be constructed by the local Council as soon as practicable.

- Services – The development will be fully serviced and includes the following.
  - Water supply
  - Low pressure sewer system in accordance with Councils specification including the construction of a rising main from the site to Townsend
  - Electricity through Essential Energy
  - Telecommunications including NBN.

- Heritage – The site has been previously farmed. A report on Aboriginal Cultural Heritage has been previously conducted on the site. A review of the report has accepted its findings without the need for additional assessment. These documents are included in the application.
- Flora and fauna impacts – a Biodiversity Assessment has been prepared for the site. Its findings on likely impacts are.
  - The removal of up to 0.1 ha of PCT 3253 Northern Hinterland Grey Gum-Turpentine Mesic Forest.
  - Light spill into adjacent vegetation to the north of the site.
  - Noise and disturbance to locally occurring fauna within adjacent habitat areas during the establishment and construction phases. Additionally, the occupation of the site would result in ongoing noise and disturbance which has potential to result in:
    - Disturbance of adjacent fauna habitat to the north and west.
    - Potential for predation of native fauna from roaming domestic animals.
    - Potential for vehicle strike to wandering fauna.

  Given the degraded and modified condition of vegetation at the site, and the low impacts on native

- vegetation and habitat, biodiversity impacts of the Proposal are relatively low

- Subdivision design – The proposal responds to the constraints of the locality and the land while also providing usable lots. In this regard RAD Architecture has prepared various typologies of the development. These plans show that residential buildings can be developed on the proposed lots in accordance with the Clarence Valley Residential DCP and therefore there is little likelihood of any adverse impact as a result of developing the housing opportunities.
- Child care centre – The proposed child care centre will provide a valuable community facility and is needed in the locality. Its design is in accordance with the current NSW State design guidelines and satisfies the usability requirements. Adverse amenity impacts are attenuated through the careful design of the centre and its colocation with the neighbourhood park. We do not foresee anything but a positive impact from this aspect of the application.

6.12 Suitability of the site

The site is suitable for residential subdivision and is responsive to the zoning of the subject site and provides opportunities for residential housing in a diversity of types and forms to meet an existing housing demand as identified within the Clarence Valley Local Housing Strategy. The layout reflects the zoning by locating lots which respond to the intent of the zones under the LEP.

The proposed subdivision provides a diversity of housing choice and lot sizes consistent with the Residential DCP. The development addresses a housing need and provides appropriate community services, including a commercial lot, a child care centre, open space, community shelter and pedestrian connections.

In accordance with the Clarence Valley Council, 'Notification Requirements for DAs', it is expected that Council will determine that application required for Public Notification, given that the application seeks approval for "*Subdivision of land into 50 or more allotments*".

6.13 The Public Interest

The development responds to an identified housing need and provides appropriate housing development and community services. The previous application was advertised and attracted submissions, the content of which has been used to prepare this application by focusing on a number of the issues raised including site planning, diversity of housing buffers, stormwater, flood safety and community facilities.

7 Conclusion

This Planning Report has provided an assessment of the proposed development against the relevant elements of the planning legislative framework, particularly the SEPP's and the LEP and DCP for Clarence Valley Council.

The application has responded to the matters raised by Council and the Planning Panel in the earlier decision to refuse the application. In response to the Planning Panels reasons for determination the following comments are made.

- The previous application was deemed to be an inward facing urban structure, density and lot design relates poorly to the existing topographical form and presents a stark change to the surrounding rural and semi-rural setting and character. In responding to these points, the fresh application focuses on the interfaces with neighbouring properties by providing a minimum 50m separation area, the development proposal for the NW corner has been removed, stormwater outcomes have been improved, and the lot layout now responds to the R1 and R3 zoned by following the intent of the zones with a planned lot and consequent housing delivery consistent with the zones.
- The Panel considers there is inadequate social infrastructure and services to support the proposed development including a bus service and given the distances to local shops and facilities. The application has responded by creating a focused village intent and incorporates a commercial lot capable of containing complimentary commercial facilities such as a general store, a child care centre, integrated parks and open space, diversity of housing, and community shelters within the park area. Provision for a future bus route through the site has been made and plans for pathways connecting the site are being discussed with Council.
- The Panel concluded that there was insufficient consideration of flood evacuation. This application confirms the proposal to upgrade Gardiners Road to a Q100 level which makes the site accessible in flood times and additionally will benefit the approximately 100 existing lots which also use Gardiners Road in flood times. This is an important community benefit.
- The Panel agreed with Councils view that additional information and design amendments might result in a more integrated village style settlement. We have reviewed in detail the matters raised in Councils report and have addressed them through several meetings with Council to a point where we believe that the new design approach has overcome Councils previous concerns.
- Many of the concerns of the submitters are addressed and overcome with this revised proposal.

To this end we believe that the proposal has satisfactorily addressed the previous reasons for refusal, is generally consistent with the relevant controls and permissible with consent; is suitable for the site and unlikely to result in significant impact or be detrimental to the public interest. It is therefore requested that the application be approved subject to reasonable and relevant conditions.

Enclosure 1

Clarence Valley application forms (completed NSW Planning Portal)

Development application Lodgement Matrix and checklist

For use when lodging an application through the NSW Planning Portal

The Clarence Valley Council is committed to meeting its obligations under the Government Information (Public Access) Act 2009 (NSW) (GIPA Act) and associated regulation. Council will redact personal information from development application forms that are made publicly available.

You are advised that complete documents submitted with development applications may be made publicly available as part of the development assessment process and/or as open access documents under the GIPA Act. ***You are advised to exercise due diligence in not including unnecessary personal information including signatures.***

(a) The Lodgement Matrix and checklist identifies what documentation is required to be submitted to Council in conjunction with a Development Application (including any amended applications). A detailed explanation is provided below for document requirements.

(b) Applications will not be accepted unless all required documentation is submitted to Council.

For Dwellings and Ancillary Development	Dwellings / Secondary dwellings (granny flats)	Alterations and additions to dwellings	Outbuildings (e.g., pergolas, sheds, etc)	Swimming Pools	Demolition / Pool Infill
BASIX Certificate	●	○		○	
Biodiversity Assessment	○	○	○		
Bushfire Report	○	○	○		
Cost Estimate Report	●	●	●	●	●
Cut/Fill and Retaining Walls	○	○	○	○	
Demolition Plan and Statement	○	○	○		●
Development Control Plan / LEP Variation	○	○	○	○	
Elevation Plan	●	●	●	●	●
Erosion and Sediment Control Plan	●	●	●	●	●
Flood Impact Assessment Statement	○	○	○	○	
Floor Plan	●	●	●		○
Heritage Assessment	○	○	○	○	○
Notification Plan	●	●	●	●	●
Owner's consent required where applicant is not the owner	○	○	○	○	○
Section Plan	●	●	●	●	●
Site Plan	●	●	●	●	●
Statement of Environmental Effects	●	●	●	●	●
Stormwater Plan	●	●	●		
Waste Management Plan	●	○	○	○	●

●	**This information is required**	○	**This information may be required (refer to attached explanatory document)**

Council may require the submission of additional documentation, i.e., complex applications due to site constraints. Council encourages consultation prior to lodging your application. This ensure that many issues may be resolved before an application is lodged and that each application contains all necessary information to enable prompt processing. It is recommended that discussions occur with a Council Duty Officer, prior to lodgement of the application on (02) 6643 0200.

All other development	Dual Occupancies / Multiple Dwellings	Subdivision	Signage	Commercial	Tourist Accommodation	Industrial	Change of Use (no building works)	Home Occupation/Industry	Mixed Commercial/ Residential Development	Residential Flat Buildings
Accessibility Detail	○			○	○	○	○		○	○
Acid Sulfate Soil Management Plan	○	○		○	○	○			○	○
Acoustic Report	○	○		○	○	○	○	○	○	○
Adaptable Housing Details	○								○	○
Basix Certificate	●	○			○		○		●	●
Biodiversity Assessment	○	○	○	○	○	○	○	○	○	○
Bushfire Report	○	○		○	○	○	○		○	○
Cost Estimate Report	●	●	●	●	●	●	●	●	●	●
Contamination report	○	○		○	○	○			○	○
Crime Prevention Report	○	○		○	●	○			●	○
Cut/Fill and Retaining Walls	○	○		○	○	○			○	○
Development Control Plan Variation/ LEP Variation	○	○	○	○	○	○	○	○	○	○
Demolition Plan and Statement	○	○	○	○	○	○	○	○	○	○
Elevation Plan	●		●	●	●	●	○	○	●	●
Fire Safety Measures		○		○	○	○	○		○	○
Flood Impact Assessment Report	○	○		○	○	○			○	○
Floor Plan	●			●	●	●	●	●	●	●
Heritage Assessment	○	○	○	○	○	○	○	○	○	○
Landscaping Plan	●	○			○	●				●
Liquid Trade waste				○	○				○	
Notification Plan	●	●	●	●	●	●	●	●	●	●
On-site Wastewater Management System Report	○	○		○	○	○			○	○
Owner's consent required where applicant is not the owner	○	○	○	○	○	○	○	○	○	○
Section Plan	●			●	●	●			●	●
Shadow Diagrams	○			○	○	○			○	○
SEPP65 Design Quality of Residential Apartment Development Documentation									○	○
Site Analysis	●	●		●	●	○			●	●
Signage Plan			●	○	○	○	○	○	○	
Site Plan	●	●	●	●	●	●	●	●	●	●
Statement of Environmental Effects	●	●	●	●	●	●	●	●	●	●
Statement for Erosion and Sediment Control	●	○	○	●	●	●	○	○	●	●
Stormwater Management	●	●		●	●	●			●	●
Subdivision Plan		●								

Traffic Report	○		○	○	○	○	○	○	○	○
Waste Management Plan	●	○	●	●	●	●	○		●	●

●	**This information is required**	○	**This information may be required (refer to attached explanatory document)**

Council may require the submission of additional documentation, i.e., complex applications due to site constraints. Council encourages consultation prior to lodging your application. This ensure that many issues may be resolved before an application is lodged and that each application contains all necessary information to enable prompt processing. It is recommended that discussions occur with a Council Officer, prior to lodgement of the application on (02) 6643 0200.

SUBMISSION REQUIREMENT	REQUIRED INFORMATION
Accessibility detail	Required in accordance with the Disability (Access to Premises - Buildings) Standards 2010. Information is required to demonstrate compliance with the Standards. An Access Report prepared by a suitably qualified person (such as an Access consultant, Architect or building designer) may be required. A Disability Access Report describes how the development will comply with provisions of the Disability Discrimination Act 1992 and the Disability (Access to Premises – Buildings) Standards 2010.
Acid sulfate soil management plan	A report to determine the appropriate management of Acid Sulfate Soil and is to be prepared by a suitably qualified person.
Acoustic report	Required where: • Residential development is proposed adjacent to noise sources, including railway lines, arterial roads, and aerodromes. • Other type of development is proposed adjacent to residential properties, e.g., use of an existing commercial building as a restaurant with extended trading hours, located adjacent to dwellings. • Depending on nature of proposal, such as where noise may be significantly increased e.g., childcare centre, mechanical car wash, industrial processing, development with heavy vehicles. The report is to be prepared by a suitably qualified person accredited under the Association of Australasian Acoustic Consultants or Australian Acoustical Society or peer reviewed by an accredited consultant.
Adaptable housing details	Required where development contains adaptable dwellings (e.g., multiple dwellings, residential flat buildings, or mixed commercial/residential development). The following information must be provided: • Checklist demonstrating compliance with Class A, B or C dwelling in accordance with AS 4299. • Pre and post adaptation drawings.
Basix certificate	Required for: • All development that contains all types of new residential dwelling/s, including alterations and additions to existing dwellings valued at $50,000 or more, and swimming pools and outdoor spas with a minimum 40,000L capacity. • Class 1b tourist accommodation buildings. • Class 4 caretaker's residence within a commercial building. Relocated dwellings and manufactured homes do not require a BASIX certificate. The following information is to be provided in accordance with Clause 75 of the Environmental Planning and Assessment Regulation 2021: • BASIX Certificate. • All BASIX commitments to be identified on the plans. • Where applicable, ABSA Certification and a set of stamped plans. The BASIX Certificate must be generated on the Department of Planning and Environment BASIX website: www.basix.nsw.gov.au, issued no earlier than 3 months before the date on which the application is lodged.

SUBMISSION REQUIREMENT	REQUIRED INFORMATION
Biodiversity assessment	Any clearing of vegetation associated with the proposal will need to be assessed as part of the DA. Assessment will be needed under either the Council's DCP (Controls for Biodiversity and Habitat Protection) where applicable or the Biodiversity Conservation Act 2016. The objective of both Council's DCP and the Biodiversity Conservation Act 2016 is to avoid or minimise clearing. Biodiversity Conservation Act 2016 Clearing that exceeds the area clearing thresholds of the Biodiversity Offset Scheme (BOS) will require assessment under the latter legislation and preparation of a Biodiversity DA Report (BDAR) by an accredited assessor and will require the matter to be considered under the Biodiversity Offsets Scheme and apply the Biodiversity Assessment Method (the BAM) to assess the impacts of a proposal. The area threshold varies depending on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan (LEP)), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP). The area threshold applies to all proposed native vegetation clearing associated with a proposal, regardless of whether this clearing is across multiple lots and includes, asset protection zones, wastewater application areas, dwelling site, new accesses and services to the dwelling site etc. In the case of a subdivision, the proposed clearing must include all future clearing likely to be required for the intended use of the land after it is subdivided including new boundary lines. More details can be found at: https://www.environment.nsw.gov.au/biodiversity/offsetsscheme.htm Areas that impact mapped areas under the Biodiversity Values Map also trigger entry to the Biodiversity Offset Scheme even if the offset threshold above is not triggered, see https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap The Biodiversity Values Map and Threshold Tool is used to produce a report that states whether a development proposal occurs on land on the BV Map and if the Biodiversity Offsets Scheme is triggered and can be accessed at https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap **OR** Council's DCP Preparation of a Baseline Ecological Assessment to address Council's DCP controls. The proposal may trigger more detailed Biodiversity assessments, including a Flora and Fauna Assessment, Supplementary Threatened Fauna Assessment, Habitat Restoration Plan, Threatened Species Management Plan, and Biodiversity Offset Management Plan. Note, some exemptions apply to the preparation of a Baseline Ecological Assessment – see DCP controls. **OR** 5-part test At a minimum any clearing that is not required to be considered under the above assessments will necessitate assessment by a suitably qualified/experienced person sufficient for Council staff to properly consider the 5-part test contained at section 7.3 of the Biodiversity Conservation Act 2016. https://www.legislation.nsw.gov.au/#/view/act/2016/63/part7/div1/sec7.3 Please contact Council's Duty Planner if you are unsure of the type of Biodiversity Assessment required.
Bushfire report	A Bushfire report is required where land is identified as bushfire prone on Council's Bushfire Prone Land map or is subject to grassland hazard (Note: Council's current mapping for bushfire prone land does not include land identified as predominately grasslands which is now identified as a vegetation hazard under Planning for Bushfire Protection 2019). There are two types of bushfire assessment: • For single dwellings - A single dwelling application kit (available from the NSW RFS website www.rfs.nsw.gov.au/) can be used for residential infill development (dwellings and alterations/additions). For further details contact a Council officer or go to Clarence online mapping at www.clarence.nsw.gov.au • For subdivisions or developments identified as Special Fire Protection Purposes under s100B of the Rural Fires Act 1997 (including tourist accommodation, schools, childcare centres, hospital, seniors housing, group homes, etc), on bushfire prone land - a suitably qualified person must prepare the bushfire assessment report in accordance with NSW RFS Planning for Bushfire Protection 2019.

SUBMISSION REQUIREMENT	REQUIRED INFORMATION
Contamination report	If potentially contaminating activities have occurred on-site, a preliminary site investigation (PSI) must be prepared for the proposed development site. The investigation should include a detailed site history of the subject land including historical aerial photography and may be supported by statutory declarations from neighbours and previous owners and a search of Council's records (GIPA). The results of the preliminary site investigation may warrant further sampling and/or a Detailed Site Investigation (DSI) and Remedial Action Plan (RAP). Refer to *Managing Land Contamination – Planning Guidelines SEPP55- Remediation of Land* document for more information.
Cost estimate report	Provide the total value of the proposed development including any demolition, construction or fit-out costs including GST. **NOTE:** The value of the development or contract price is subject to a check by Council before final acceptance. Value of development between $1 million and $3 million should be confirmed by a suitably qualified person (e.g., a licensed builder, a registered architect, a qualified and accredited building designer, or similar). If the development is valued over $3,000,000, a detailed cost report prepared by the registered quantity surveyor needs to accompany the application. Swimming pools - the estimate may be from the quote by the swimming pool company installing the pool.
Crime & Safety Report	A report is required to ensure the proposal has been designed following consideration of the Crime Prevention through Environmental Design (CPTED) strategies relating to surveillance, access control, territorial reinforcement and space management. Further information can be found on the NSW Police website. CPTED refers to the principles specified under the Crime Prevention and the Assessment of Development Applications published by Department of Urban Affairs and Planning Guidelines for consideration under section 4.15 of the Environmental Planning and Assessment Act 1979 as amended. Under this section, all councils are required to consider and implement CPTED principles when assessing Development Applications. If a development application presents a crime risk, the guidelines can be used to justify modification of the development to minimise crime risk, or, refusal of the development on the grounds that crime risk cannot be appropriately minimised.
Cut/fill and retaining walls	Required where application proposes cut/fill and/or retaining walls. Plan to address the following: • Location of retaining walls to be shown on the site plan. • Height of retaining wall/filling to showing existing and proposed levels to AHD, including levels of the area surrounding the affected land. • Details of material to be utilised for construction of retaining wall. • Elevation of retaining wall/cross-section of batters.
Development Control Plan Variation / Local Environmental Plan Standard Variation	If your development does not comply with a LEP standard or a DCP control you need to seek a formal written request to vary the standard / control and provide adequate justification for the variation. A variation to an LEP standard is called a Clause 4.6 variation and must be made in writing addressing the requirements of that clause. Clause 4.6 allows flexibility in the application of development standards where this will achieve a positive planning outcome. A variation greater than 10% will require a report to Council for determination of the application and may require concurrence from the Department of Planning. Complex variations should be prepared by a town planning consultant. Council standard forms can be used for LEP and DCP variations. Note – additional application fees may apply for consideration of an LEP and DCP variation.

SUBMISSION REQUIREMENT	REQUIRED INFORMATION
Demolition plan and statement	Demolition plan to contain the following details: • The location of the structure to be demolished, shown via a dotted line. • Elevations indicating the height of the structure above ground level and the distance from the structure to the boundary, or alternatively, a series of photographs indicating this information. • A description of the type of building, e.g., house, shops. • A description of the methods of demolition proposed to be used, and the number of types of major items of equipment to be used in demolition. • A description of the methods proposed for handling and disposing of demolished materials and any hazardous materials. • A description of the proposed sequence of carrying out the demolition works, and an estimate of the time, in days, that it is likely to take to complete all or each of the stages of the work. • Details of the proposed hoardings, fencing, overhead protection and scaffolding.
Elevation plan	Showing all elevations boundary to boundary including location of doors, windows, external finishes/materials any earthworks proposed, ground levels, finished floor levels and ridge levels, and overall height of the building.
Fire safety measures	Required to enable Council to consider Clauses 62 & 64 of the Environmental Planning and Assessment Regulation 2001. Required for applications involving: • Change of building use, and/or • Alterations to an existing building. If the proposal involves a change of use of a building: • A list of *Category 1 fire safety provisions* that currently apply to the existing building. • A list of *Category 1 fire safety provisions* that are to apply to the building following its change of use. If the proposal involves additions or alterations to an existing building: • A scaled floor plan of the whole of the building showing existing and proposed fire safety measures.
Flood impact assessment Report	A report may be required to be prepared by a suitably qualified person. If the development site is affected by flooding or is likely to be affected by flooding/localised drainage, the applicant should consult with Council staff to determine the information required to be submitted.
Floor plan	Include room names, direction in which doors swing, location and size of windows and doors, areas and dimensions, position of fixtures in bathrooms and kitchens, location of accessible WC, means of providing disabled access. Additions are to be highlighted or clearly delineated. * Where the DA includes food preparation or personal appearance services (e.g., beauty salon/hairdresser) detailed plans and elevations are required to include the finishes of floors, walls, ceilings, benches, shelves, elevations of fixtures and fittings and location of sinks and hand wash basins

SUBMISSION REQUIREMENT	REQUIRED INFORMATION
Heritage assessment	Heritage reports and supporting documentation are required to be provided with a Development Application in relation to heritage items and properties in a Heritage Conservation Area under Clause 5.10 of *Clarence Valley Council Local Environmental Plan 2011*, as set out in below: 1. For work in relation to an item listed on the State Heritage Register under the Heritage Act 1977, a Statement of Heritage Impact (SOHI) and Heritage Conservation Management Plan prepared in accordance with the requirements of Heritage NSW. 2. For works in relation to a **Heritage Item** of local significance, or **a property within a Heritage Conservation Area** listed on Schedule 5 of *Clarence Valley Council Local Environmental Plan 2011*, a Heritage Impact Statement (SOHI) prepared in accordance with the guidelines: *Statements of Heritage Impact;* https://www.heritage.nsw.gov.au/assets/Uploads/a-z-publications/s-u/Statements-of-Heritage-Impact.pdf Is required in relation to: • any demolition, relocation or subdivision of a structure building or land that is a listed Heritage Item, • Development under the conservation incentives clause 5.10(10) • Significant façade works, two storey additions, or additions greater than 100m^2 to a heritage item or building with a Heritage Conservation Area The heritage report is to be prepared by a professional heritage consultant with relevant experience and skills to the project. A list of heritage consultants is available on this link. https://www.heritage.nsw.gov.au/search-for-heritage/directory-of-heritage-professionals/ A Heritage Conservation Management Strategy may also be required in some circumstances. 3. A detailed Statement of Environmental Effects addressing the heritage provisions of the applicable Clarence Valley Development Control Plan 2011. A detailed Statement of Environmental Effects will be accepted in relation to proposed development of a non listed property in a Heritage Conservation Area where the proposed works are not included in point 2 above.
Landscape plan	Prepared by a person competent in the field and is to indicate the mature height, location, quantity and species of all existing vegetation and trees (including street trees/public trees and trees close to common boundaries), proposed plantings and permeable and non-permeable surfaces detailing areas for turf, paving, rocks, and concrete etc. The plan should also demonstrate that the landscaped area required for the development is achieved.
Liquid trade waste	If your business generates liquid trade waste which is discharged to the local sewerage system, you must have Council approval and, in most cases, provide and maintain pre-treatment devices to ensure that your discharge meets acceptable standards. Refer to the fact sheet on liquid trade waste at www.clarence.nsw.gov.au. Once approved for trade waste disposal, annual Liquid Trade Waste management fees and usage charges apply.
Notification plans	To include the site plan, (internal floor plans deleted) and elevations**.** Some types of development will require Public Notification. Public Notification means that neighbours and other interested parties must be advised that an application for development has been lodged and that they can comment on the application.
On-site wastewater management system	Required where a lot does not have access to the reticulated sewer system. An on-site wastewater management system is required to treat and dispose of wastewater effluent associated with the development. Wastewater disposal must comply with the Clarence Valley Council's On-site Wastewater Management Strategy 2019. For Dwellings For the purposes of Development Application assessment, Council must be satisfied that the lot can accommodate an on-site wastewater management system based on the circumstances of the proposed development and constraints of the site. To demonstrate this (at DA stage) an applicant must submit a Section 68 application concurrently with the DA.

SUBMISSION REQUIREMENT	REQUIRED INFORMATION
	When assessing Section 68 applications for non-domestic systems, Council will consider these applications on a site-specific basis and may require a wastewater management report to be prepared by a suitably qualified and experienced designer. Reference should be made to Council's website – Septic: Application to Install, Construct or Alter, and Approval to Operate form and checklist of documentation to accompany the Section 68 application. <u>For Subdivisions and other development</u> For subdivision of land not serviced by reticulated sewer that creates lots less than 1ha in area, and for some commercial, industrial or multi dwelling developments on land not serviced by reticulated sewer, a wastewater management report is to be prepared by a suitably qualified person.
Owners Consent	Part of the Environmental Planning and Assessment (Miscellaneous) Regulation (No 2) 2022, written landowners consent will be required for all development applications where the applicant is not the owner.
Section plan	Internal cross-sectional structure of the proposed building indicating construction materials and ceiling heights *Required for a minor addition; Internal cross-sectional structure of the proposal, footing details, energy efficient measures, floor, and ceiling heights.
Shadow diagrams	A Shadow Diagram is a plan showing where shadows will fall at specific times of the day. Shadow diagrams allow Council to assess the potential overshadowing impact of a proposal. If required under the Development Control Plan - Shadow diagrams are to show shadow impact on the land and adjoining land between 10am and 2pm during midwinter.
State environmental planning policy (Sepp) 65 documentation	Required for residential flat development to which SEPP 65 – 'Design Quality of Residential Flat Development', applies. The following shall be submitted: • Design verification statement from a qualified designer, addressing the requirements of SEPP 65. Additional details to be contained within the Statement of Environmental Effects, as required in accordance with SEPP 65. • A compliance Table demonstrating assessment against the Apartment Design Guide Additional details to be contained within the Statement of Environmental Effects, as required in accordance with SEPP 65.
Site analysis	Site dimensions and site area; north point; topography and contours; location of existing vegetation; location of services and easements; location of other buildings and structures; any heritage features (if applicable); vehicle access; location of fences; drainage and effluent disposal (for rural areas); location, height and use of neighbouring buildings; street frontage features such as street trees, poles, etc.
Signage plan	Required where signage is proposed. The following shall be submitted: • Details of the proposed structure and construction materials. • Size, colours, type, and overall design of the sign, including overall height dimension. • Proposed sign wording and method of any illumination. • Location/s of proposed signs to be shown on a site plan.
Site plan	Showing the entire allotment with boundary dimensions, site area, the location and uses of the existing and proposed buildings/structures. Shows any structures to be demolished, any rights of carriageway or easement, public road/s adjoining the site, the north point, existing vegetation and trees including vegetation to be removed, setbacks to all boundaries, existing or proposed driveway, proposed building footprint, effluent disposal area and location of on-site wastewater treatment system if in unsewered area, RL's and contours (Australian Height Datum (AHD) required for Flood liable land), Basix commitments, extent of any earthworks.

SUBMISSION REQUIREMENT	REQUIRED INFORMATION
Statement of Environmental Effects (SEE)	A Statement of Environmental Effects is required for all types of development. This is a written statement that addresses the matters for consideration contained within Section 4.15 of the Environmental Planning and Assessment Act 1979. The Statement of Environmental Effects must indicate the following matters: • A description of the site • A detailed description of the proposed development • Details of compliance with relevant environmental planning instruments (SEPPs and LEP) • Details of compliance with Council's Development Control Plan • Justification for variations to the LEP or DCP • The environmental impacts of the development, and steps to be taken to protect the environment or to lessen the expected harm to the environment. • The suitability of the site for the development • **Note:** A pro forma Statement of Environmental Effects may only be submitted where works are minor and adverse environmental impacts are unlikely. This includes development such as signage, single dwellings, change of use applications, strata subdivision.
Statement erosion and sediment control	Development Applications involving major earthworks will require a detailed Erosion and Sediment Control Plan in accordance with Council's Development Control Plan.

Stormwater Management	*Proposed stormwater design to indicate method of drainage proposed. (dwelling/minor)*
	The stormwater plan should include:
	• Location of any drainage easements
	• Proposed drainage lines, size, depth, fall, location, and material type
	• Existing stormwater drainage location including downpipes, connection, and discharge points
	• Details of discharging/managing stormwater where property slopes away from street (Include site contours/spot levels).
	• If Sustainable Water Controls apply under the DCP, a Stormwater Management Plan, prepared by a suitably qualified engineer, shall be provided. The Stormwater Management Plan shall consider and demonstrate the following:
	  ◦ Stormwater quality is to be achieved through the adoption of Water Sensitive Urban Design principles and/or Stormwater Quality Improvement Devices
	  ◦ Stormwater runoff volumes and frequency reduced or maintained to the pre-development through application of Harvesting, Retention, Infiltration and Detention as appropriate

Subdivision plan	A plan to address the following: • Clearly nominate existing and proposed boundaries. • Detail accurate areas of proposed lots. • Identify roads and waterways • Show all existing structures and improvements (access etc) on site. • Show all existing vegetation on site. • Show contours where required • Show north point • Show location of any existing or proposed easements/restrictions/services. For lots proposed to be created that are less than 560m2, an additional plan is to be submitted showing a concept design for a dwelling. The plan is to demonstrate that it is possible to fit a rectangle suitable for a building measuring 10 metres by 15 metres behind the building line that complies with Council's DCP controls for setbacks, private open space, and landscaped area.
Traffic Report	A traffic report prepared in accordance with the requirements of the Clarence Valley Council Development Control Plan 2011.
Waste management plan	Prepared in accordance with Council's Waste Not Development Control Policy and Development Control Plan for developments with a footprint exceeding 50m^2.

Enclosure 2

Owner's consent

clarence VALLEY COUNCIL

Contact Details:
Postal Address: Locked Bag 23, Grafton 2460
Telephone: (02) 6643 0200
Email: council@clarence.nsw.gov.au

Office Locations:
2 Prince Street, Grafton
50 River Street, Maclean

OWNERS CONSENT

For use when lodging Applications

Site Identification details

Address: Lot 104, James Creek Road, James Creek.

Lot(s) and DP(s) Number(s): Lot 104 on DP751388.

Owner(s) Details and Consent

First Given name(s): Neil

Other Given name(s):

Family name(s): Garrard [Authorised Representative]

Company name: Kahuna No 1 Pty Ltd ABN: 737 113 744 39

Postal Address: PO Box 538

Town/Locality: YAMBA State: NSW Postcode: 2464

Email: ngarrard@bigpond.net.au

Contact number: 0413 522 399

As the owner(s) of the property, I/we consent to this application and to any authorised Officers of Clarence Valley Council entering onto the land to carry out inspections, take measurements or photographs as required in the assessment of the application in accordance with the requirements of the Environmental Planning and Assessment Act 1979, Local Government Act 1993 and Building Code of Australia as applicable.

Owner's Signature(s):

Name of person(s) signing: Neil Garrard is an authorised representative of Kahuna No 1 Pty Ltd.

☐ Private Land Owner	☐ Sole Director	☐ Director, Secretary & Company Seal

Note: All owner(s) of the land subject to this application must sign this form. If you are not the owner of the land, you must have all the owners sign the application.

Note: If signing on the owner's behalf please state your legal authority and provide documentary evidence (e.g., copy of power of attorney, trust deed etc.)

Note: In the case of land that is the subject of a strata scheme under the Strata Schemes (Freehold Development) Act 1973 or the Strata Schemes (Leasehold Development) Act 1986, the owners corporation for that scheme must provide consent.

Note: In the case of land that is a community, precinct or neighbourhood parcel within the meaning of the Community Land Development Act 1989, the association for the parcel must provide consent.

Note: If signing on behalf of a corporate body or company, the application should be signed by an authorised person under common seal and the position of that person in the corporate body or company must be stated on the form. Alternatively, the Common Seal is not required if two Directors or authorised persons sign the application form, or if you are a sole Director.

PRIVACY NOTICE

The personal information that Council has collected or is collecting from you is personal information for the purposes of the Privacy and Personal Information Protection Act 1998 (PIPPA). Council will only use this information in accordance with the PIPIPA.

The supply of this information by you is voluntary. However, if you cannot provide or do not wish to provide the information sought, the Council may be limited in dealing with your application/request. Council requires this personal information from you in order to process your application.

You may make application for access or amendment to your personal information held by Council. Council will consider any such application in accordance with the PIPPA. Council is to be regarded as the agency that holds the information.

Kahuna No. 1 Pty Ltd atf The Angourie Trust
ABN: 73711374439
PO BOX 525
Currumbin, QLD 4223

TO WHOM IT MAY CONCERN

Kahuna No 1 Pty Ltd acts as Trustee for The Angourie Trust.

I Gordon Merchant, Director of Kahuna No 1 Pty Ltd as trustee for The Angourie Trust, hereby authorise Neil Garrard to represent the Trust with any issues in relation to properties in the Yamba/Grafton area.

Neil Garrard is authorised to sign Council documents and attend meetings on behalf of Kahuna No 1 Pty Ltd as trustee for The Angourie Trust.

Yours sincerely,

Gordon Merchant
Director
Kahuna No 1 Pty Ltd atf The Angourie Trust

1/12/2021

Enclosure 3

Subdivision Layout and Civil Engineering Drawings prepared by GeoLINK dated 22 November 2023

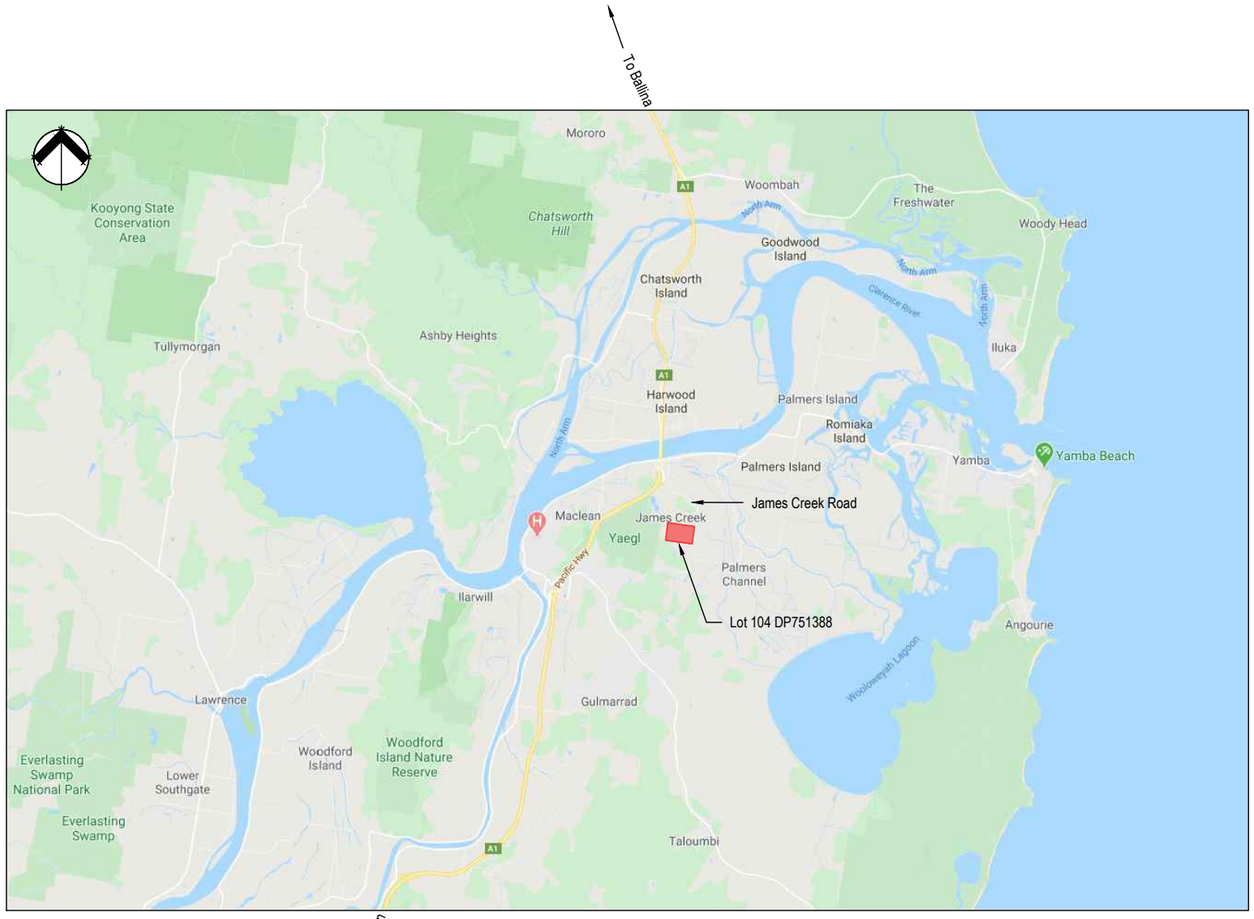
THE VILLAGE AT JAMES CREEK

MPD INVESTMENTS PTY LTD

Lot104 DP751388, James Creek Road, James Creek

Development Application

Drawing Schedule		
Dwg No.	**Title**	**Revision**
3204/C101	Cover Sheet, Locality Plan and Drawing Schedule	C
3204/C102	Existing Layout	C
3204/C110	Staging Plan	C
3204/C111	Lot Layout and Lot Areas	C
3204/C112	Lot Layout and Lot Dimensions	C
3204/C113	Bus Route	C
3204/C114	Bus Route Swept Path Analysis	C
3204/C120	Design Layout Key Plan	C
3204/C121	Design Layout Sheet 1 of 5	C
3204/C122	Design Layout Sheet 2 of 5	C
3204/C123	Design Layout Sheet 3 of 5	C
3204/C124	Design Layout Sheet 4 of 5	C
3204/C125	Design Layout Sheet 5 of 5	C
3204/C126	Design Layout Signage & Traffic Calming	C
3204/C127	James Creek Road Intersection Detail and Typical Road Section	C
3204/C128	Typical Road Sections	C
3204/C129	Corner Lot Frontage Details	C
3204/C130	External Intersection Details James Creek Road / Yamba Road	C
3204/C131	External Path Network and Typical Section	C
3204/C135	Bulk Earthworks Layout	C
3204/C136	Site Cross Sections Sheet 1 of 2	C
3204/C137	Site Cross Sections Sheet 2 of 2	C
3204/C140	Design Layout Overall Layout	C
3204/C141	Longitudinal Section Road 1	C
3204/C142	Longitudinal Section Road 2 - Sheet 1 of 2	C
3204/C143	Longitudinal Section Road 2 - Sheet 2 of 2	C
3204/C144	Longitudinal Section Road 3 and 4	C
3204/C145	Longitudinal Section Road 5 and 6	C
3204/C146	Longitudinal Section Road 7	C
3204/C147	Longitudinal Section Road 8	C
3204/C148	Longitudinal Section Road 9 - Sheet 1 of 2	C
3204/C149	Longitudinal Section Road 9 - Sheet 2 of 2	C
3204/C160	Existing Stormwater Catchment and Overland Flow	C
3204/C161	Stormwater Design Layout	C
3204/C162	North-East Basin (2) Layout and Details	C
3204/C163	South-East Basin (3) Layout and Details	C
3204/C164	South-West Basin (4) Layout and Details	C
3204/C165	Typical Details	C
3204/C170	Sewerage Rising Main	C
3204/C171	Sewerage Layout Low Pressure System	C
3204/C180	Water Overall Layout	C
3204/C181	Water Reticulation Layout	C
3204/C190	Erosion and Sediment Control Layout Stage 1A and 1B	C
3204/C191	Erosion and Sediment Control Layout Stage 2 and 3	C
3204/C192	Erosion and Sediment Control Layout Stage 4 and Notes	C
3204/C193	Erosion and Sediment Control Details Sheet 1 of 2	C
3204/C194	Erosion and Sediment Control Details Sheet 2 of 2	C



Locality Plan

DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	App.	Chk.
C	Revised submission	22/11/2023	JLC	MVE	MVE
B	Drawing Schedule updated	13/04/2023	JLC	MVE	MVE
A	Updated to address Council's AIR	24/05/2022	JLC	MVE	MVE

Amendments

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GeoLINK environmental management and design

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Email: info@geolink.net.au

www.geolink.net.au

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Project Title

The Village at James Creek

Client

MPD Investments Pty Ltd

Designed	JLC	Drawn	JLC	Checked	MVE
Approved	MVE	Date	8/10/2021		

XREFs

Scale

metres Not To Scale

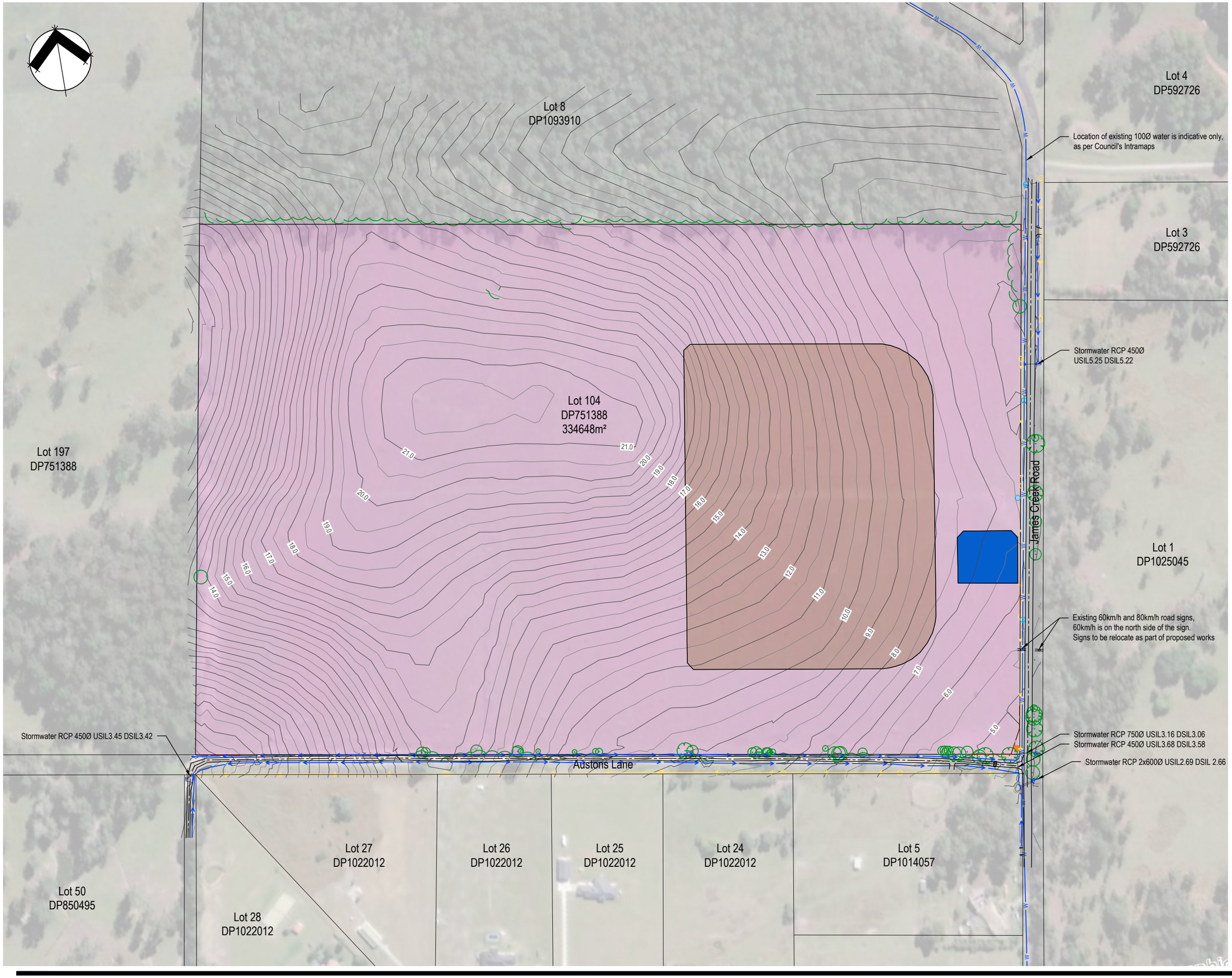
Drawing Title

Cover Sheet, Locality Plan and Drawing Schedule

3204-1129

Drawing Number 3204/C101

Revision C



LEGEND

- Electricity and power pole
- Tree line
- Fire hydrant
- Communication line and pit
- Watermain (approximate)
- Swale
- R1 - General residential
- R3 - Medium denity residential
- B1 - Neighbourhood centre

Existing contours shown at 0.5m intervals

DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	App.	Chk.
C	Revised submission	22/11/2023	JLC	MVE	MVE
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Designed	JLC	Drawn	JLC	Checked	MVE
Approved	MVE	Date	8/10/2021		

XREFs

Scale

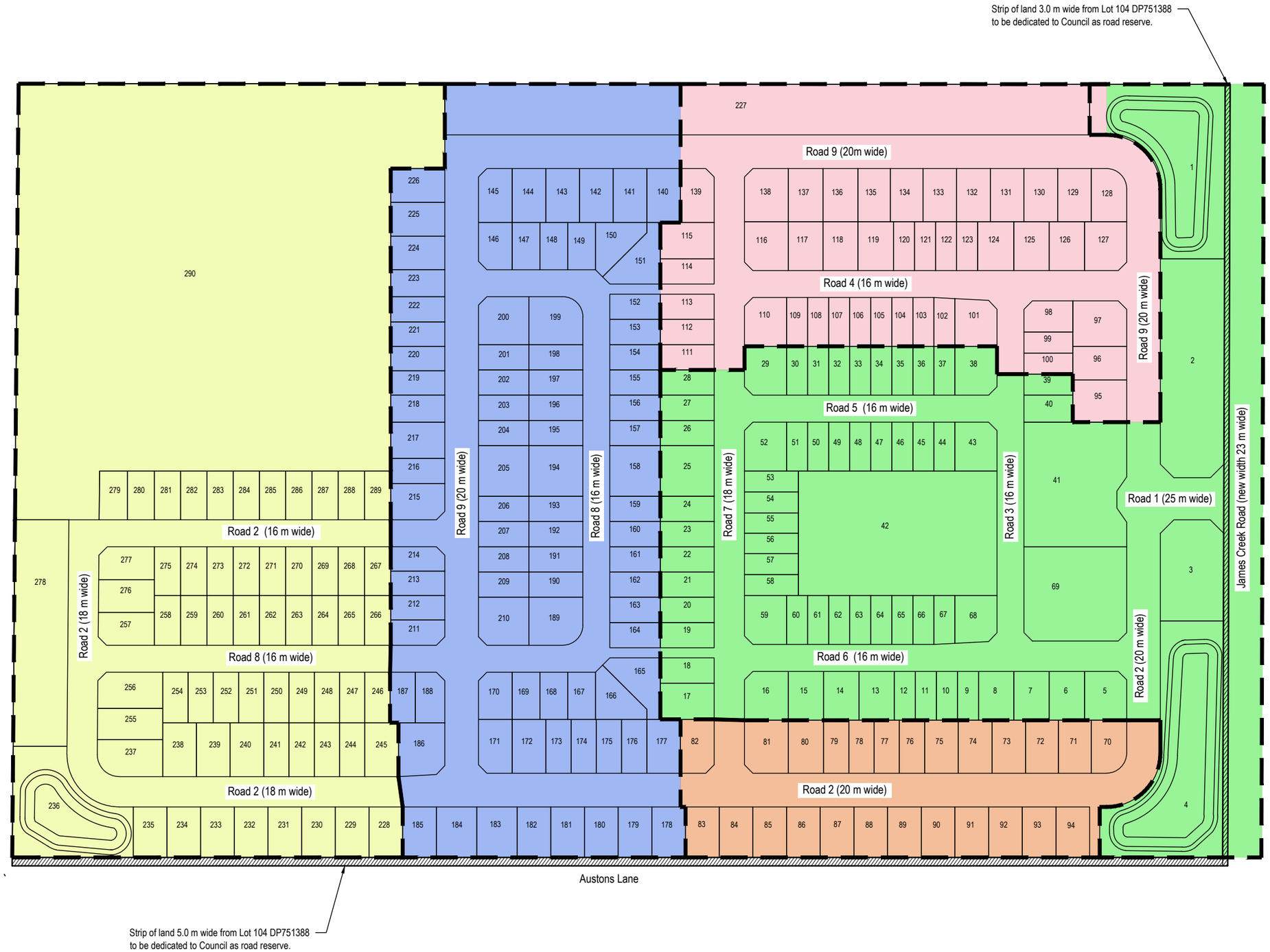
metres 0 15 30 45 60 75

Drawing Title

Existing Layout

3204-1129

Drawing Number 3204/C102 *Revision* C



LEGEND

- Stage 1A - 69 lots
- Stage 1B - 25 lots
- Stage 2 - 46 lots
- Stage 3 - 87 lots
- Stage 4 - 63 lots
- Road reserve widening (dedicated to Council)

Note: Lot 227 buffer is included with Stage 2 count.
Residue lot included with Stage 4 lot count.

Note:
1. Stages shown are indicatively only, and construction / release will be undertaken in sub-stages to be determined during detailed design.

DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	App.	Chk.
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Amendments

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Project Title

The Village at James Creek

Client

MPD Investments Pty Ltd

Designed	JLC	Drawn JLC	Checked MVE
Approved	MVE	Date 8/10/2021	
XREFs			

Scale

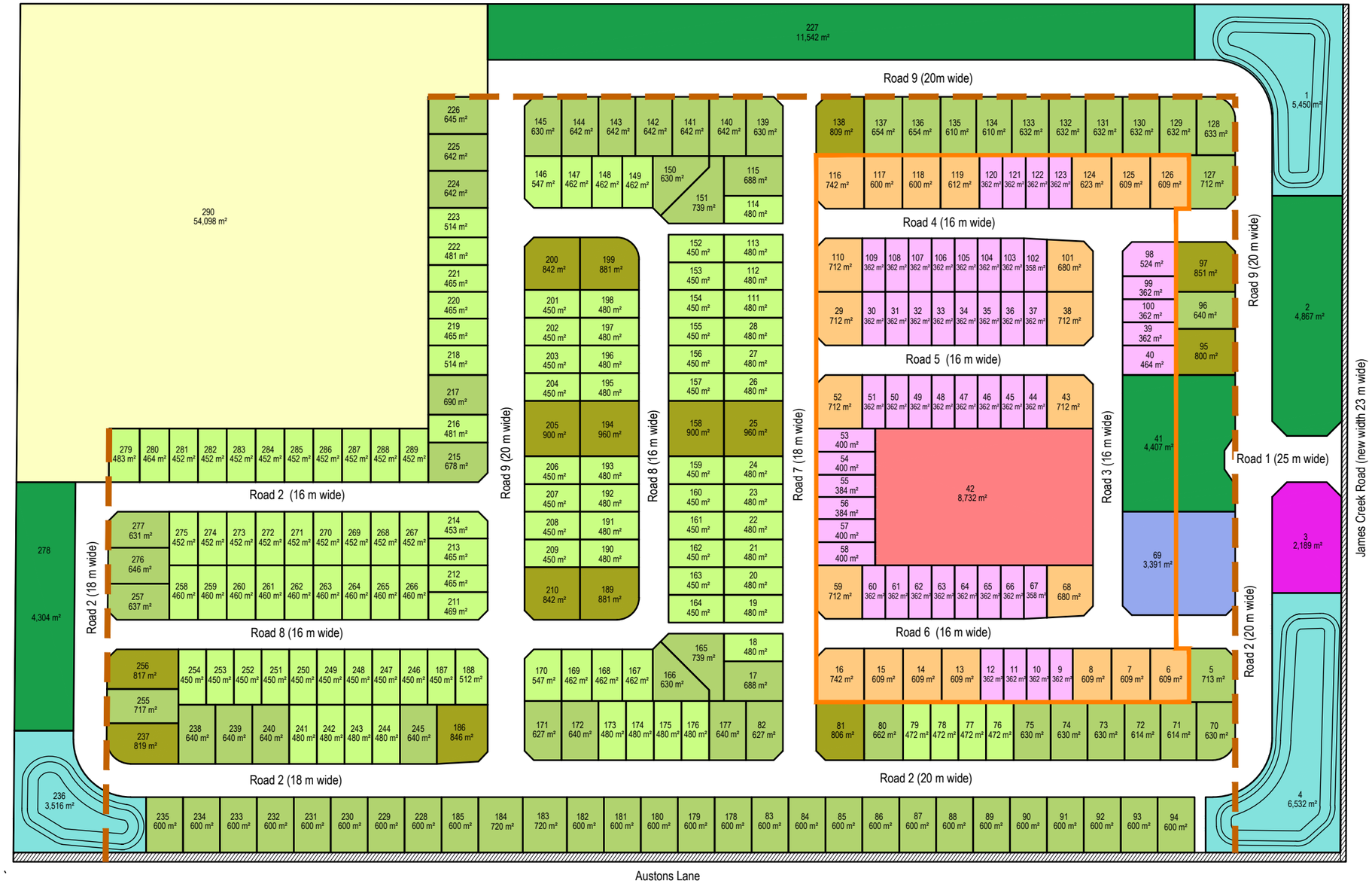
metres 0 12.5 25 37.5 50 62.5

Drawing Title

Staging Plan

Drawing Number 3204/C110

Revision C



LEGEND

Residential R1 Zone

	>450 m²	113 Lots
	>600 m²	78 Lots
	>800 m²	15 Lots

Residential R3 Zone

	>350 m²	51 Lots
	>600 m²	22 Lots
	R3 medium density	1 Lot
	Total residential lots	***280 Lots***

Other

	Balance Lot	1 Lot
	Drainage reserve	3 Lots
	Open space	4 Lots
	Childcare centre	1 Lot
	Commercial centre	1 Lot
	50 m offset to rural land	
	Proposed R3 Zone	
	Road reserve widening (dedicated to Council)	

DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	App.	Chk.
C	Revised submission	22/11/2023	JLC	MVE	MVE
B	Drawing Schedule updated	13/04/2023	JLC	MVE	MVE
A	Updated to address Council's AIR	24/05/2022	JLC	MVE	MVE

Amendments

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XREFs			
Scale			

metres 0 12.5 25 37.5 50 62.5

Drawing Title

Lot Layout and Lot Areas

3204-1130

Drawing Number 3204/C111 *Revision* C

Note:
1. Duplicate dimensions are removed for clarity.
2. Dimensions shown are indicative only, subject to final setout by registered surveyor.

DEVELOPMENT APPLICATION

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XREFs					
Scale					

metres 0 12.5 25 37.5 50 62.5

Drawing Title

Lot Layout and Lot Dimensions

3204-1130

Drawing Number *Revision*

3204/C112 C

Note:
1. 96.8% of all lots in Stage 1B are within 400 m walking distance to the nearest proposed bus stop.
2. 100% of all lots within remaining stages (and within the final development) will be within 400 m walking distance to the nearest proposed bus stop.

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Client
MPD Investments Pty Ltd

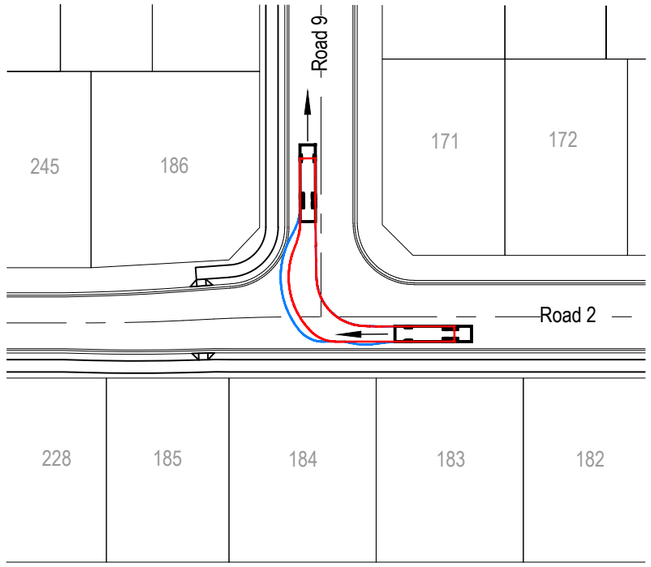
Designed	JLC	Drawn JLC	Checked MVE
Approved	MVE	Date 8/10/2021	

XREFs

Scale
metres 0 12.5 25 37.5 50 62.5

Drawing Title
Bus Route

Drawing Number 3204/C113
Revision C



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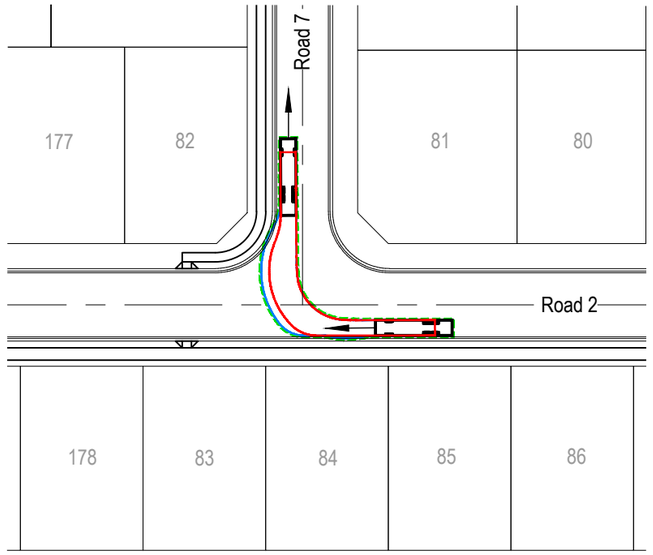

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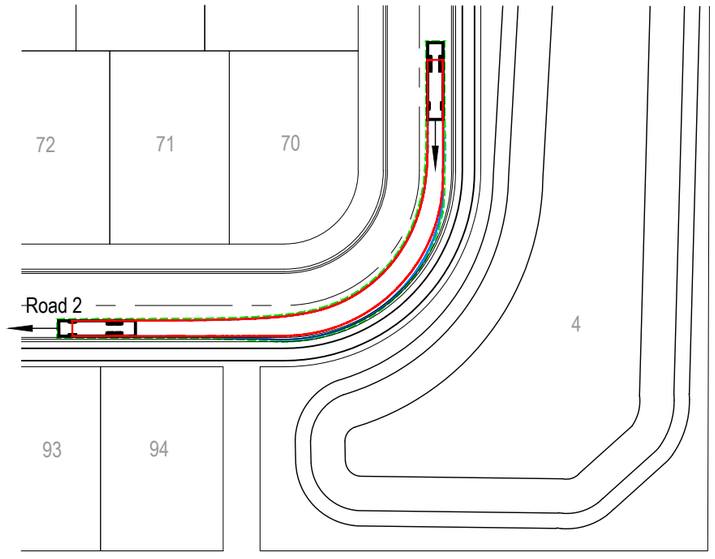

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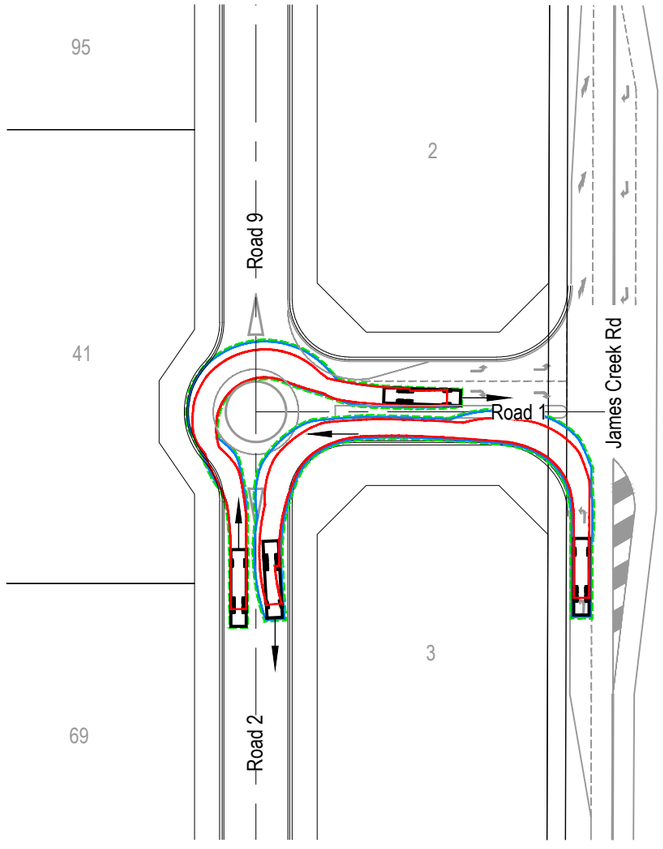

Inset 4

LEGEND

- Wheel track
- Overhang
- Offset envelope (300 mm)

DEVELOPMENT APPLICATION

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Project Title

The Village at James Creek

Client

MPD Investments Pty Ltd

Designed	JLC	Drawn	JLC	Checked	MVE
Approved	MVE	Date	8/10/2021		

XREFs

Scale

metres 0 5 10 15 20 25

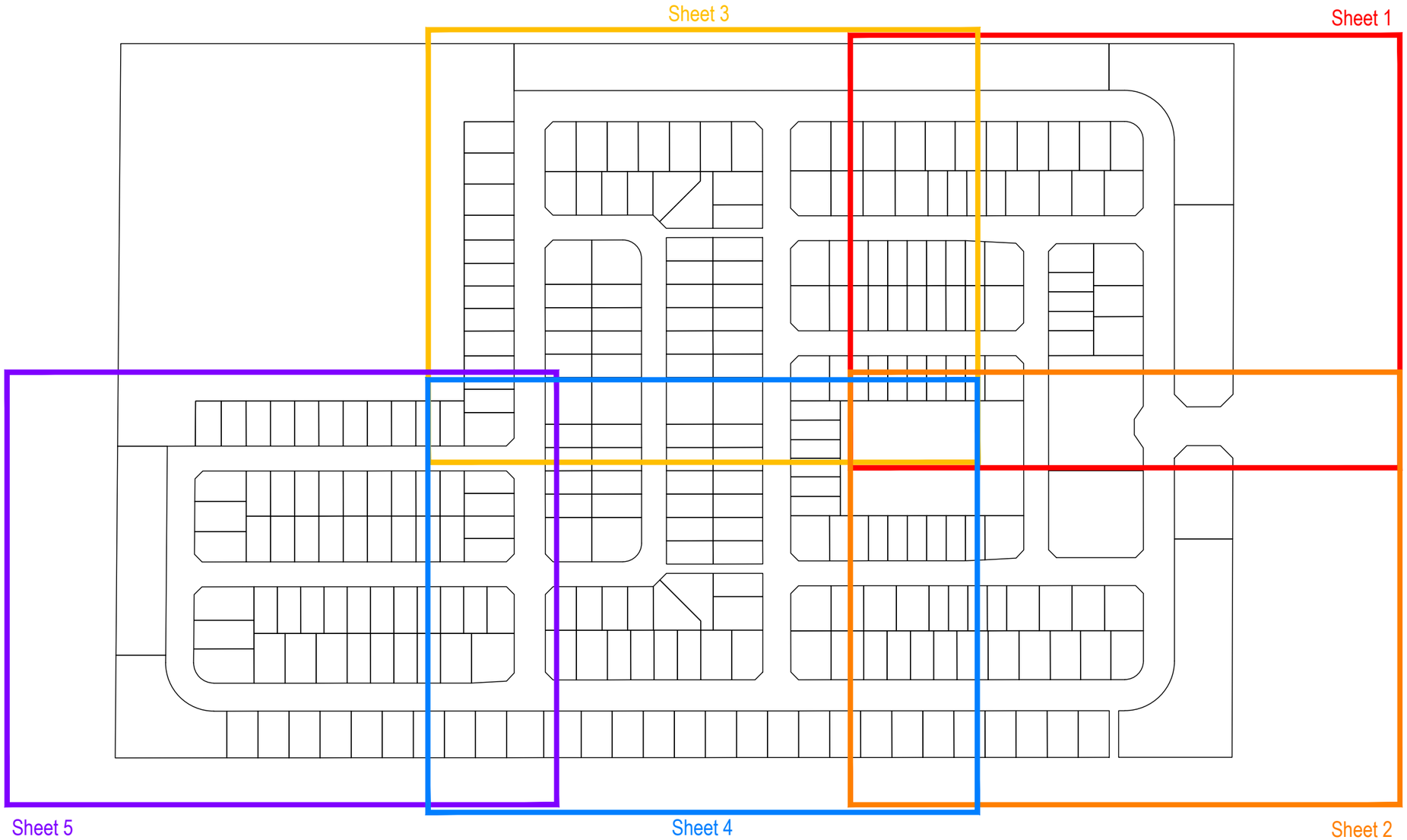
Drawing Title

Bus Route
Swept Path Analysis

3204-1130

Drawing Number 3204/C114

Revision C



DEVELOPMENT APPLICATION

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Approved	MVE	Date	8/10/2021		
XREFs					

Scale

metres 0 15 30 45 60 75

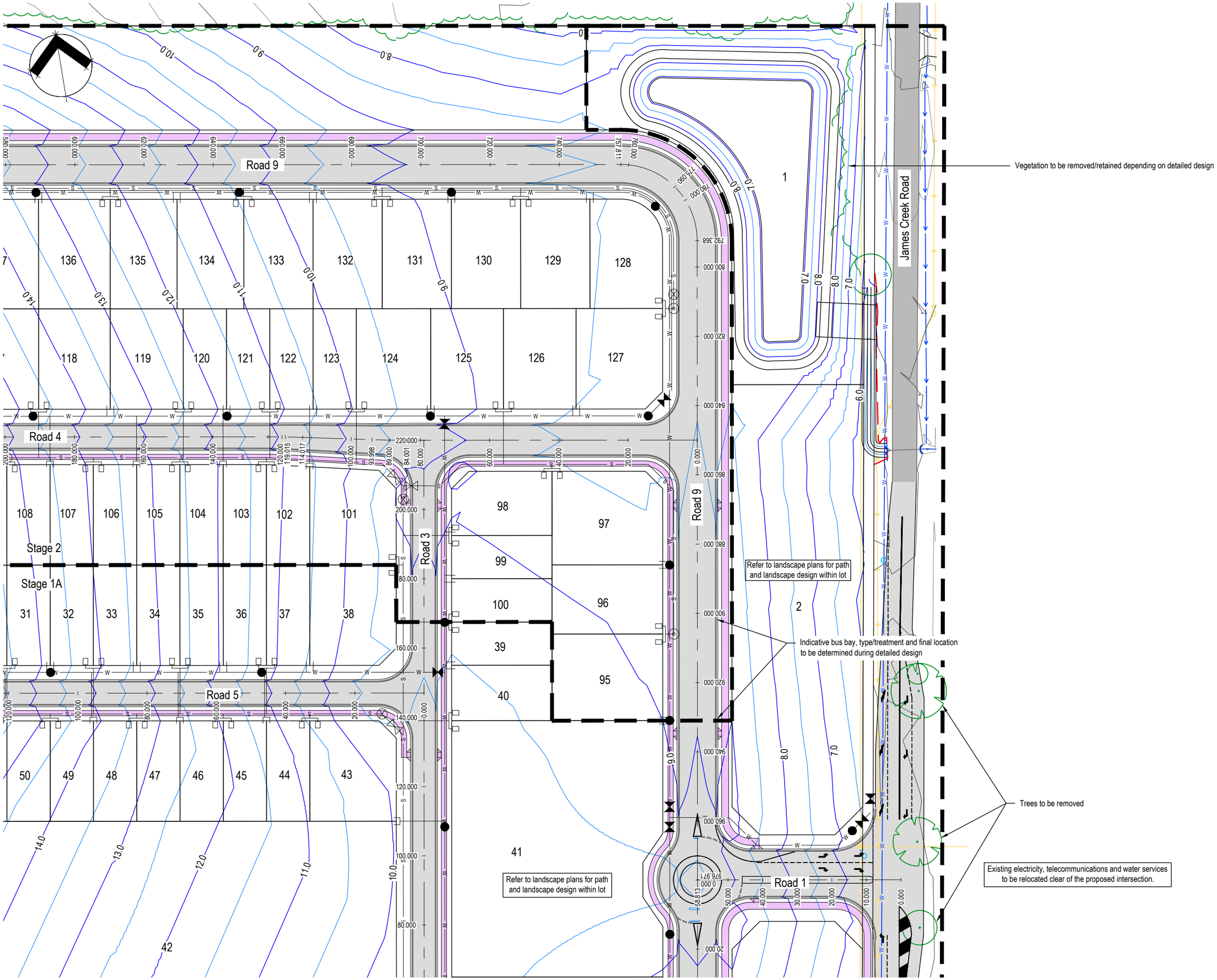
Drawing Title

Design Layout
Key Plan

3204-1131

Drawing Number *Revision*

3204/C120 C



LEGEND (Existing)

- Electricity and power pole
- Tree line
- Fire hydrant
- Communication line and pit
- Watermain (approximate)
- Swale
- Road

LEGEND (Design)

- Road
- Footpath
- Water reticulation pipe
- Low pressure sewer main
- Sewer rising main
- Stage boundary
- Extent of works

Existing and design contours shown at 0.5 m intervals

Note:

1. Fencing to be installed as per landscaping design, refer to plan set by others.
2. Stormwater pits and pipes not shown as locations will be determined as part of detailed design.
3. Stage boundaries are extent of works unless shown otherwise (refer to Legend).

DEVELOPMENT APPLICATION

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XREFs

Scale

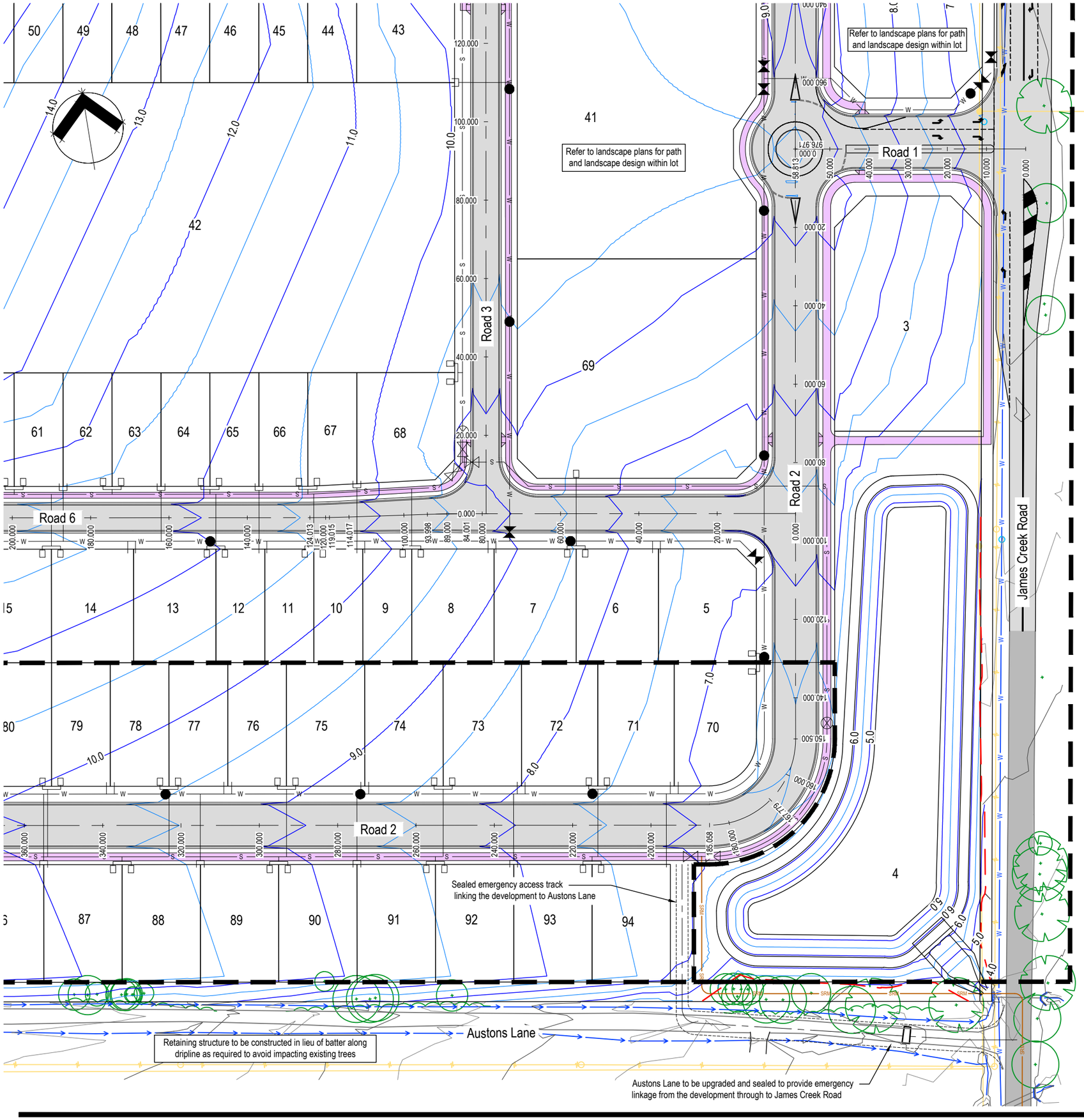
metres 0 5 10 15 20 25

Drawing Title

Design Layout
Sheet 1 of 5

3204-1131

Drawing Number 3204/C121 *Revision* C



LEGEND (Existing)

- Electricity and power pole
- Tree line
- Fire hydrant
- Communication line and pit
- Watermain (approximate)
- Swale
- Road

LEGEND (Design)

- Road
- Footpath
- Water reticulation pipe
- Low pressure sewer main
- Sewer rising main
- Stage boundary
- Extent of works

Existing and design contours shown at 0.5 m intervals

Note:

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Approved	MVE	Date	8/10/2021		
XREFs					

Scale

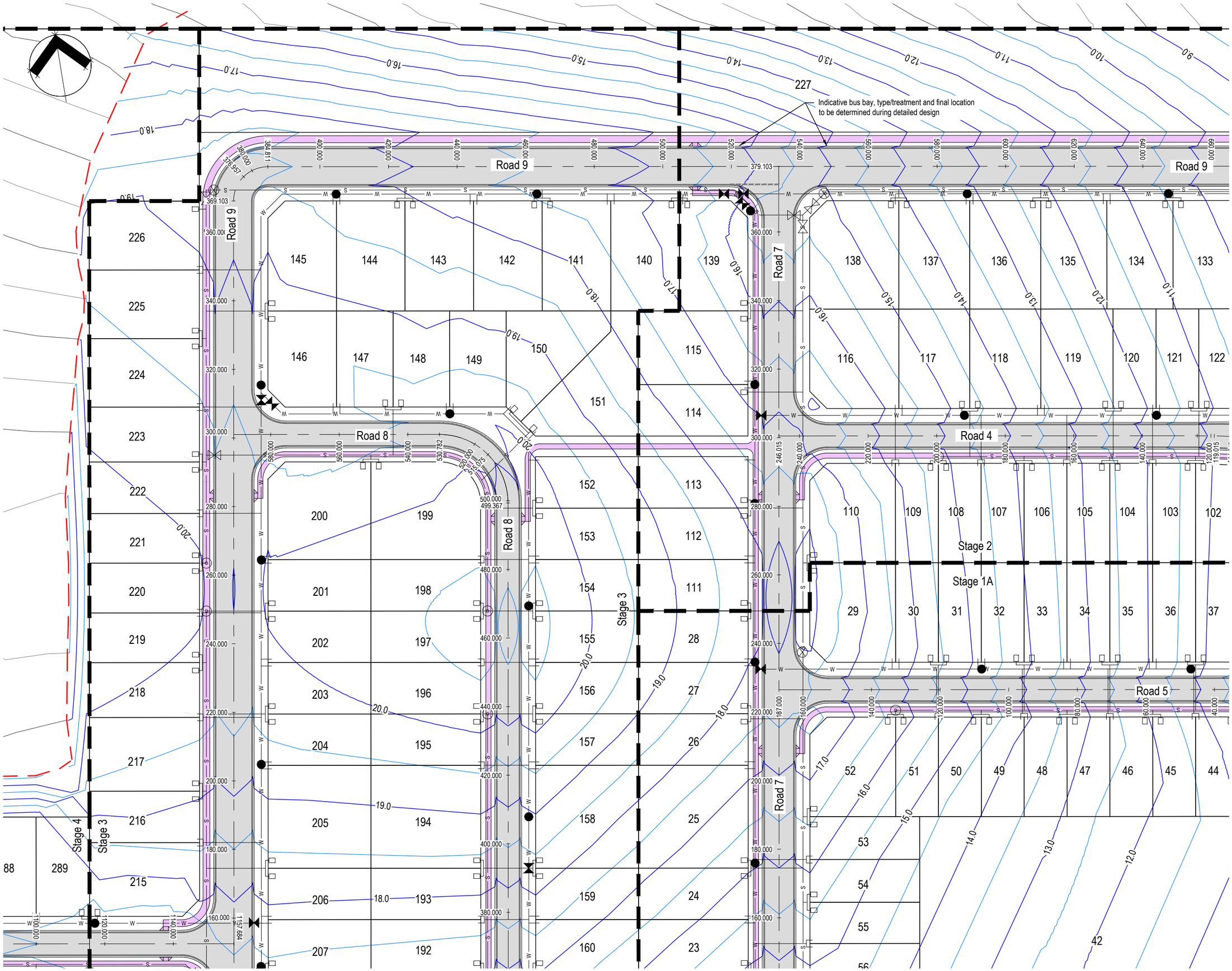
metres 0 5 10 15 20 25

Drawing Title

Design Layout
Sheet 2 of 5

3204-1131

Drawing Number 3204/C122 *Revision* C



LEGEND (Existing)

- Electricity and power pole
- Tree line
- Fire hydrant
- Communication line and pit
- Watermain (approximate)
- Swale
- Road

LEGEND (Design)

- Road
- Footpath
- Water reticulation pipe
- Low pressure sewer main
- Sewer rising main
- Stage boundary
- Extent of works

Existing and design contours shown at 0.5 m intervals

Note:

1. Fencing to be installed as per landscaping design, refer to plan set by others.
2. Stormwater pits and pipes not shown as locations will be determined as part of detailed design.
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Designed	Drawn	Checked
JLC	JLC	MVE
Approved	Date	
MVE	8/10/2021	

XREFs

Scale

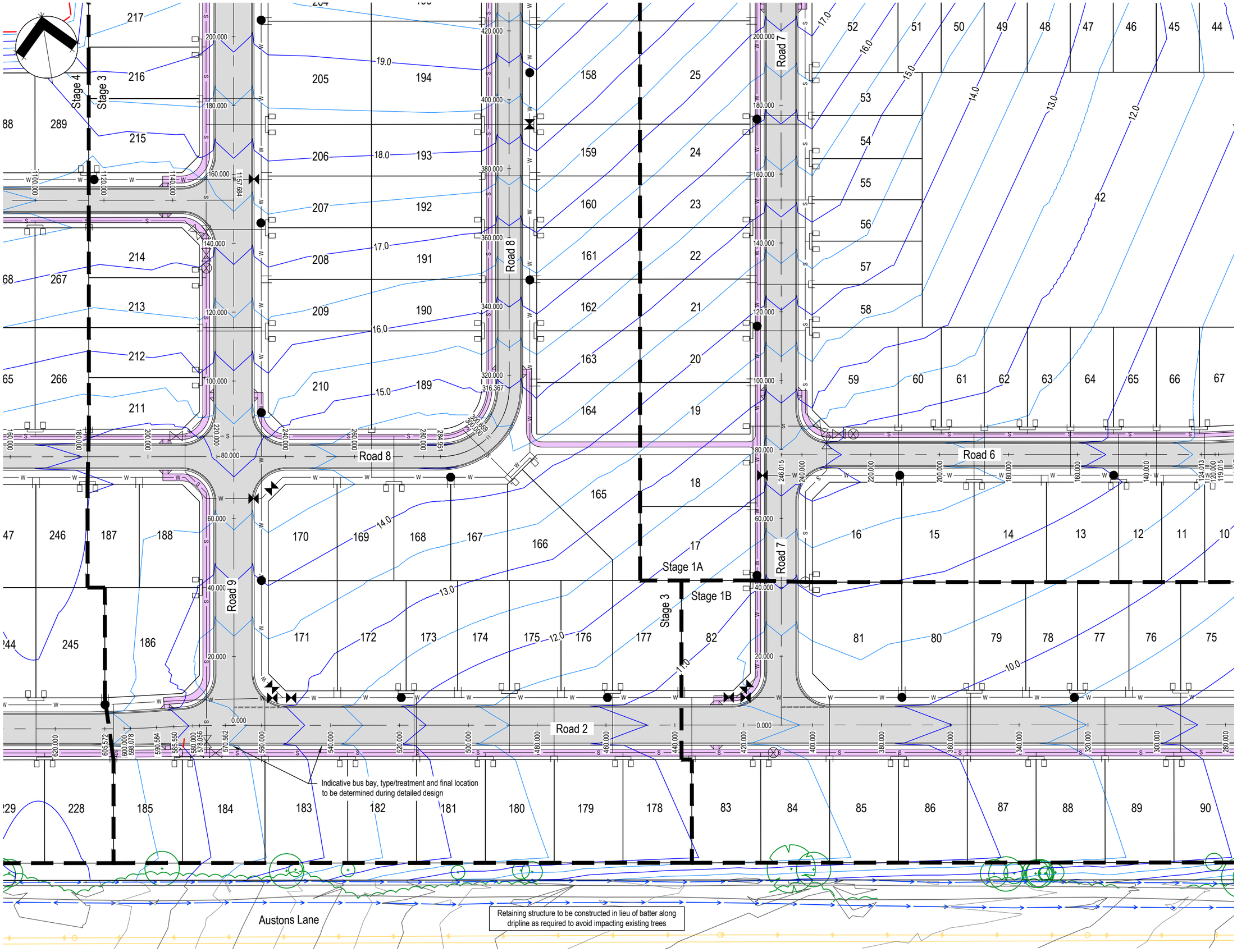
metres 0 5 10 15 20 25

Drawing Title

Design Layout
Sheet 3 of 5

3204-1131

Drawing Number	*Revision*
3204/C123	C



LEGEND (Existing)

- Electricity and power pole
- Tree line
- Fire hydrant
- Communication line and pit
- Watermain (approximate)
- Swale
- Road

LEGEND (Design)

- Road
- Footpath
- Water reticulation pipe
- Low pressure sewer main
- Sewer rising main
- Stage boundary
- Extent of works

Existing and design contours shown at 0.5 m intervals

Note:

1. Fencing to be installed as per landscaping design, refer to plan set by others.
2. Stormwater pits and pipes not shown as locations will be determined as part of detailed design.
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XREFs			

Scale

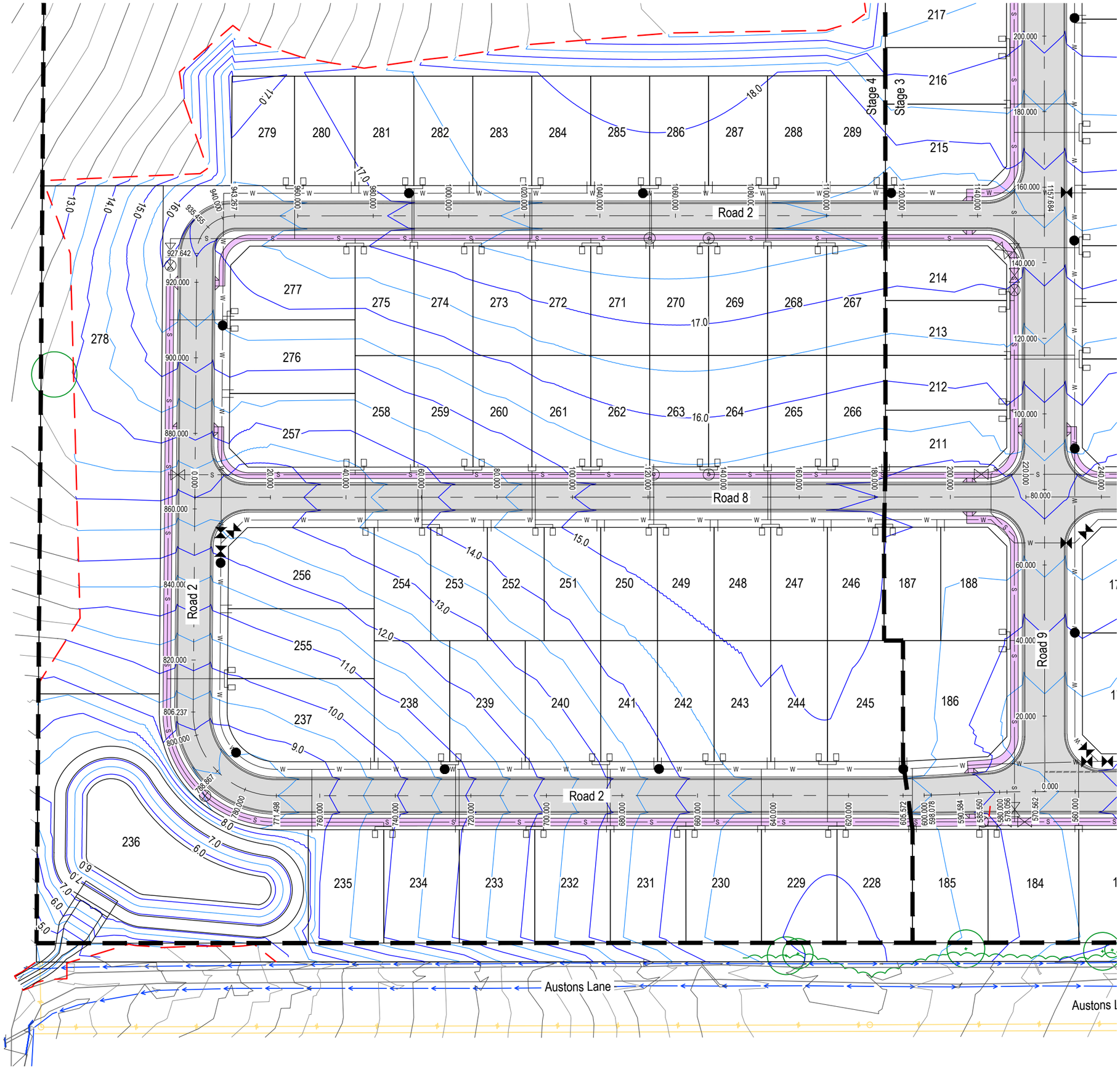
metres 0 5 10 15 20 25

Drawing Title

Design Layout
Sheet 4 of 5

3204-1131

Drawing Number 3204/C124 *Revision* C



LEGEND (Existing)

- Electricity and power pole
- Tree line
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- Communication line and pit
- Watermain (approximate)
- Swale
- Road

LEGEND (Design)

- Road
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- Water reticulation pipe
- Low pressure sewer main
- Sewer rising main
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Approved	MVE	Date 8/10/2021	

XREFs

Scale

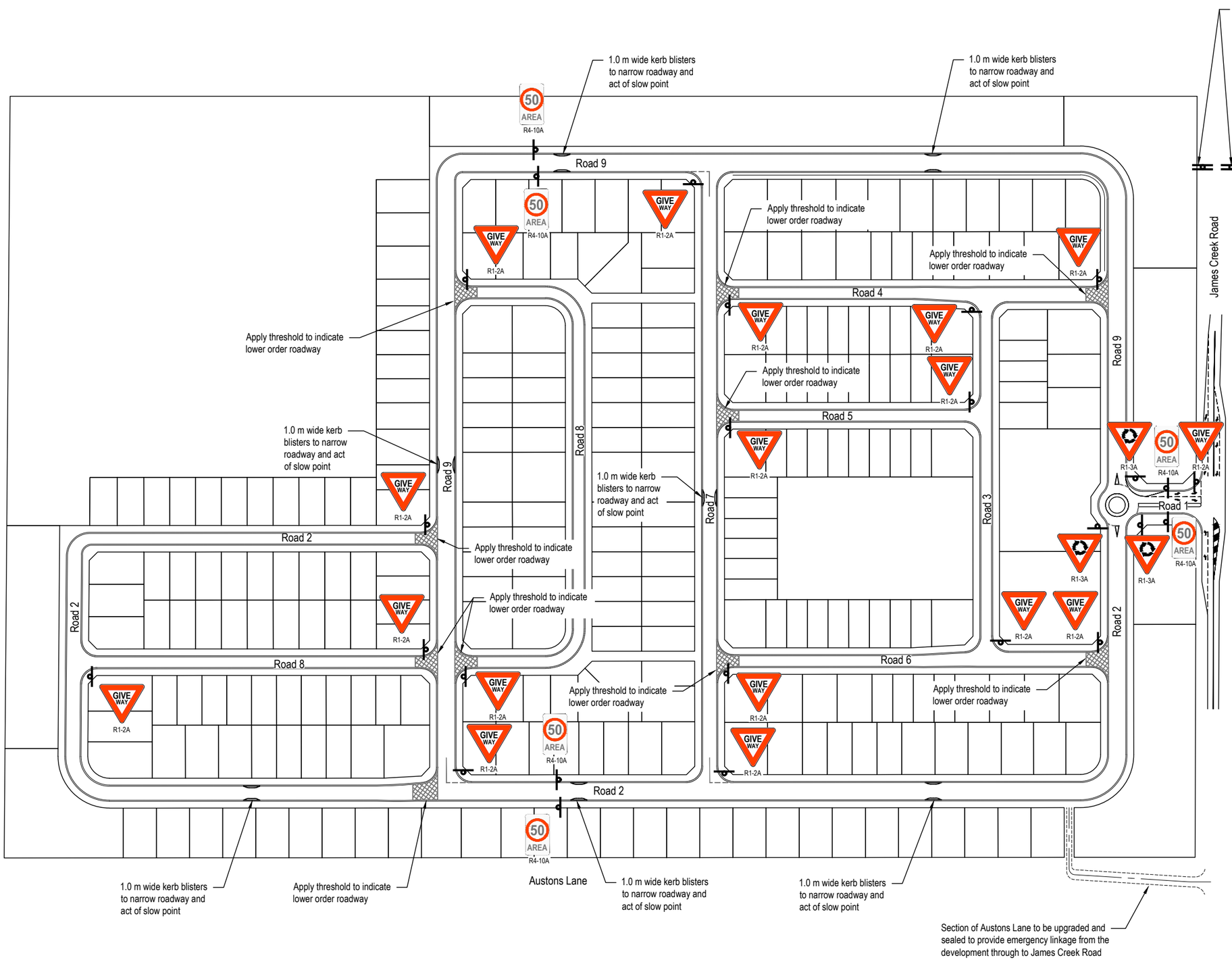
metres 0 5 10 15 20 25

Drawing Title

Design Layout
Sheet 5 of 5

3204-1131

Drawing Number 3204/C125 *Revision* C



Note:
1. Location of slow points and intersection thresholds shown indicatively only, to be determined during detailed design.

DEVELOPMENT APPLICATION

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Approved	MVE	Date 8/10/2021	

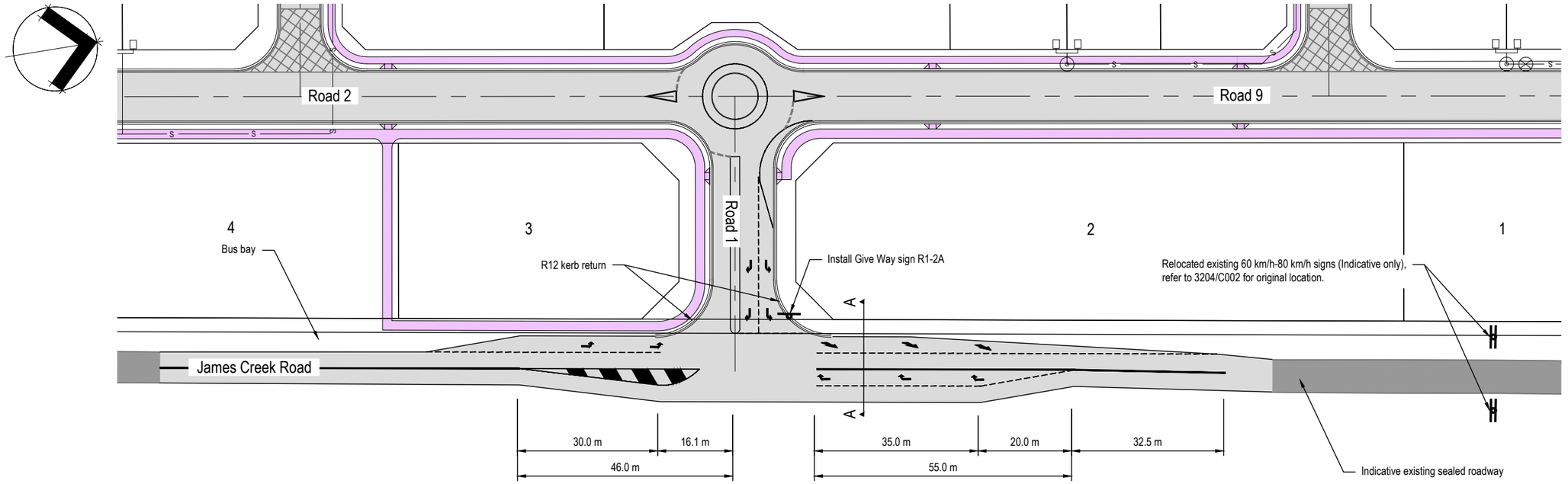
XREFs

Scale
metres 0 12.5 25 37.5 50 62.5

Drawing Title
Design Layout
Signage & Traffic Calming

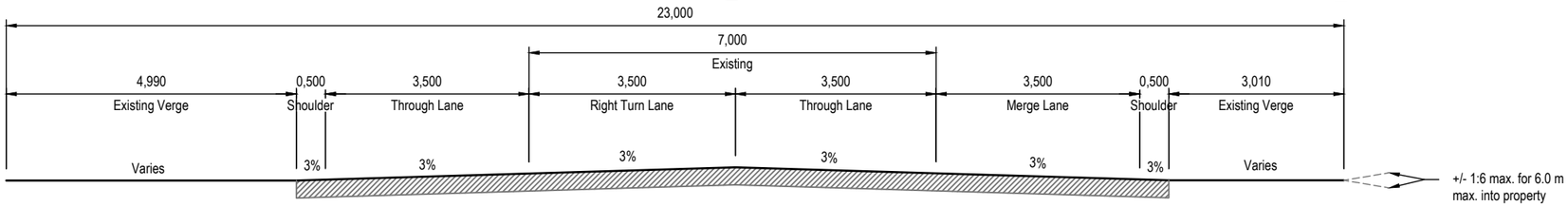
3204-1131

Drawing Number 3204/C126 *Revision* C



Turning Concept Stage 1

Note: All lane widths to be minimum 3.5m wide.



Section A-A
23.0 m wide Road Reserve

James Creek Road

Road Network Characteristics					
Road	Road Reserve (m)	Carriageway Width (m)	Verge Width LHS (m)	Verge Width RHS (m)	Path Width (m)
1	25.0	13.5	7.0	4.5	2.0
2 (Ch 0.000 - Ch 570.000)	20.0	11.0	4.5	4.5	2.0
2 (Ch 570.000 - Ch 930.000)	18.0	9.0	4.5	4.5	1.5
2 (Ch 930.000 - Ch 976.971)	16.0	7.0	4.5	4.5	1.5
3	16.0	7.0	4.5	4.5	1.5
4 (Ch 0.000 - Ch 80.000)	18.0	9.0	4.5	4.5	1.5
4 (Ch 80.000 - Ch 246.015)	16.0	7.0	4.5	4.5	1.5
5	16.0	7.0	4.5	4.5	1.5
6 (Ch 0.000 - Ch 80.000)	18.0	9.0	4.5	4.5	1.5
6 (Ch 80.000 - Ch 246.015)	16.0	7.0	4.5	4.5	1.5
7	18.0	9.0	4.5	4.5	1.5
8	16.0	7.0	4.5	4.5	1.5
9	20.0	11.0	4.5	4.5	2.0

DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	App.	Chk.
C	Revised submission	22/11/2023	JLC	MVE	MVE
B	Drawing Schedule updated	13/04/2023	JLC	MVE	MVE
A	Updated to address Council's AIR	24/05/2022	JLC	MVE	MVE

Amendments

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Project Title

The Village at James Creek

Client

MPD Investments Pty Ltd

Designed	Drawn	Checked
JLC	JLC	MVE
Approved	Date	
MVE	8/10/2021	

XREFs

Scale

metres 0 5 10 15 20 25

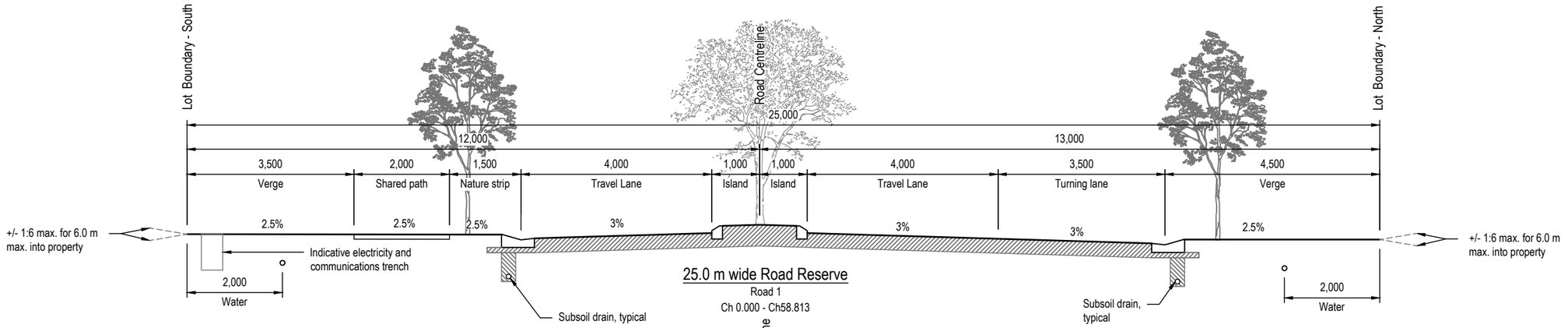
Drawing Title

James Creek Road Intersection Detail and Typical Road Section

3204-1131

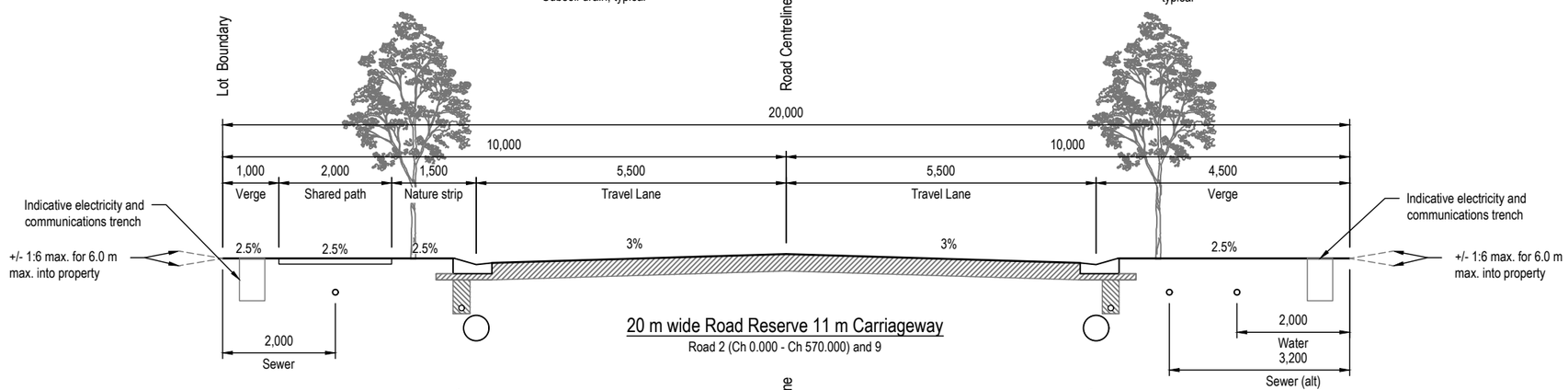
Drawing Number 3204/C127

Revision C



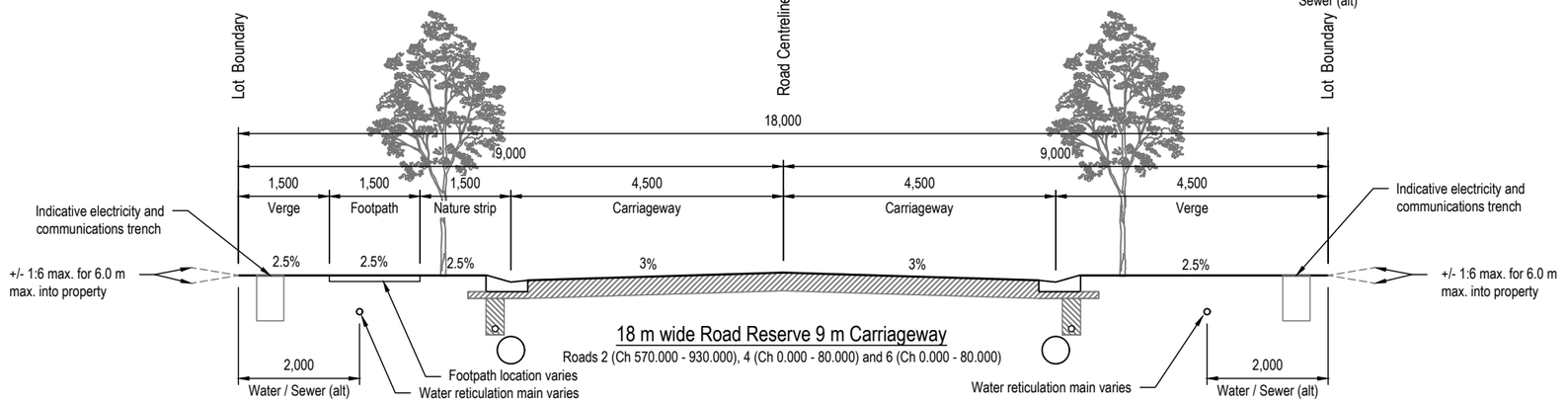
25.0 m wide Road Reserve

Road 1
Ch 0.000 - Ch58.813



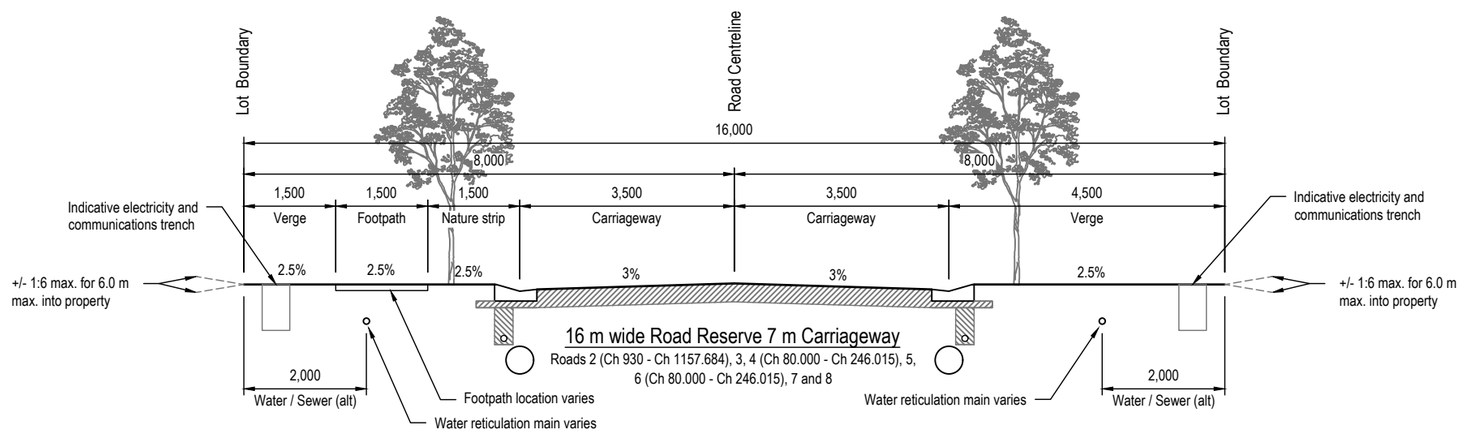
20 m wide Road Reserve 11 m Carriageway

Road 2 (Ch 0.000 - Ch 570.000) and 9



18 m wide Road Reserve 9 m Carriageway

Roads 2 (Ch 570.000 - 930.000), 4 (Ch 0.000 - 80.000) and 6 (Ch 0.000 - 80.000)



16 m wide Road Reserve 7 m Carriageway

Roads 2 (Ch 930 - Ch 1157.684), 3, 4 (Ch 80.000 - Ch 246.015), 5, 6 (Ch 80.000 - Ch 246.015), 7 and 8

DEVELOPMENT APPLICATION

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Approved	MVE	Date	8/10/2021		
XREFs					
Scale					

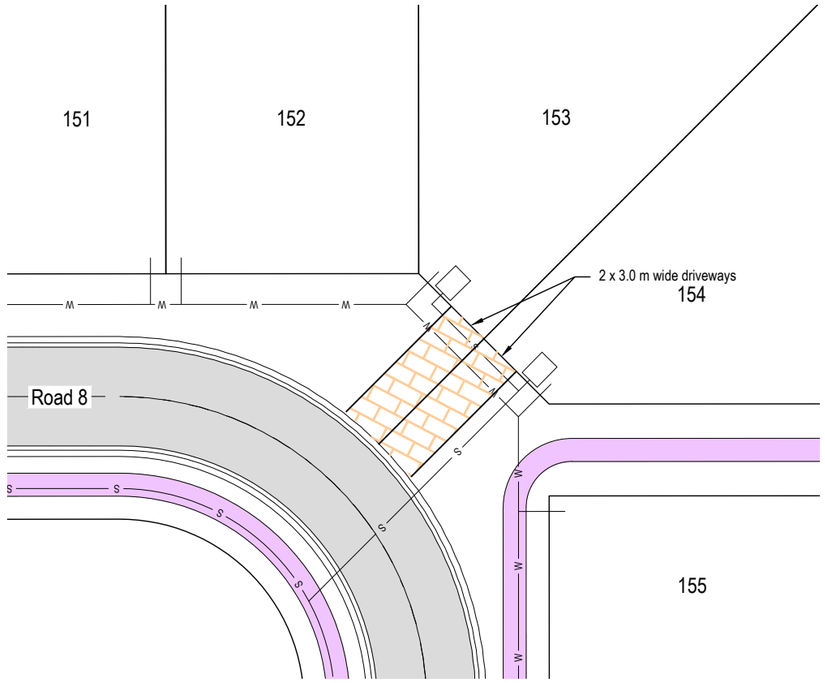
metres 0 0.5 1.0 1.5 2.0 2.5

Drawing Title

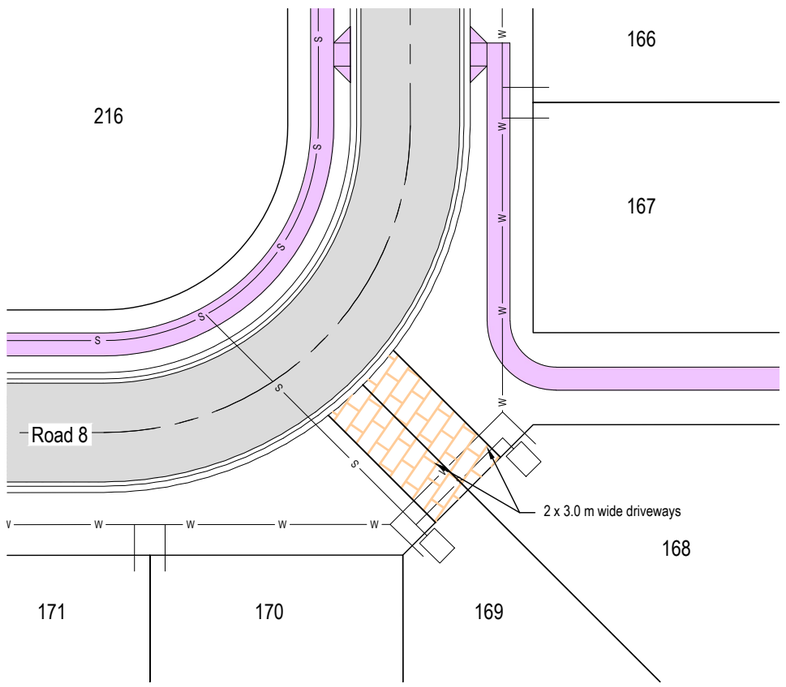
Typical Road Sections

3204-1131

Drawing Number 3204/C128 *Revision* C



Lot Frontage Detail - Lot 157 / 158



Lot Frontage Detail - Lot 168 / 169

LEGEND

- Road pavement
- Footpath / Access
- Indicative driveway location
- Easement
- W — Water reticulation pipe
- S — Proposed gravity sewer pipe

Note:
1. Stormwater pits not shown as locations will be determined as part of detailed design.

DEVELOPMENT APPLICATION

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XREFs			

Scale

metres 0 2 4 6 8 10

Drawing Title

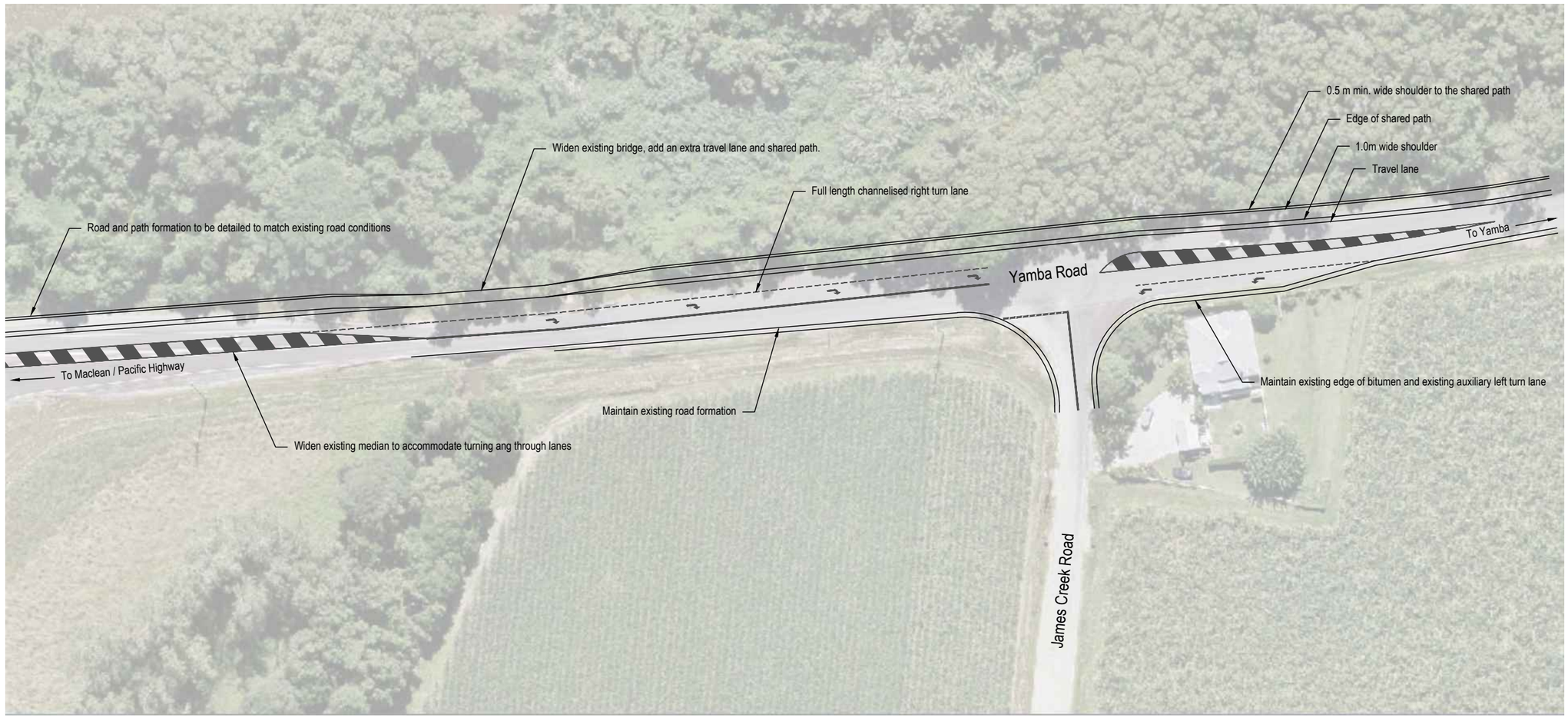
Corner Lot Frontage Details

3204-1131

Drawing Number 3204/C129

Revision C

Intersection Locality Plan
NTS



Concept Yamba Rd / James Creek Rd Intersection Layout
NTS

Notes:
1. Intersection is to be designed in consultation with Council and is currently conceptual only.
2. Bridge to be widened and raised under separate upgrades to be undertaken by Council.

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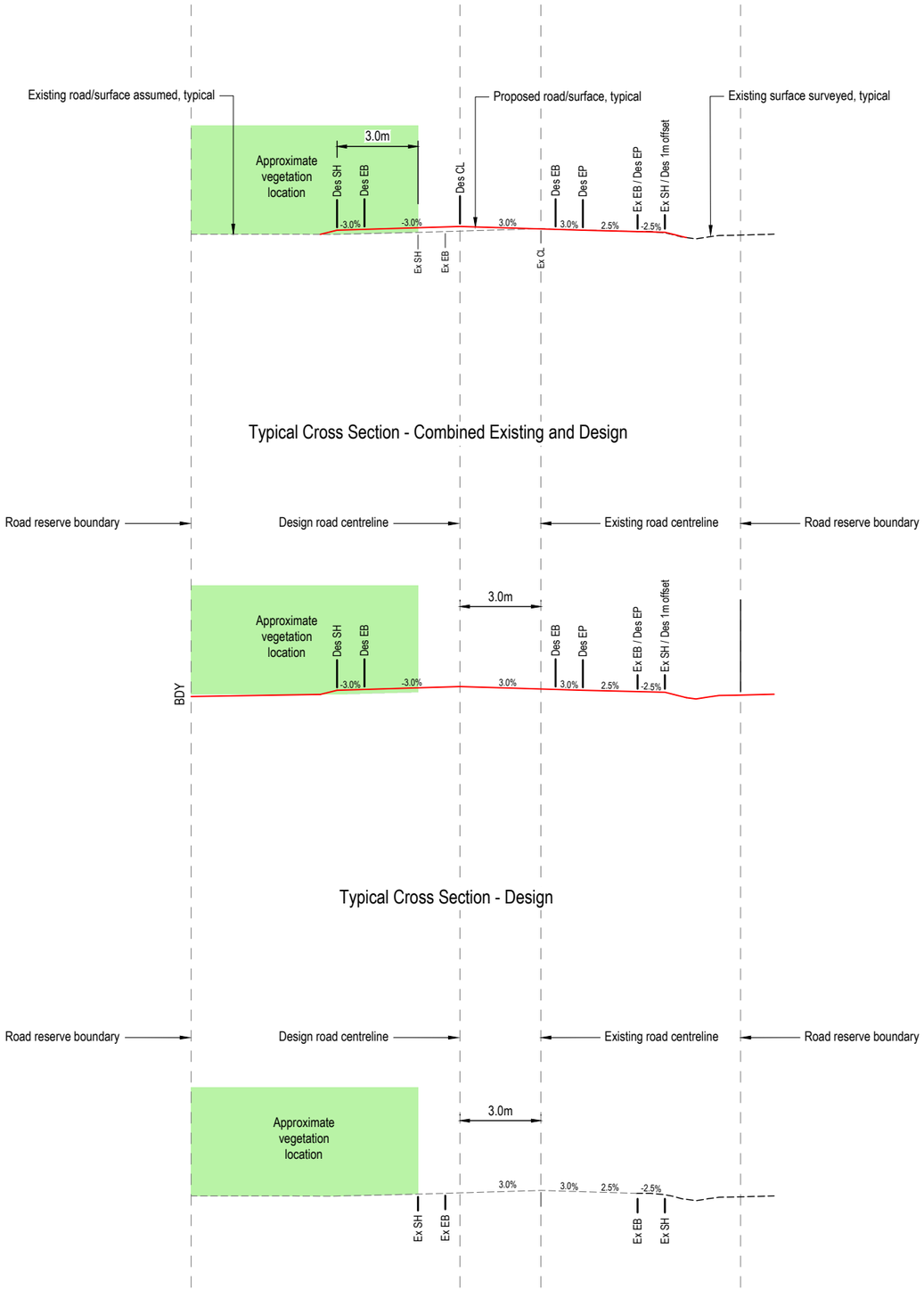
Approved	MVE	Date	8/10/2021		
XREFs					

Scale
metres 0 5 10 15 20 25

Drawing Title
External Intersection Details
James Creek Road / Yamba Road

3204-1131

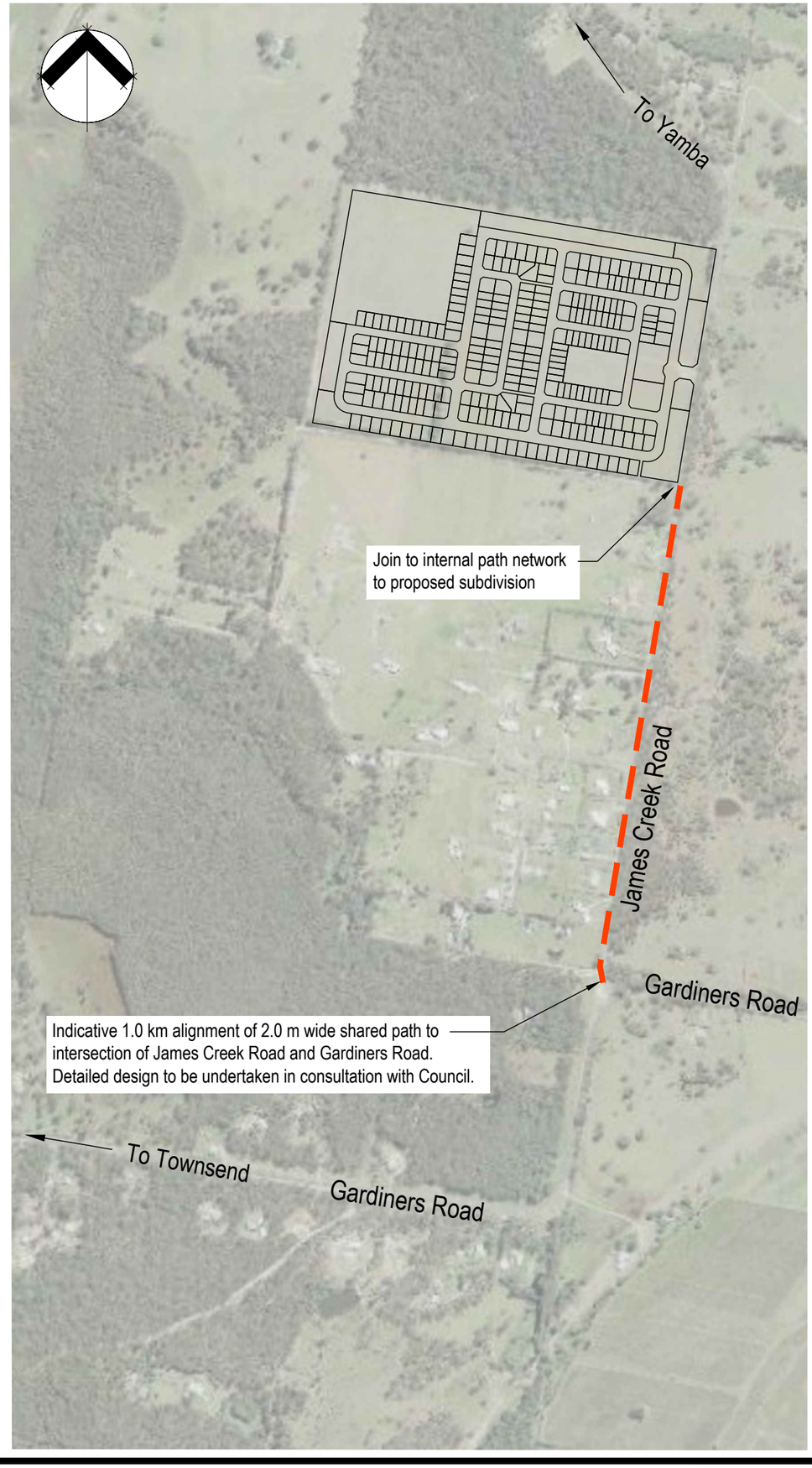
Drawing Number 3204/C130 *Revision* C



Typical Cross Section - Combined Existing and Design

Typical Cross Section - Design

Typical Cross Section - Existing



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Project Title

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Designed	JLC	Drawn JLC	Checked MVE
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XREFs			

Scale

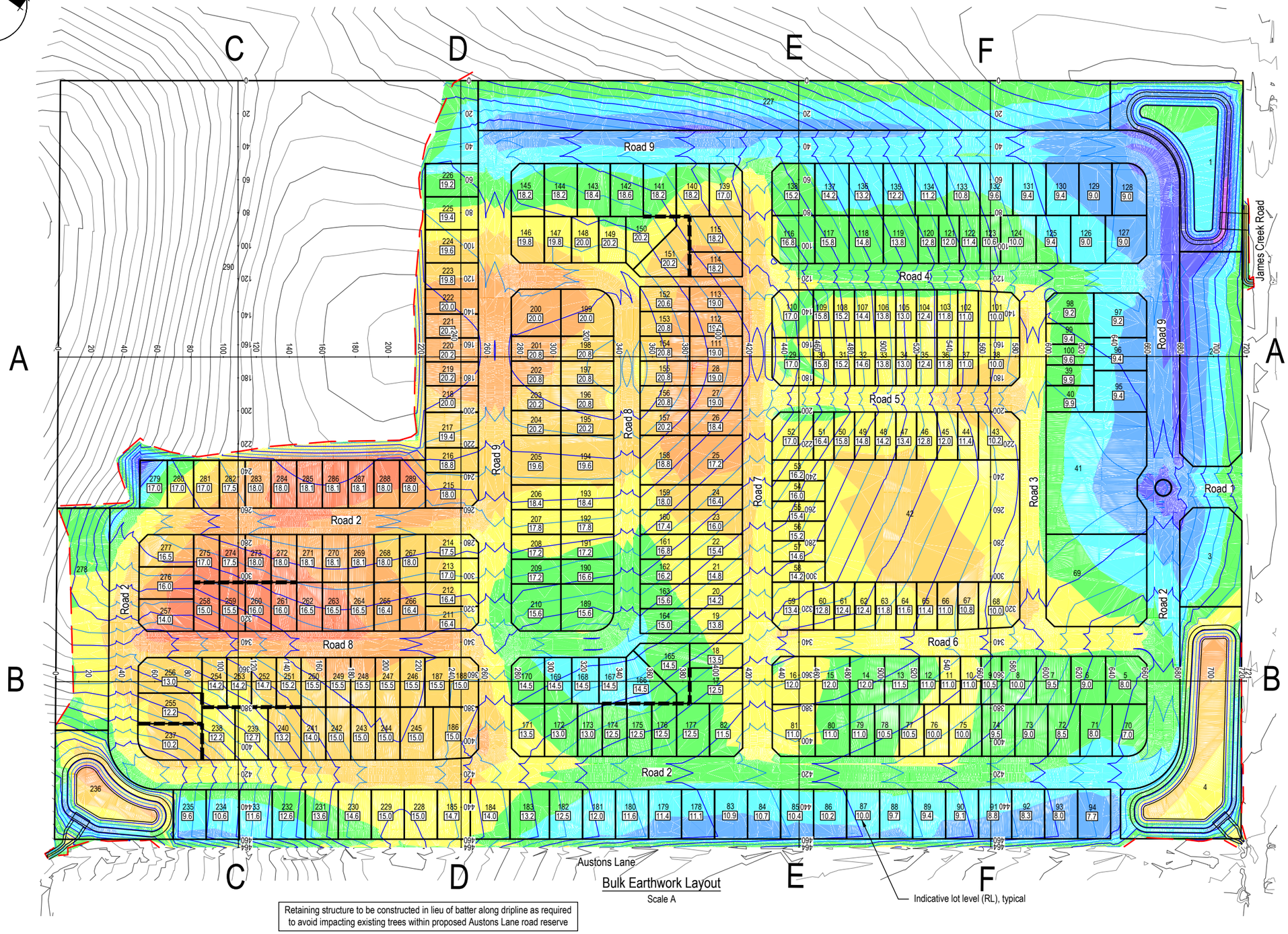
metres 0 50 100 150 200 250

Drawing Title

External Path Network and Typical Section

3204-1131

Drawing Number 3204/C131 *Revision* C



Retaining structure to be constructed in lieu of batter along dripline as required to avoid impacting existing trees within proposed Austons Lane road reserve

Bulk Earthworks Parameters

Parameter	Base Surface	Comparison Surface	Total Area (m²)	Total Cut Volume (m³)	Total Fill Volume (m³)	Balance (m³)
Cut - Fill	Existing surface	Design surface	282,002	113,075	94,385	18690 (fill)

Notes:
1. Figures are approximate, design will be refined at detailed design stage to include more of a balanced earthworks.
2. Earthworks do not include material to be excavated for the pavement area.

LEGEND

- Cut 1.8 m to 2.3 m
- Cut 1.2 m to 1.8 m
- Cut 0.6 m to 1.2 m
- Cut 0.0 m to 0.6 m
- Fill 0.0 m to 0.6 m
- Fill 0.6 m to 1.2 m
- Fill 1.2 m to 1.8 m
- Fill 1.8 m to 2.4 m
- Fill 2.4 m to 2.53 m
- Extent of works
- Maximum retaining locations (refer to typical detail on sheet C136)

Existing and design contours shown at 0.5 m intervals

Note:
1. Bulk earthworks shown is from the existing surface to the design surface.
2. Lot grading and retaining to be finalised with detailed design. Maximum height of walls will be 2.0 m.
3. Stage boundaries are extent of works unless shown otherwise (refer to Legend).

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Project Title

The Village at James Creek

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MPD Investments Pty Ltd

Designed	JLC	Drawn JLC	Checked MVE
Approved	MVE	Date 8/10/2021	

XREFs

Scale

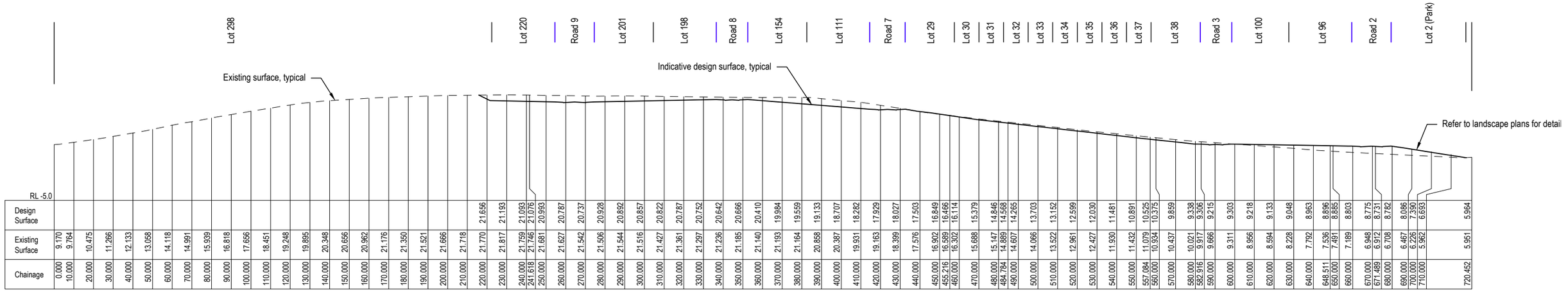
A metres 0 12.5 25 37.5 50 62.5

Drawing Title

Bulk Earthworks Layout

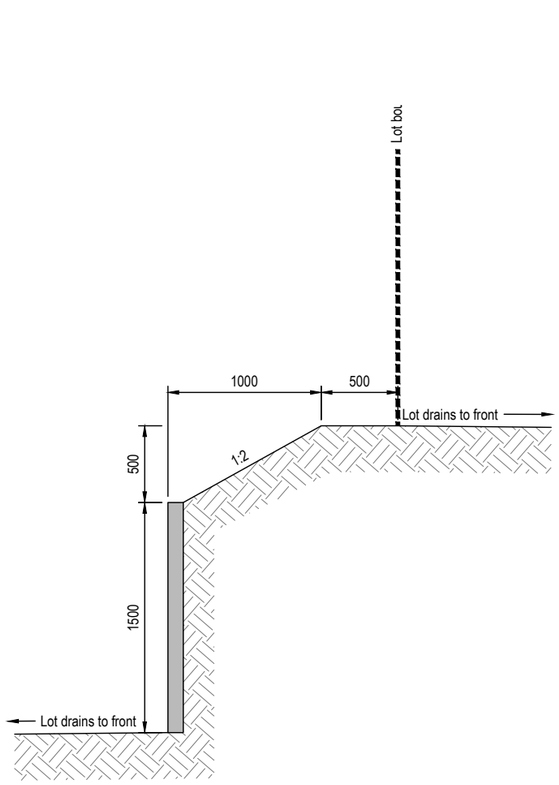
3204-1132

Drawing Number 3204/C135 *Revision* C



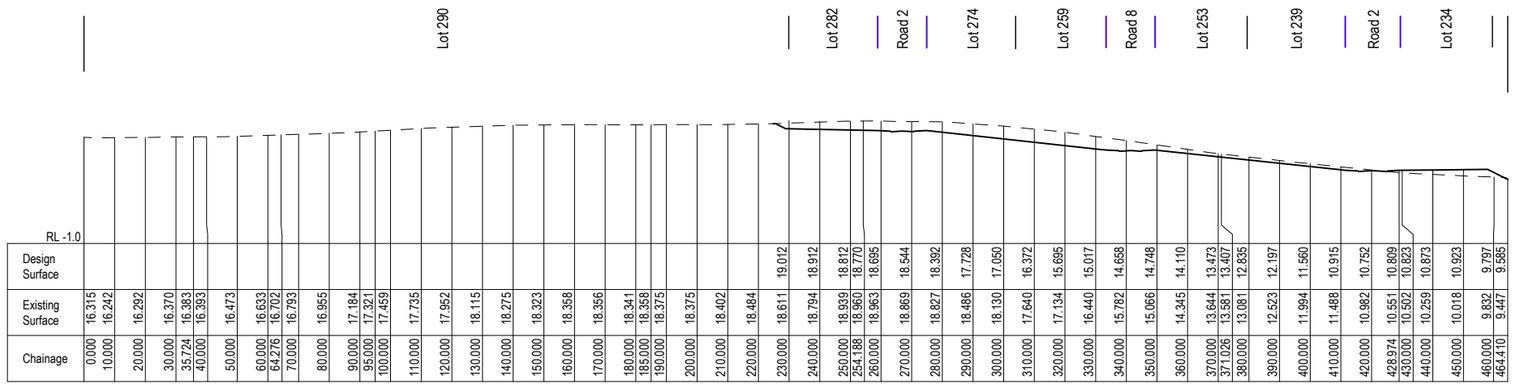
Chainage	Existing Surface	Design Surface
0.000	9.170	
10.000	9.764	
20.000	10.475	
30.000	11.266	
40.000	12.133	
50.000	13.058	
60.000	14.118	
70.000	14.991	
80.000	15.939	
90.000	16.818	
100.000	17.656	
110.000	18.451	
120.000	19.248	
130.000	19.895	
140.000	20.348	
150.000	20.656	
160.000	20.962	
170.000	21.176	
180.000	21.350	
190.000	21.521	
200.000	21.666	
210.000	21.718	
220.000	21.770	21.656
230.000	21.817	21.193
240.000	21.759	21.093
241.618	21.746	21.076
250.000	21.681	20.993
260.000	21.627	20.787
270.000	21.542	20.737
280.000	21.506	20.928
290.000	21.544	20.892
300.000	21.516	20.857
310.000	21.427	20.822
320.000	21.361	20.787
330.000	21.297	20.752
340.000	21.236	20.642
350.000	21.185	20.666
360.000	21.140	20.410
370.000	21.193	19.984
380.000	21.164	19.559
390.000	20.858	19.133
400.000	20.387	18.707
410.000	19.931	18.282
420.000	19.163	17.929
430.000	18.399	18.027
440.000	17.576	17.503
450.000	16.902	16.849
455.216	16.589	16.466
460.000	16.302	16.114
470.000	15.688	15.379
480.000	15.147	14.846
484.784	14.889	14.568
490.000	14.607	14.265
500.000	14.066	13.703
510.000	13.522	13.152
520.000	12.961	12.599
530.000	12.427	12.030
540.000	11.930	11.481
550.000	11.432	10.891
557.084	11.079	10.525
560.000	10.934	10.375
570.000	10.437	9.859
580.000	10.021	9.338
582.916	9.917	9.306
590.000	9.666	9.215
600.000	9.311	9.303
610.000	8.956	9.218
620.000	8.594	9.133
630.000	8.228	9.048
640.000	7.792	8.963
648.511	7.536	8.896
650.000	7.491	8.885
660.000	7.189	8.803
670.000	6.948	8.775
671.489	6.912	8.731
680.000	6.708	8.782
690.000	6.467	8.086
700.000	6.226	7.390
710.000	5.962	6.693
720.452	5.951	5.964

Section A-A



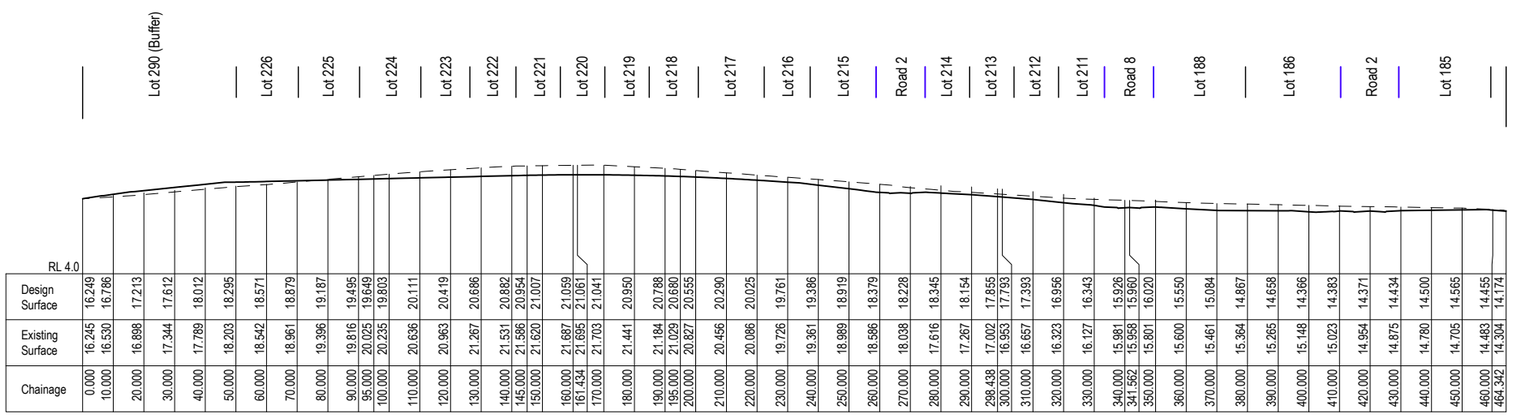
Retaining Wall Detail (maximum height)
(NTS)

Note: Type and design of retaining wall to be determined at detailed design stage.



Chainage	Existing Surface	Design Surface
0.000	16.315	
10.000	16.242	
20.000	16.292	
30.000	16.370	
35.724	16.383	
40.000	16.393	
50.000	16.473	
60.000	16.633	
64.276	16.702	
70.000	16.793	
80.000	16.955	
90.000	17.184	
95.000	17.321	
100.000	17.459	
110.000	17.735	
120.000	17.952	
130.000	18.115	
140.000	18.275	
150.000	18.323	
160.000	18.358	
170.000	18.356	
180.000	18.341	
185.000	18.358	
190.000	18.375	
200.000	18.375	
210.000	18.402	
220.000	18.484	
230.000	18.611	19.012
240.000	18.794	18.912
250.000	18.939	18.812
254.188	18.960	18.770
260.000	18.963	18.695
270.000	18.869	18.544
280.000	18.827	18.392
290.000	18.486	17.728
300.000	18.130	17.050
310.000	17.640	16.372
320.000	17.134	15.695
330.000	16.440	15.017
340.000	15.782	14.658
350.000	15.066	14.748
360.000	14.345	14.110
370.000	13.644	13.473
371.026	13.581	13.407
380.000	13.081	12.835
390.000	12.523	12.197
400.000	11.994	11.560
410.000	11.488	10.915
420.000	10.982	10.752
428.974	10.551	10.809
430.000	10.502	10.823
440.000	10.259	10.873
450.000	10.018	10.923
460.000	9.832	9.797
464.410	9.447	9.585

Section C-C



Chainage	Existing Surface	Design Surface
0.000	16.245	16.249
10.000	16.530	16.786
20.000	16.898	17.213
30.000	17.344	17.612
40.000	17.789	18.012
50.000	18.203	18.295
60.000	18.542	18.571
70.000	18.961	18.879
80.000	19.396	19.187
90.000	19.816	19.495
95.000	20.025	19.649
100.000	20.235	19.803
110.000	20.636	20.111
120.000	20.963	20.419
130.000	21.267	20.686
140.000	21.531	20.882
145.000	21.586	20.954
150.000	21.620	21.007
160.000	21.687	21.059
161.434	21.695	21.061
170.000	21.703	21.041
180.000	21.441	20.950
190.000	21.184	20.788
195.000	21.029	20.680
200.000	20.827	20.555
210.000	20.456	20.290
220.000	20.086	20.025
230.000	19.726	19.761
240.000	19.361	19.386
250.000	18.989	18.919
260.000	18.586	18.379
270.000	18.038	18.228
280.000	17.616	18.345
290.000	17.267	18.154
298.438	17.002	17.855
300.000	16.953	17.793
310.000	16.657	17.393
320.000	16.323	16.956
330.000	16.127	16.343
340.000	15.981	15.926
341.562	15.958	15.960
350.000	15.801	16.020
360.000	15.600	15.550
370.000	15.461	15.084
380.000	15.364	14.867
390.000	15.265	14.658
400.000	15.148	14.366
410.000	15.023	14.383
420.000	14.954	14.371
430.000	14.875	14.434
440.000	14.780	14.500
450.000	14.705	14.565
460.000	14.483	14.455
464.342	14.304	14.174

Section D-D

DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	App.	Chk.
C	Revised submission	22/11/2023	JLC	MVE	MVE
B	Drawing Schedule updated	13/04/2023	JLC	MVE	MVE
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quality solutions sustainable future

Project Title

The Village at James Creek

Client

MPD Investments Pty Ltd

Designed	JLC	Drawn JLC	Checked MVE
Approved	MVE	Date 8/10/2021	
XREFs			

Scale

Horizntal metres 0 10 20 30 40 50

Vertical 0 5 10 15 20 25

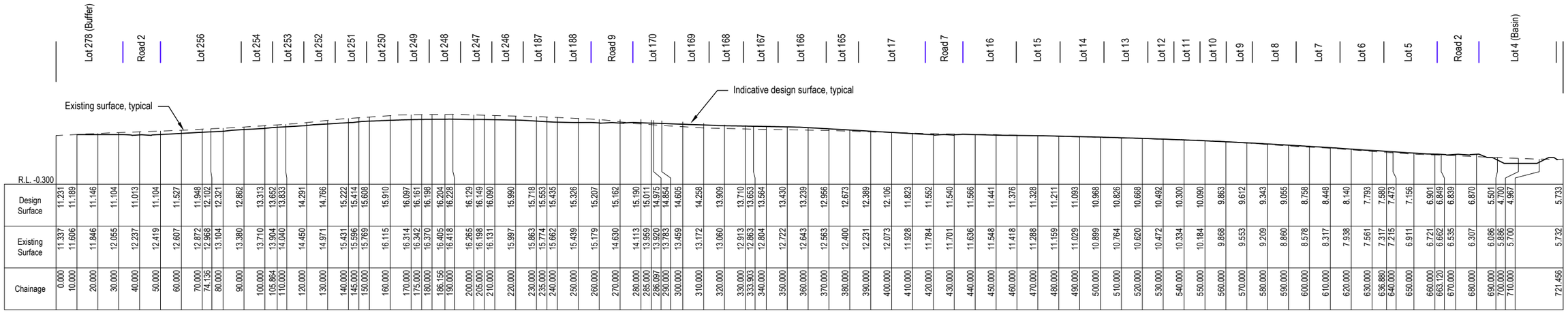
Drawing Title

Site Cross Sections
Sheet 1 of 2

3204-1132

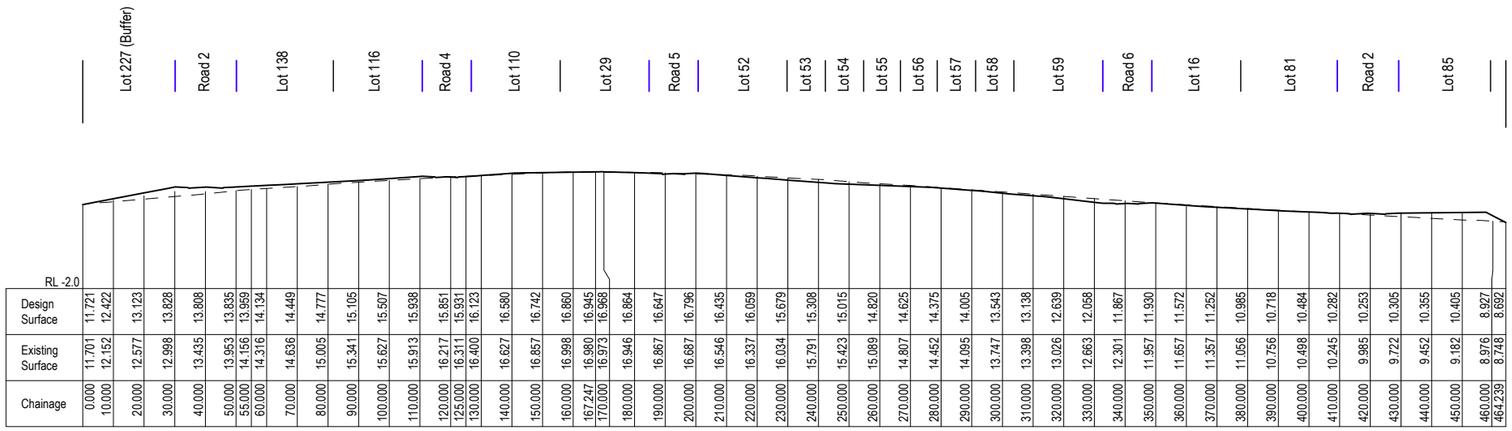
Drawing Number 3204/C136

Revision C



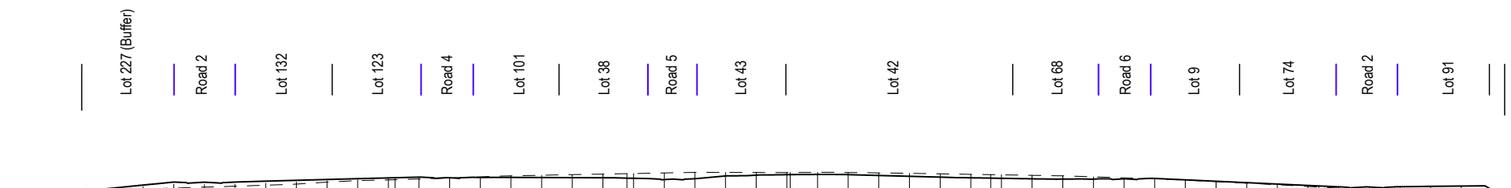
	Lot 278 (Buffer)	Road 2	Lot 256	Lot 254	Lot 253	Lot 252	Lot 251	Lot 250	Lot 249	Lot 248	Lot 247	Lot 246	Lot 187	Lot 188	Road 9	Lot 170	Lot 169	Lot 168	Lot 167	Lot 166	Lot 165	Lot 17	Road 7	Lot 16	Lot 15	Lot 14	Lot 13	Lot 12	Lot 11	Lot 10	Lot 9	Lot 8	Lot 7	Lot 6	Lot 5	Road 2	Lot 4 (Basin)
R.L. -0.300																																				
Design Surface	11.231	11.189	11.146	11.104	11.013	11.104	11.527	11.948	12.102	12.321	12.862	13.313	13.652	13.833	14.291	14.766	15.222	15.414	15.608	15.910	16.097	16.161	16.198	16.204	16.228	16.129	16.149	16.090	15.990	15.718	15.553	15.435	15.326	15.207	15.162	15.190	15.011	14.975	14.854	14.605	14.258	13.909	13.710	13.653	13.564	13.430	13.239	12.956	12.673	12.389	12.106	11.823	11.552	11.540	11.566	11.441	11.376	11.328	11.211	11.093	10.968	10.826	10.668	10.492	10.300	10.090	9.863	9.612	9.343	9.055	8.758	8.448	8.140	7.793	7.580	7.473	7.156	6.901	6.849	6.839	6.870	5.501	4.700	4.967	5.733
Existing Surface	11.337	11.606	11.846	12.055	12.237	12.419	12.607	12.872	12.968	13.104	13.380	13.710	13.904	14.040	14.450	14.971	15.431	15.596	15.769	16.115	16.314	16.342	16.370	16.405	16.418	16.265	16.198	16.131	15.997	15.863	15.774	15.662	15.439	15.179	14.630	14.113	13.959	13.920	13.783	13.459	13.172	13.060	12.913	12.863	12.804	12.722	12.643	12.563	12.400	12.231	12.073	11.928	11.784	11.701	11.636	11.548	11.418	11.288	11.159	11.029	10.899	10.764	10.620	10.472	10.334	10.184	9.868	9.553	9.209	8.860	8.578	8.317	7.938	7.561	7.317	7.215	6.911	6.721	6.662	6.535	6.307	6.086	5.986	5.700	5.732
Chainage	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	74.136	80.000	90.000	100.000	105.864	110.000	120.000	130.000	140.000	145.000	150.000	160.000	170.000	175.000	180.000	188.156	190.000	200.000	205.000	210.000	220.000	230.000	235.000	240.000	250.000	260.000	270.000	280.000	285.000	286.097	290.000	300.000	310.000	320.000	330.000	333.903	340.000	350.000	360.000	370.000	380.000	390.000	400.000	410.000	420.000	430.000	440.000	450.000	460.000	470.000	480.000	490.000	500.000	510.000	520.000	530.000	540.000	550.000	560.000	570.000	580.000	590.000	600.000	610.000	620.000	630.000	636.880	640.000	650.000	660.000	663.120	670.000	680.000	690.000	700.000	710.000	721.456

Section B-B



	Lot 227 (Buffer)	Road 2	Lot 138	Lot 116	Road 4	Lot 110	Lot 29	Road 5	Lot 52	Lot 53	Lot 54	Lot 55	Lot 56	Lot 57	Lot 58	Lot 59	Road 6	Lot 16	Lot 81	Road 2	Lot 85
RL -2.0																					
Design Surface	11.721	12.422	13.123	13.828	13.808	13.435	13.835	13.959	14.134	14.449	14.777	15.105	15.507	15.938	15.851	15.931	16.123	16.580	16.742	16.860	16.998	16.980	16.945	16.968	16.864	16.647	16.796	16.435	16.059	15.679	15.308	15.015	14.820	14.625	14.375	14.005	13.543	13.138	12.639	12.058	11.867	11.930	11.572	11.252	10.985	10.718	10.484	10.282	10.253	10.305	10.355	10.405	8.927	8.692
Existing Surface	11.701	12.152	12.577	12.998	13.435	13.953	14.156	14.316	14.636	15.005	15.341	15.627	15.913	16.217	16.311	16.400	16.627	16.857	16.998	16.980	16.973	16.946	16.867	16.687	16.546	16.337	16.034	15.791	15.423	15.089	14.807	14.452	14.095	13.747	13.398	13.026	12.663	12.301	11.957	11.657	11.357	11.056	10.756	10.498	10.245	9.985	9.722	9.452	9.182	8.976	8.748
Chainage	0.000	10.000	20.000	30.000	40.000	50.000	55.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	125.000	130.000	140.000	150.000	160.000	167.247	170.000	180.000	190.000	200.000	210.000	220.000	230.000	240.000	250.000	260.000	270.000	280.000	290.000	300.000	310.000	320.000	330.000	340.000	350.000	360.000	370.000	380.000	390.000	400.000	410.000	420.000	430.000	440.000	450.000	460.000	464.239

Section E-E



	Lot 227 (Buffer)	Road 2	Lot 132	Lot 123	Road 4	Lot 101	Lot 38	Road 5	Lot 43	Lot 42	Lot 68	Road 6	Lot 9	Lot 74	Road 2	Lot 91
RL -3.0																
Design Surface	7.935	8.307	8.681	9.054	9.029	9.055	9.245	9.435	9.625	9.814	10.003	10.044	10.189	10.091	10.128	10.147	10.139	10.130	10.122	10.069	10.044	9.824	9.973	10.414	10.548	10.630	10.638	10.665	10.642	10.502	10.362	10.222	10.120	10.070	10.038	9.950	9.909	9.907	9.958	10.013	9.786	9.559	9.332	9.105	8.878	8.799	8.649	8.619	8.674	8.724	8.774	7.185	7.111
Existing Surface	7.934	8.096	8.254	8.432	8.590	8.749	8.917	9.090	9.404	9.656	9.786	9.815	9.920	10.094	10.272	10.436	10.535	10.635	10.720	10.795	10.816	10.912	11.003	10.996	10.982	10.981	10.983	11.007	10.981	10.917	10.852	10.766	10.680	10.633	10.609	10.522	10.435	10.280	10.111	9.942	9.752	9.502	9.245	8.986	8.703	8.596	8.397	8.179	7.939	7.678	7.416	7.186	7.112
Chainage	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	102.184	110.000	120.000	130.000	140.000	150.000	160.000	170.000	177.816	180.000	190.000	200.000	210.000	220.000	230.000	231.069	240.000	250.000	260.000	270.000	280.000	290.000	296.515	300.000	310.000	320.000	330.000	340.000	350.000	360.000	370.000	380.000	390.000	400.000	403.485	410.000	420.000	430.000	440.000	450.000	460.000	464.181

Section F-F

Rev.	Description	Date	Des.	App.	Chk.
C	Revised submission	22/11/2023	JLC	MVE	MVE
B	Drawing Schedule updated	13/04/2023	JLC	MVE	MVE
A	Updated to address Council's AIR	24/05/2022	JLC	MVE	MVE

Amendments

DEVELOPMENT APPLICATION

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Project Title

The Village at James Creek

Client

MPD Investments Pty Ltd

Designed	JLC	Drawn JLC	Checked MVE
Approved	MVE	Date 8/10/2021	
XREFs			

Scale

Horizntal metres 0 10 20 30 40 50

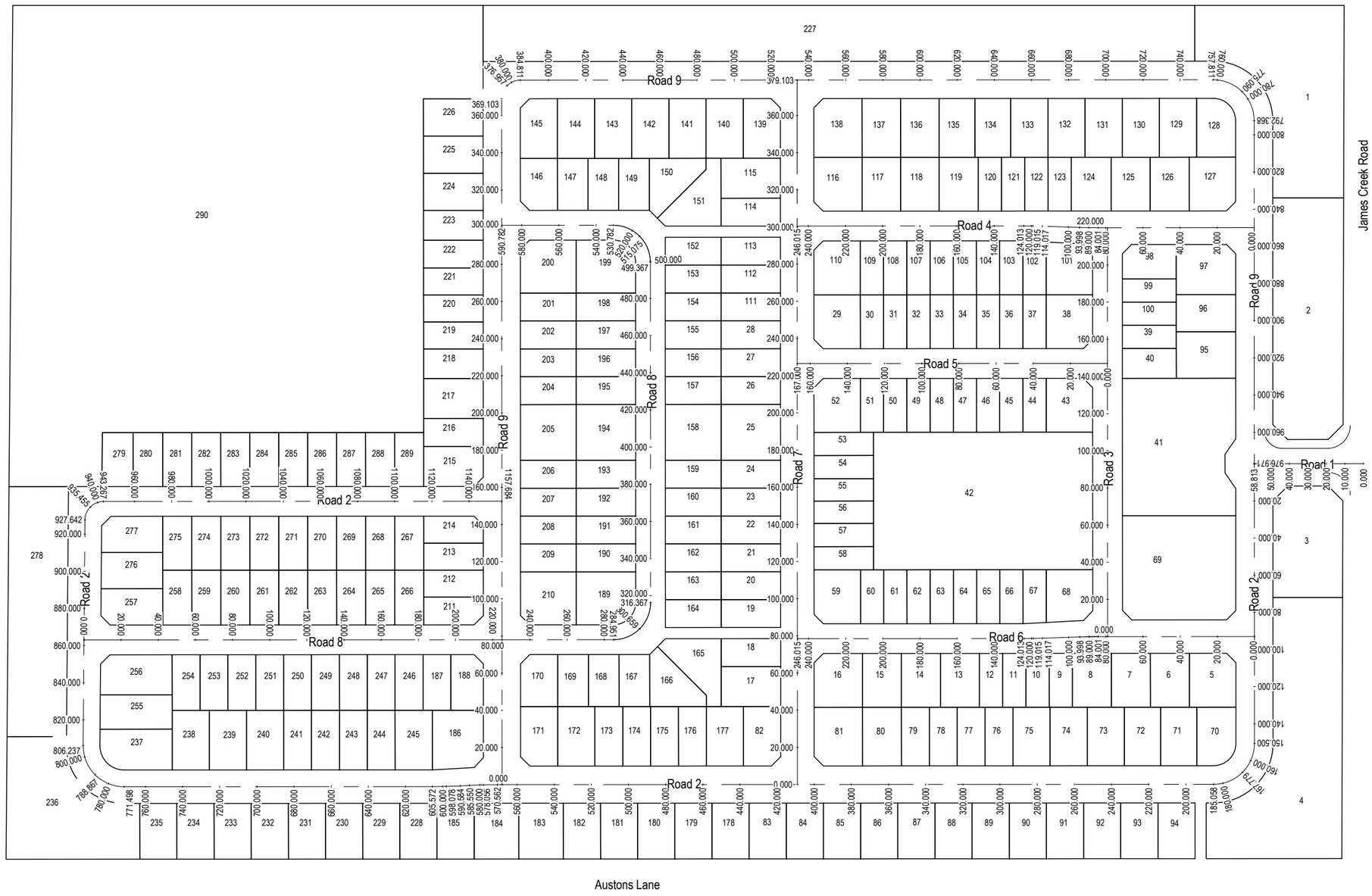
Vertical 0 5 10 15 20 25

Drawing Title

Site Cross Sections
Sheet 2 of 2

3204-1132

Drawing Number 3204/C137 *Revision* C



DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	App.	Chk.
C	Revised submission	22/11/2023	JLC	MVE	MVE
B	Drawing Schedule updated	13/04/2023	JLC	MVE	MVE
A	Updated to address Council's AIR	24/05/2022	JLC	MVE	MVE

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Project Title

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Designed	JLC	Drawn JLC	Checked MVE
Approved	MVE	Date 8/10/2021	

XREFs

Scale

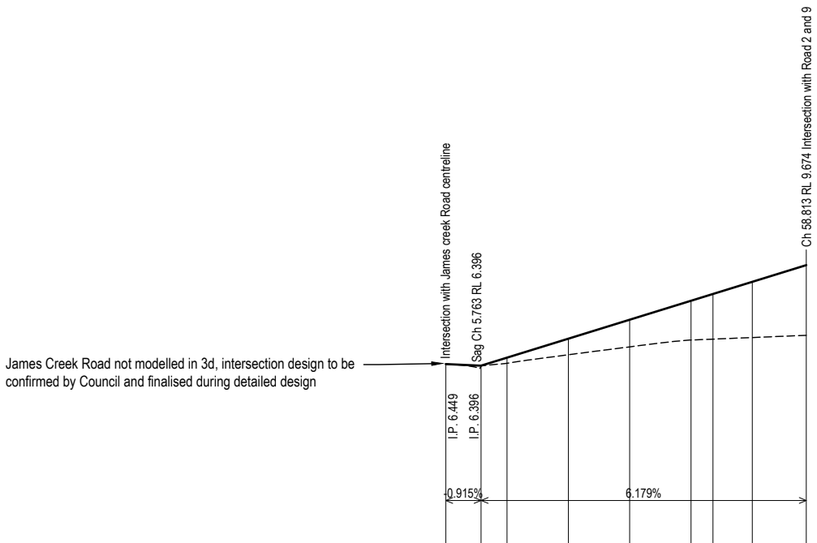
metres 0 15 30 45 60 75

Drawing Title

Design Layout
Overall Layout

3204-1131

Drawing Number 3204/C140 *Revision* C



Cut / Fill	+0.001	+0.013	+0.184	+0.525	+0.886	+1.281	+1.474	+1.817	+2.290
Design Surface	6.449	6.396	6.658	7.276	7.894	8.511	8.733	9.129	9.674
Existing Surface	6.448	6.383	6.474	6.751	7.008	7.230	7.259	7.312	7.384
Chainage	0.000	5.763	10.000	20.000	30.000	40.000	43.593	50.000	58.813
Horizontal Geometry	L=58.813 B=279°16'24"								

Road 1 Ch.0.0 - 58.813 (end)

DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	App.	Chk.
C	Revised submission	22/11/2023	JLC	MVE	MVE
B	Drawing Schedule updated	13/04/2023	JLC	MVE	MVE
A	Updated to address Council's AIR	24/05/2022	JLC	MVE	MVE

Amendments

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Project Title

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Approved	MVE	Date 8/10/2021	
XREFs			

Scale

Horizontal	metres	0	5	10	15	20	25
Vertical		0	1	2	3	4	5

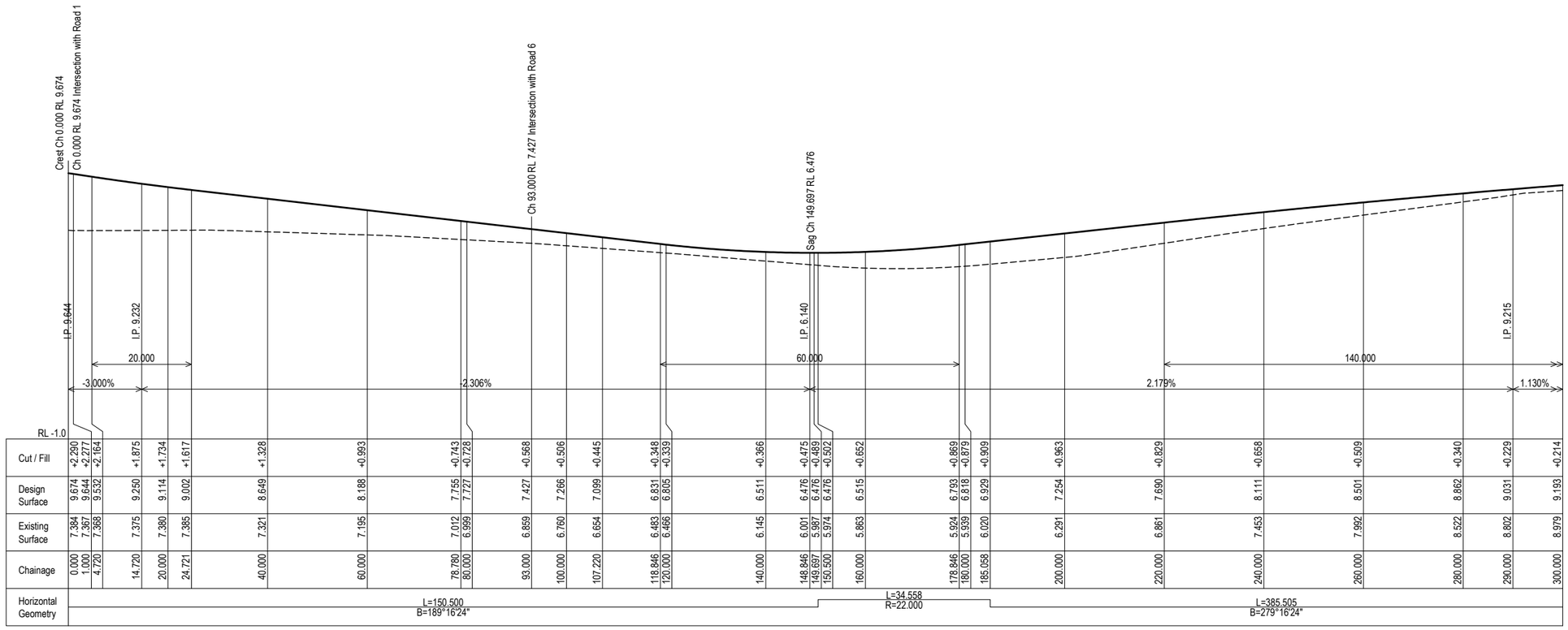
Drawing Title

Longitudinal Section
Road 1

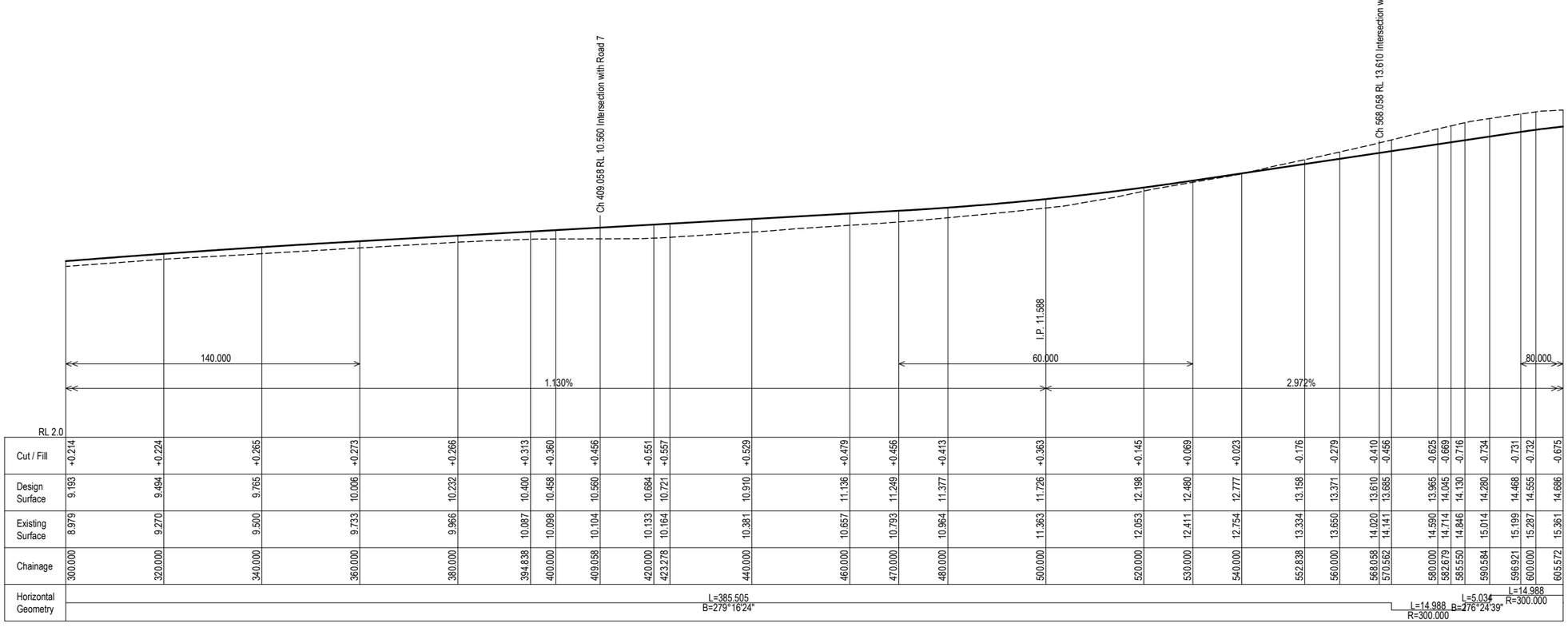
3204-1133

Drawing Number *Revision*

3204/C141 C



Road 2 Ch.0.0 - 300.000



Road 2 Ch.300.000 - 605.572

DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	App.	Chk.
C	Revised submission	22/11/2023	JLC	MVE	MVE
B	Drawing Schedule updated	13/04/2023	JLC	MVE	MVE
A	Updated to address Council's AIR	24/05/2022	JLC	MVE	MVE

Amendments

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Project Title

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Client

MPD Investments Pty Ltd

Designed	JLC	Drawn	JLC	Checked	MVE
Approved	MVE	Date	8/10/2021		
XREFs					
Scale					
Horizontal	metres	0	5	10	15	20	25
Vertical		0	1	2	3	4	5

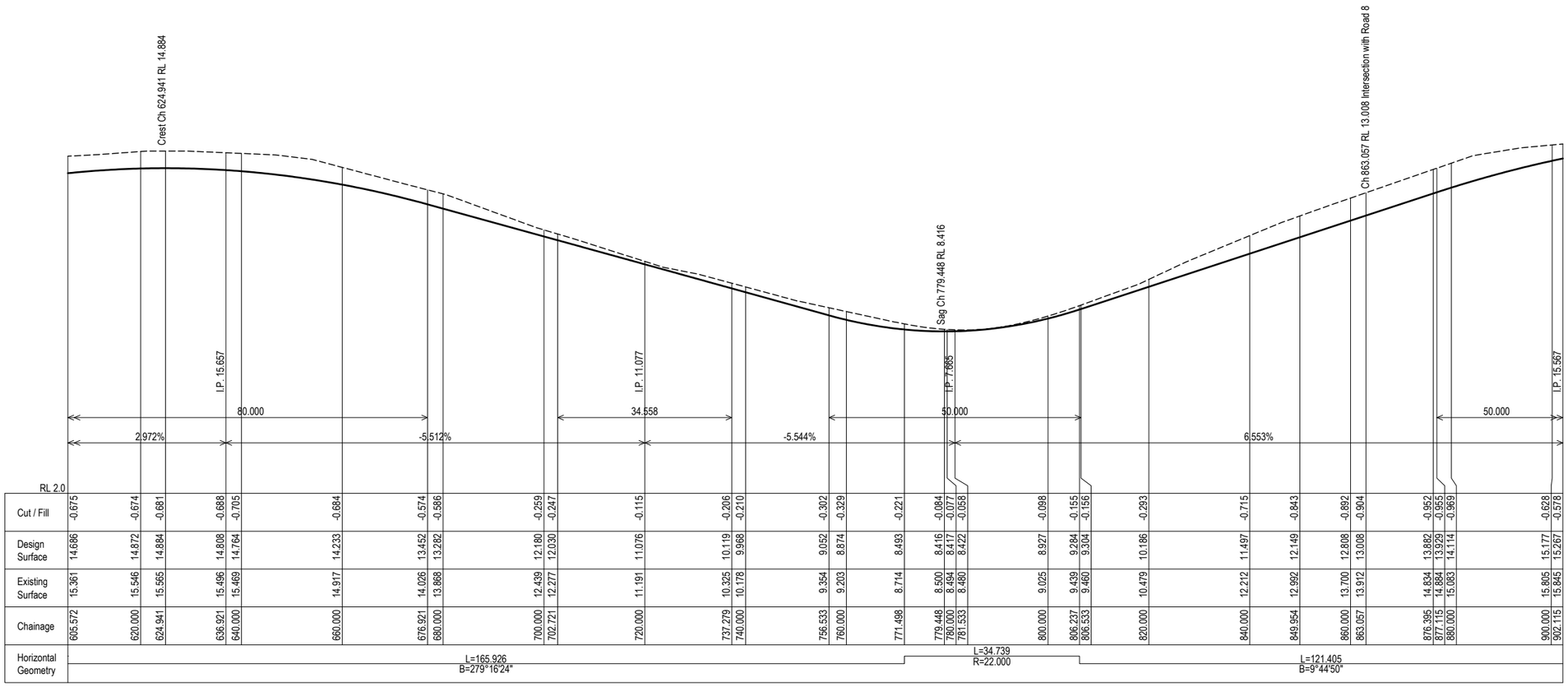
Drawing Title

Longitudinal Section
Road 2 - Sheet 1 of 2

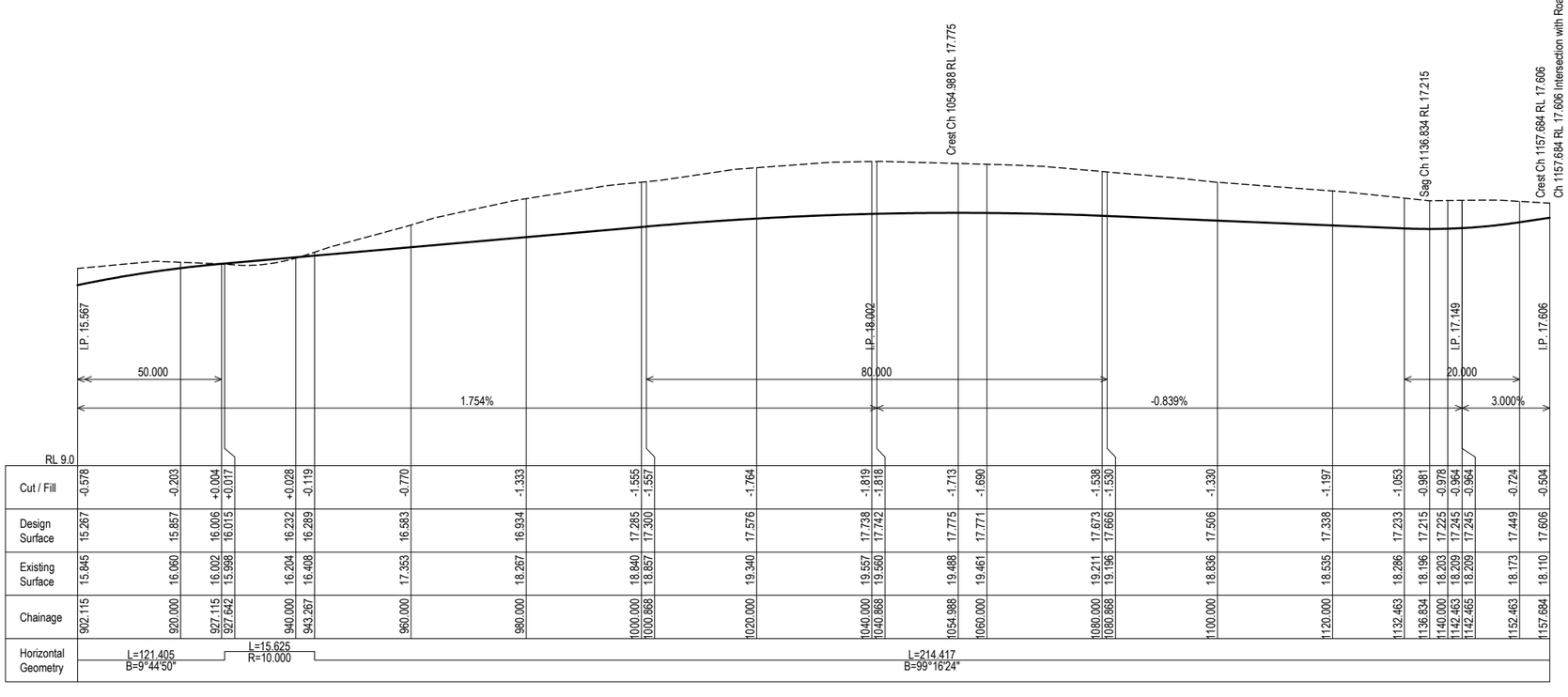
3204-1133

Drawing Number *Revision*

3204/C142 C



Road 2 Ch.605.572 - 902.115



Road 2 Ch.902.115 - 1157.684 (end)

DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	App.	Chk.
C	Revised submission	22/11/2023	JLC	MVE	MVE
B	Drawing Schedule updated	13/04/2023	JLC	MVE	MVE
A	Updated to address Council's AIR	24/05/2022	JLC	MVE	MVE

Amendments

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Client

MPD Investments Pty Ltd

Designed	JLC	Drawn	JLC	Checked	MVE
Approved	MVE	Date	8/10/2021		

XREFs

Scale

Horizontal metres 0 5 10 15 20 25

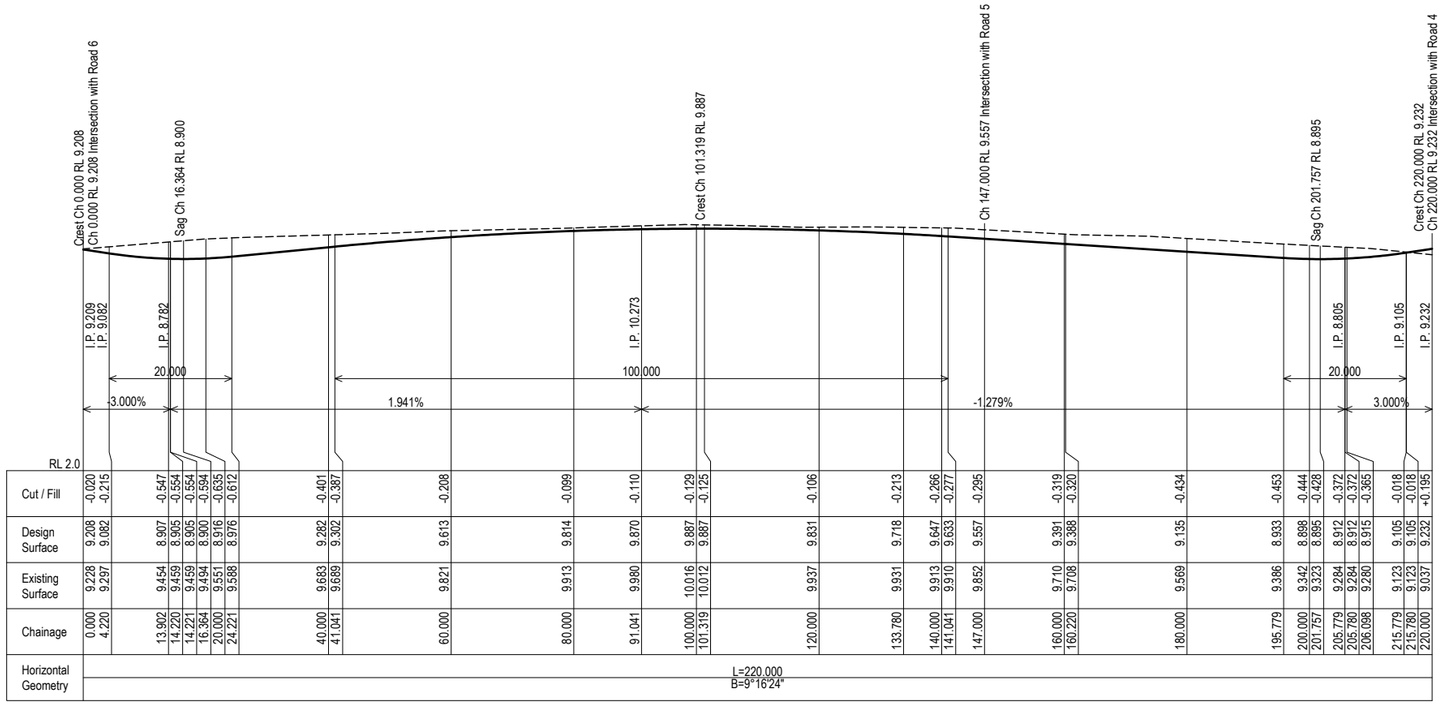
Vertical 0 1 2 3 4 5

Drawing Title

Longitudinal Section
Road 2 - Sheet 2 of 2

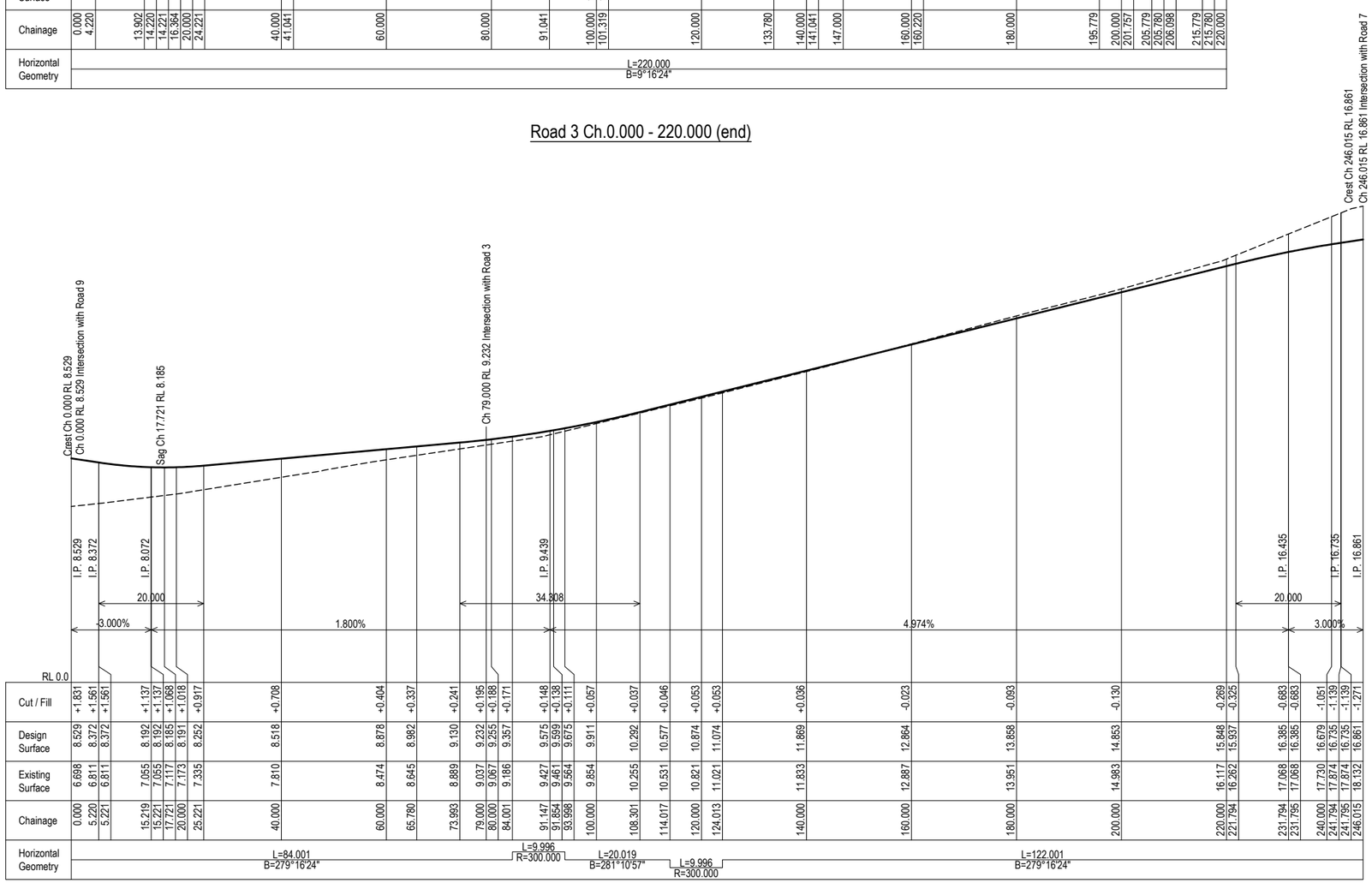
3204-1133

Drawing Number 3204/C143 *Revision* C



Chainage	Existing Surface	Design Surface	Cut / Fill
0.000	9.228	9.208	-0.020
4.220	9.297	9.082	-0.215
13.902	9.454	8.907	-0.547
14.220	9.459	8.905	-0.554
14.221	9.459	8.905	-0.554
16.364	9.494	8.900	-0.594
20.000	9.551	8.916	-0.635
24.221	9.588	8.976	-0.612
40.000	9.683	9.282	-0.401
41.041	9.689	9.302	-0.387
60.000	9.821	9.613	-0.208
80.000	9.913	9.814	-0.099
91.041	9.980	9.870	-0.110
100.000	10.016	9.887	-0.129
101.319	10.012	9.887	-0.125
120.000	9.937	9.831	-0.106
133.780	9.931	9.718	-0.213
140.000	9.813	9.647	-0.166
141.041	9.910	9.633	-0.277
147.000	9.852	9.557	-0.295
160.000	9.710	9.391	-0.319
160.220	9.708	9.388	-0.320
180.000	9.569	9.135	-0.434
195.779	9.386	8.933	-0.453
200.000	9.342	8.898	-0.444
201.757	9.323	8.895	-0.428
205.779	9.284	8.912	-0.372
205.780	9.284	8.912	-0.372
206.088	9.280	8.915	-0.365
215.779	9.123	9.105	-0.018
215.780	9.123	9.105	-0.018
220.000	9.037	9.232	-0.195

Road 3 Ch.0.000 - 220.000 (end)



Chainage	Existing Surface	Design Surface	Cut / Fill
0.000	6.698	8.529	+1.831
5.220	6.811	8.372	+1.561
5.221	6.811	8.372	+1.561
15.219	7.055	8.192	+1.137
15.221	7.055	8.192	+1.137
17.721	7.117	8.185	+1.068
20.000	7.173	8.191	+1.018
25.221	7.335	8.252	+0.917
40.000	7.810	8.518	+0.708
60.000	8.474	8.878	+0.404
65.780	8.645	8.982	+0.337
73.993	8.889	9.130	+0.241
79.000	9.037	9.232	+0.195
80.000	9.067	9.255	+0.188
84.001	9.186	9.357	+0.171
91.147	9.427	9.575	+0.148
91.854	9.461	9.599	+0.138
93.998	9.564	9.675	+0.111
100.000	9.854	9.911	+0.057
108.301	10.255	10.292	+0.037
114.017	10.531	10.577	+0.046
120.000	10.821	10.874	+0.053
124.013	11.021	11.074	+0.053
140.000	11.833	11.869	+0.036
160.000	12.887	12.864	-0.023
180.000	13.951	13.858	-0.093
200.000	14.983	14.853	-0.130
220.000	16.117	15.848	-0.269
221.794	16.262	15.937	-0.325
231.794	17.068	16.385	-0.683
231.795	17.068	16.385	-0.683
240.000	17.730	16.679	-1.051
241.794	17.874	16.735	-1.139
241.795	17.874	16.735	-1.139
246.015	18.132	16.861	-1.271

Road 4 Ch.0.000 - 246.015 (end)

DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	App.	Chk.
C	Revised submission	22/11/2023	JLC	MVE	MVE
B	Drawing Schedule updated	13/04/2023	JLC	MVE	MVE
A	Updated to address Council's AIR	24/05/2022	JLC	MVE	MVE

Amendments

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Project Title

The Village at James Creek

Client

MPD Investments Pty Ltd

Designed	JLC	Drawn	JLC	Checked	MVE
Approved	MVE	Date	8/10/2021		
XREFs					

Scale

Horizontal	metres	0	5	10	15	20	25
Vertical		0	1	2	3	4	5

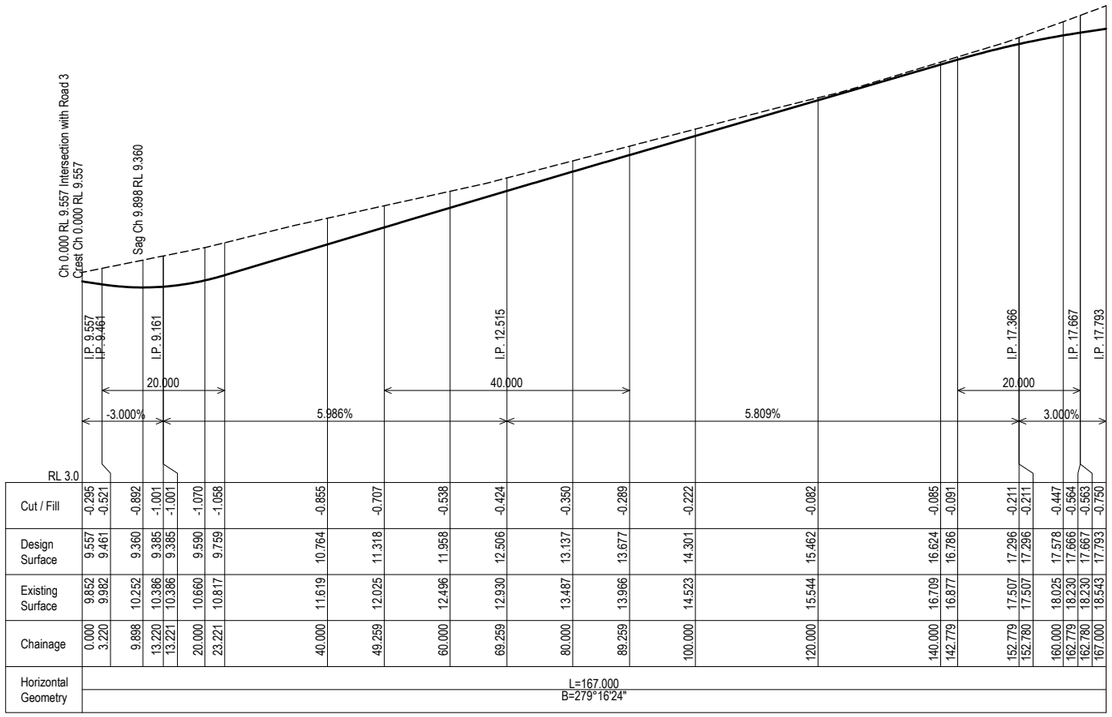
Drawing Title

Longitudinal Section
Road 3 and 4

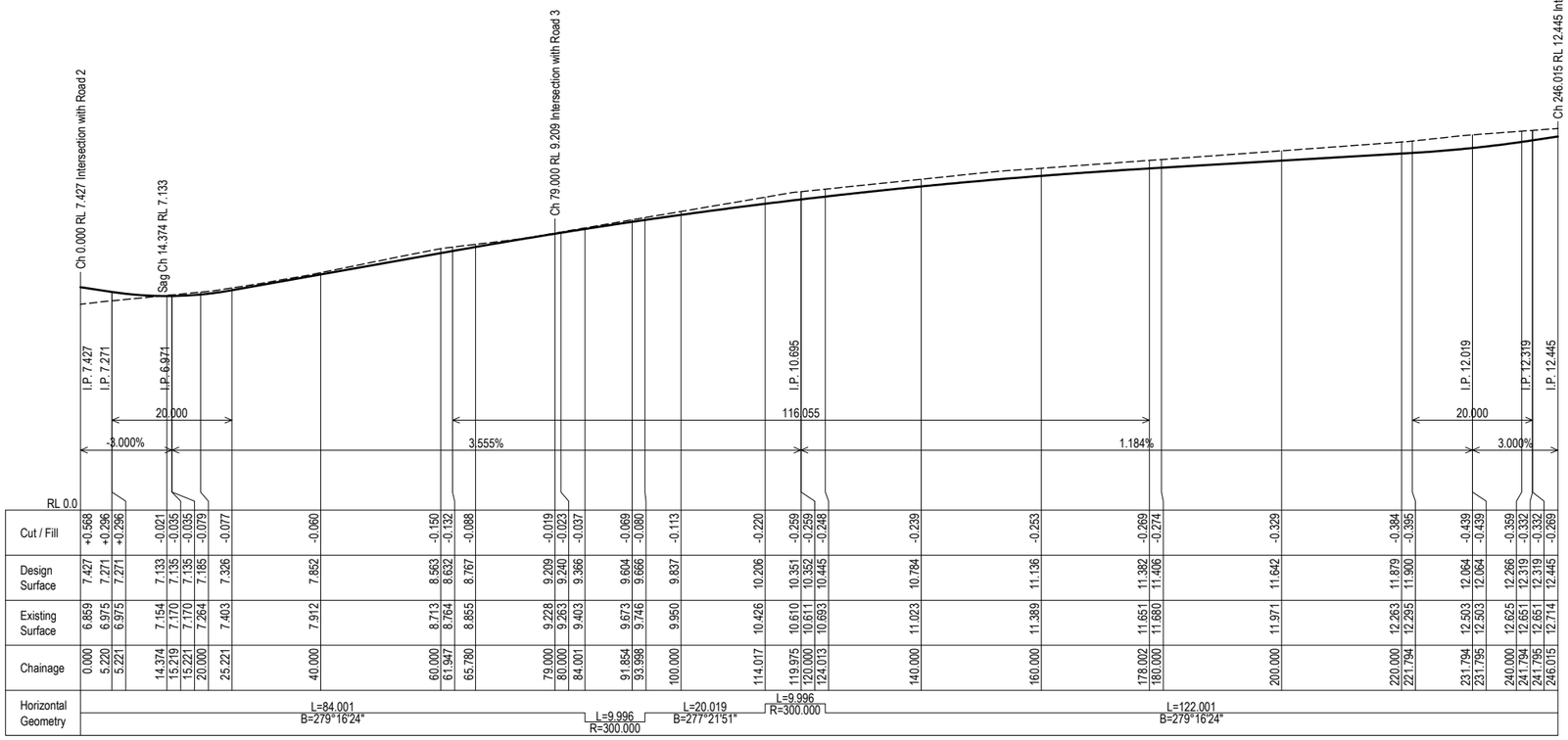
3204-1133

Drawing Number *Revision*

3204/C144 C



Road 5 Ch.0.000 - 167.000 (end)



Road 6 Ch.0.000 - 246.015 (end)

DEVELOPMENT APPLICATION

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C	Revised submission	22/11/2023	JLC	MVE	MVE
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Project Title

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Client

MPD Investments Pty Ltd

Designed	JLC	Drawn	JLC	Checked	MVE
Approved	MVE	Date	8/10/2021		

XREFs

Scale

Horizontal metres 0 5 10 15 20 25

Vertical 0 1 2 3 4 5

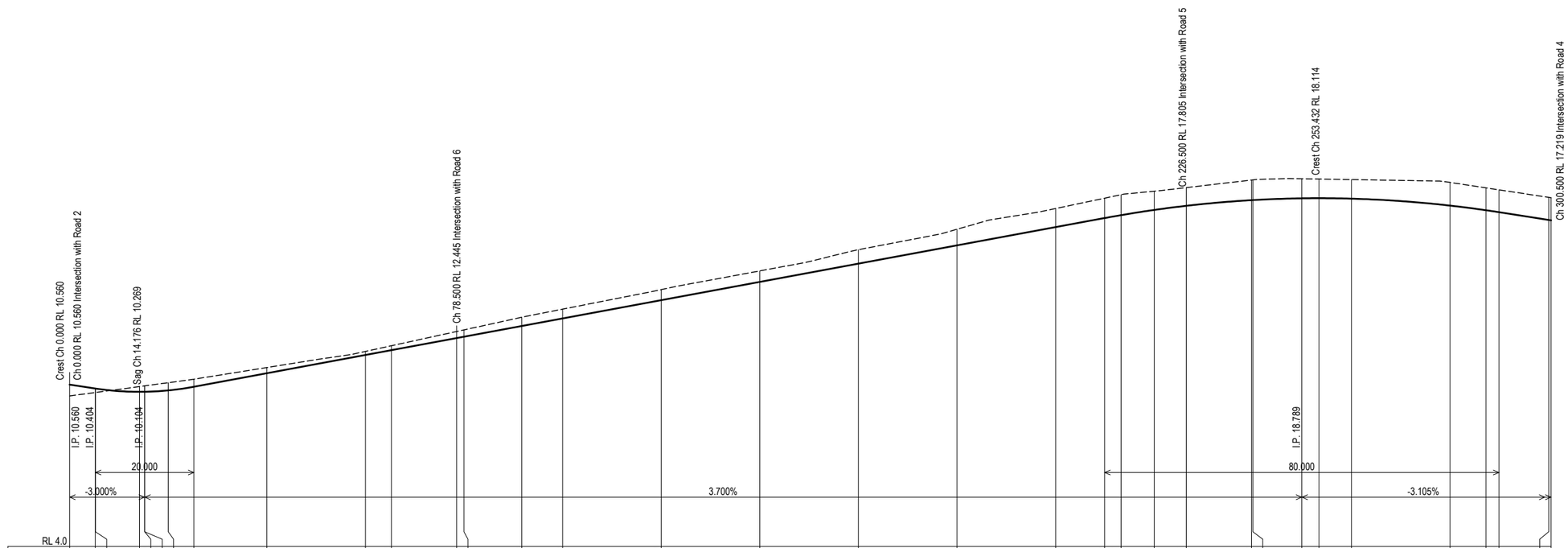
Drawing Title

Longitudinal Section
Road 5 and 6

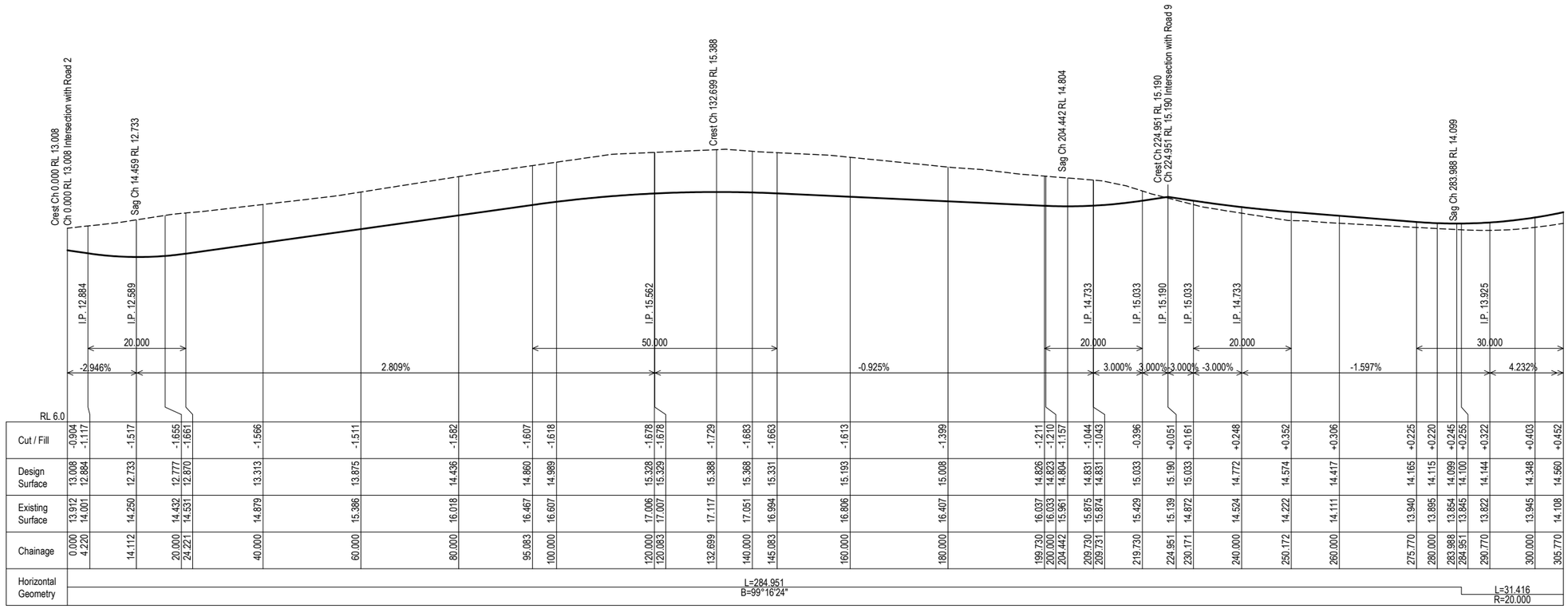
3204-1133

Drawing Number *Revision*

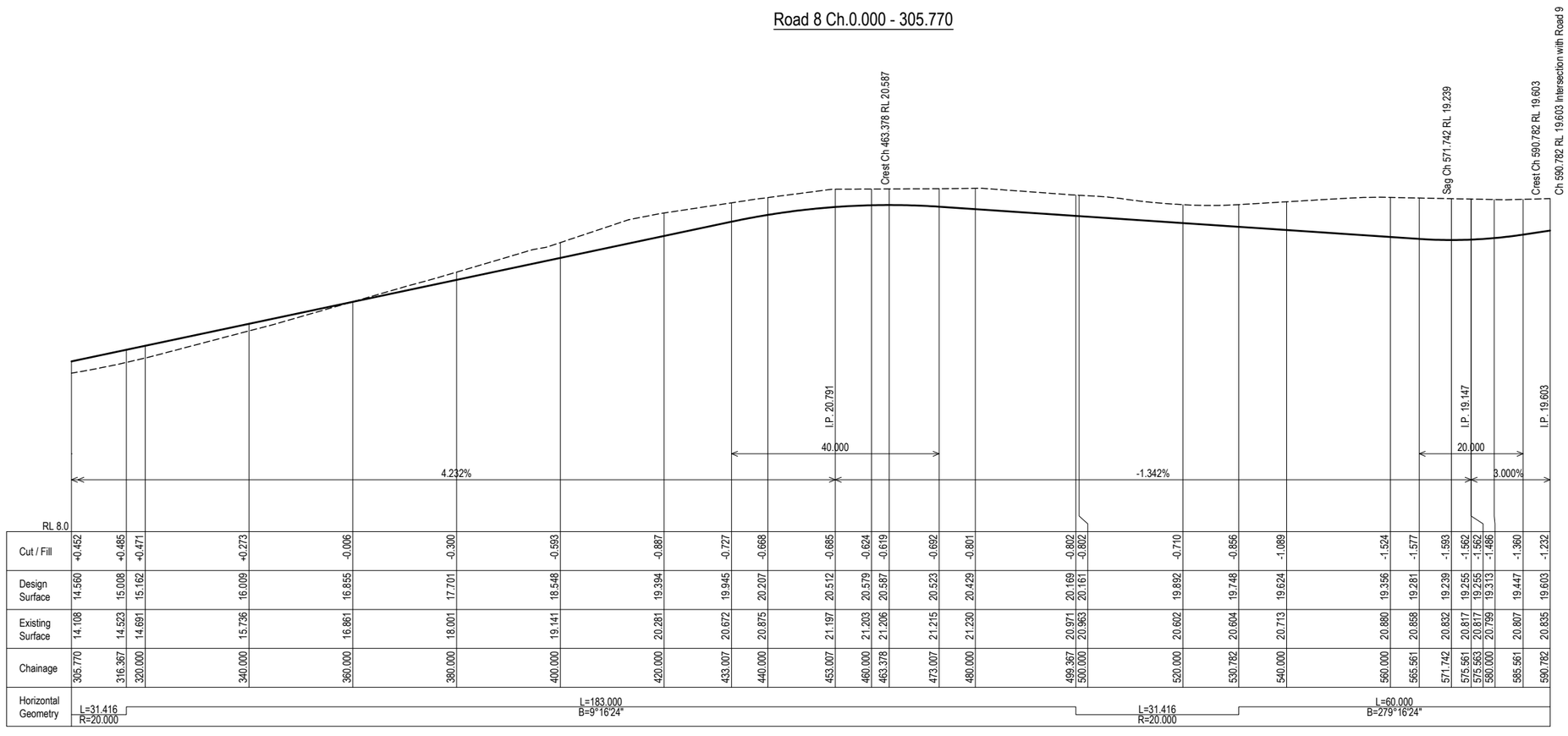
3204/C145 C


Crest Ch 0.000 RL 10.560
Ch 0.000 RL 10.560 Intersection with Road 2
Sag Ch 14.176 RL 10.269
Ch 78.500 RL 12.445 Intersection with Road 6
Ch 226.500 RL 17.805 Intersection with Road 5
Crest Ch 253.432 RL 18.114
Ch 300.500 RL 17.219 Intersection with Road 4
I.P. 10.560
I.P. 10.404
I.P. 10.104
I.P. 18.789
20.000
80.000
-3.000%
3.700%
-3.105%
RL 4.0

| | | |



Road 8 Ch.0.000 - 305.770



Road 8 Ch.305.770 - 590.782 (end)

DEVELOPMENT APPLICATION

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C	Revised submission	22/11/2023	JLC	MVE	MVE
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Project Title

The Village at James Creek

Client

MPD Investments Pty Ltd

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Approved	MVE	Date	8/10/2021		
XREFs					

Scale

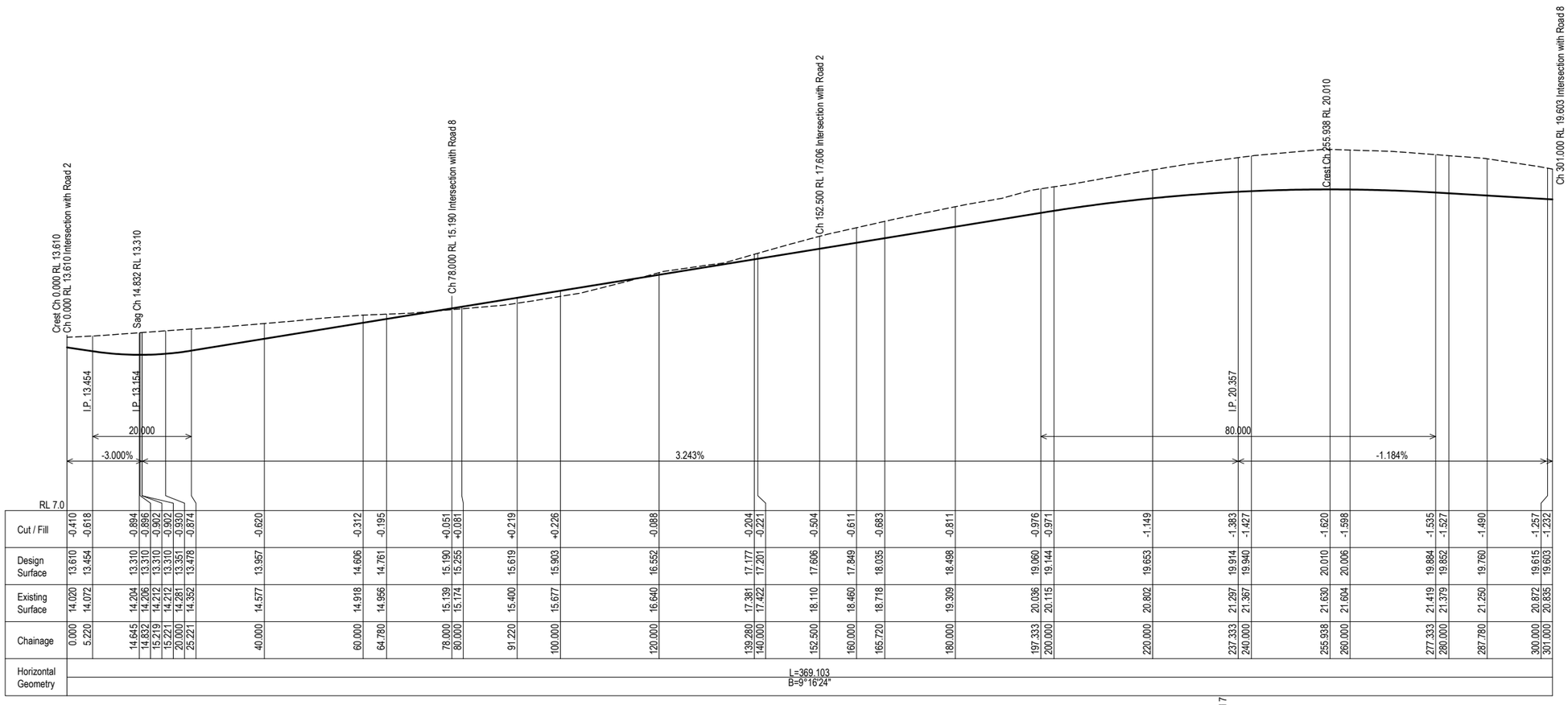
Horizontal	metres	0	5	10	15	20	25
Vertical		0	1	2	3	4	5

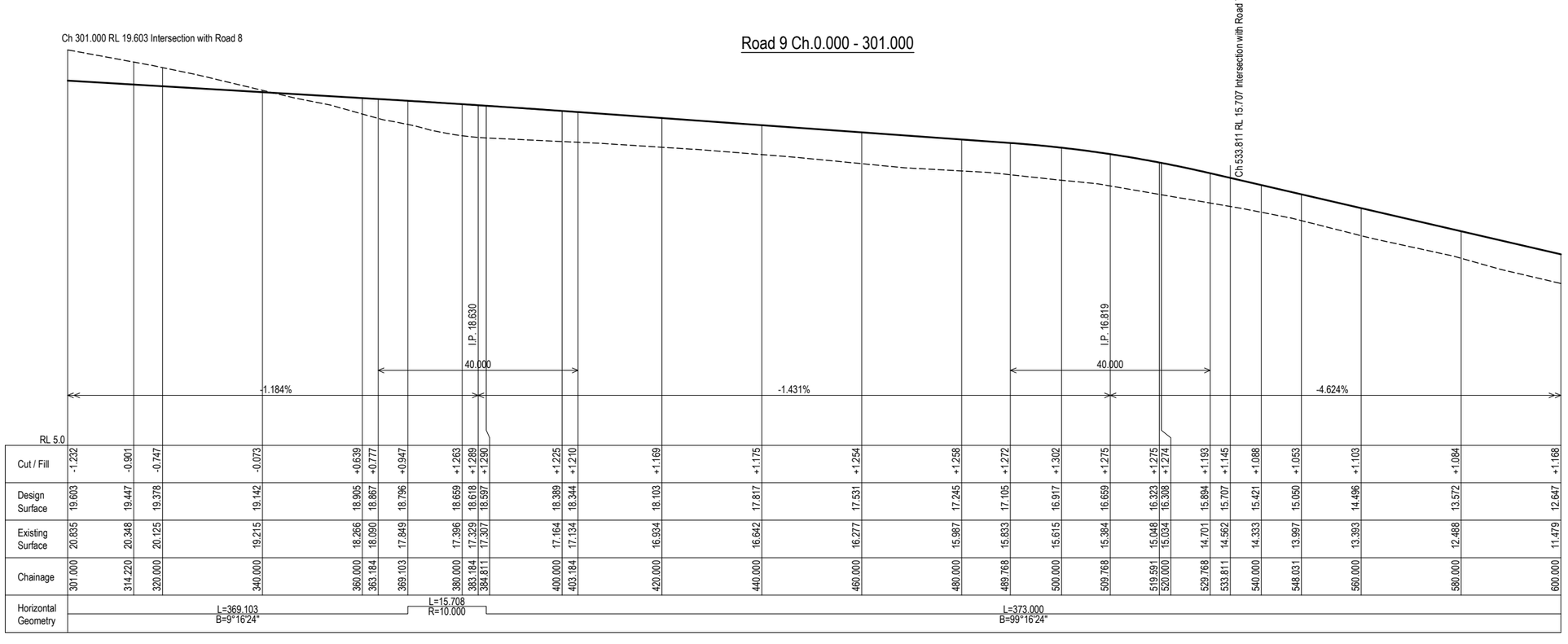
Drawing Title

Longitudinal Section
Road 8

3204-1133

Drawing Number 3204/C147 *Revision* C





Road 9 Ch.301.000 - 600.000

DEVELOPMENT APPLICATION

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C	Revised submission	22/11/2023	JLC	MVE	MVE
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Project Title

The Village at James Creek

Client

MPD Investments Pty Ltd

Designed	JLC	Drawn JLC	Checked MVE
Approved	MVE	Date 8/10/2021	
XREFs			

Scale

Horizontal metres 0 5 10 15 20 25

Vertical 0 1 2 3 4 5

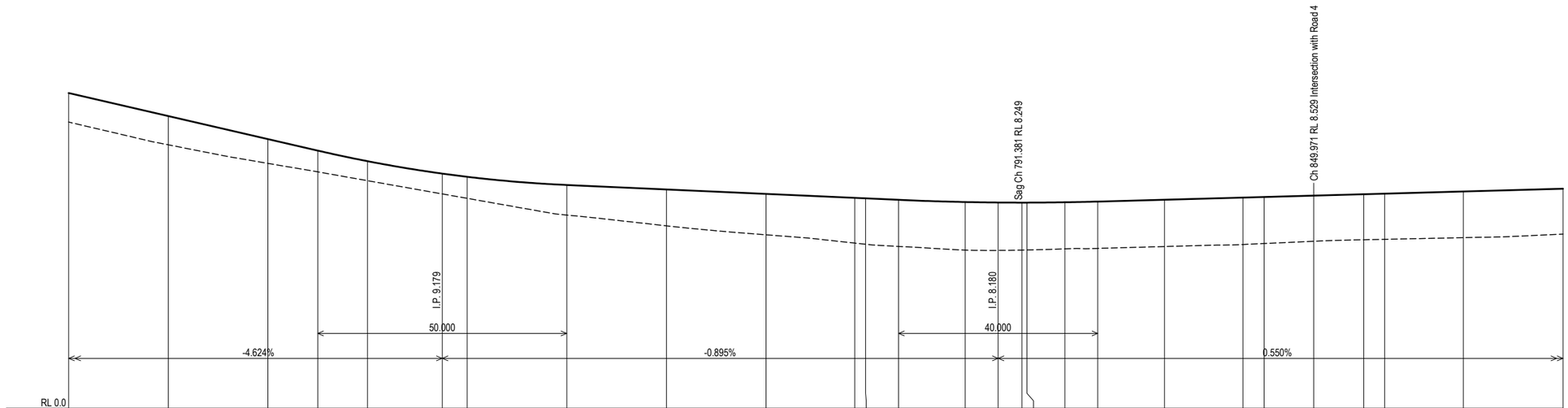
Drawing Title

Longitudinal Section
Road 9 - Sheet 1 of 2

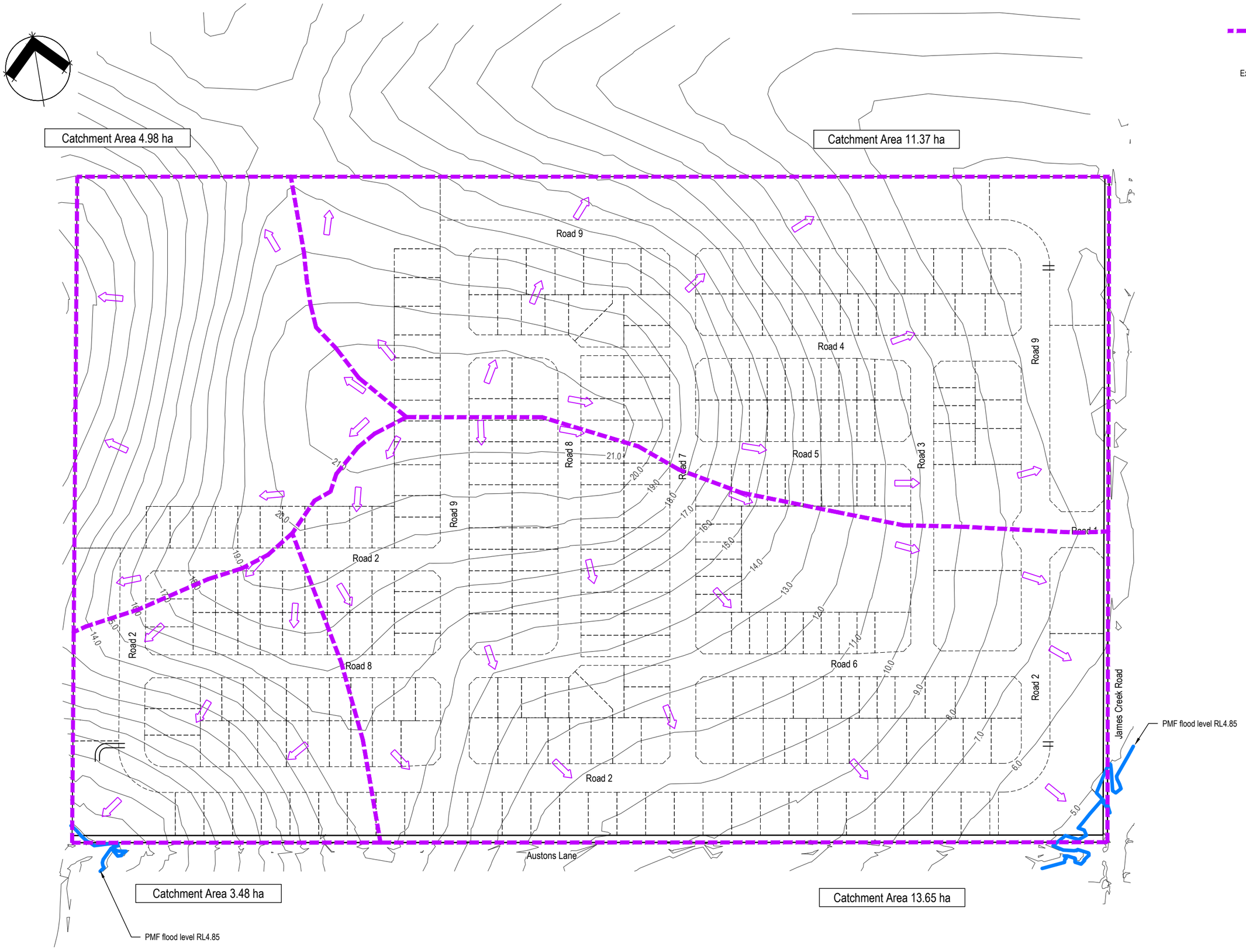
3204-1133

Drawing Number 3204/C148

Revision C


Sag Ch 791.381 RL 8.249
Ch 849.971 RL 8.529 Intersection with Road 4
I.P. 9.179
I.P. 8.180
50.000
40.000
-4.624%
-0.895%
0.550%
RL 0.0

| | | |



LEGEND (Existing)

Crest Line

Overland flow arrow

Existing contours shown at 1.0 m intervals

Note:

1. Proposed lot layout has been shown for comparison to the existing catchment.

DEVELOPMENT APPLICATION

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Approved	MVE	Date	8/10/2021		
XREFs					

Scale

metres 0 12.5 25 37.5 50 62.5

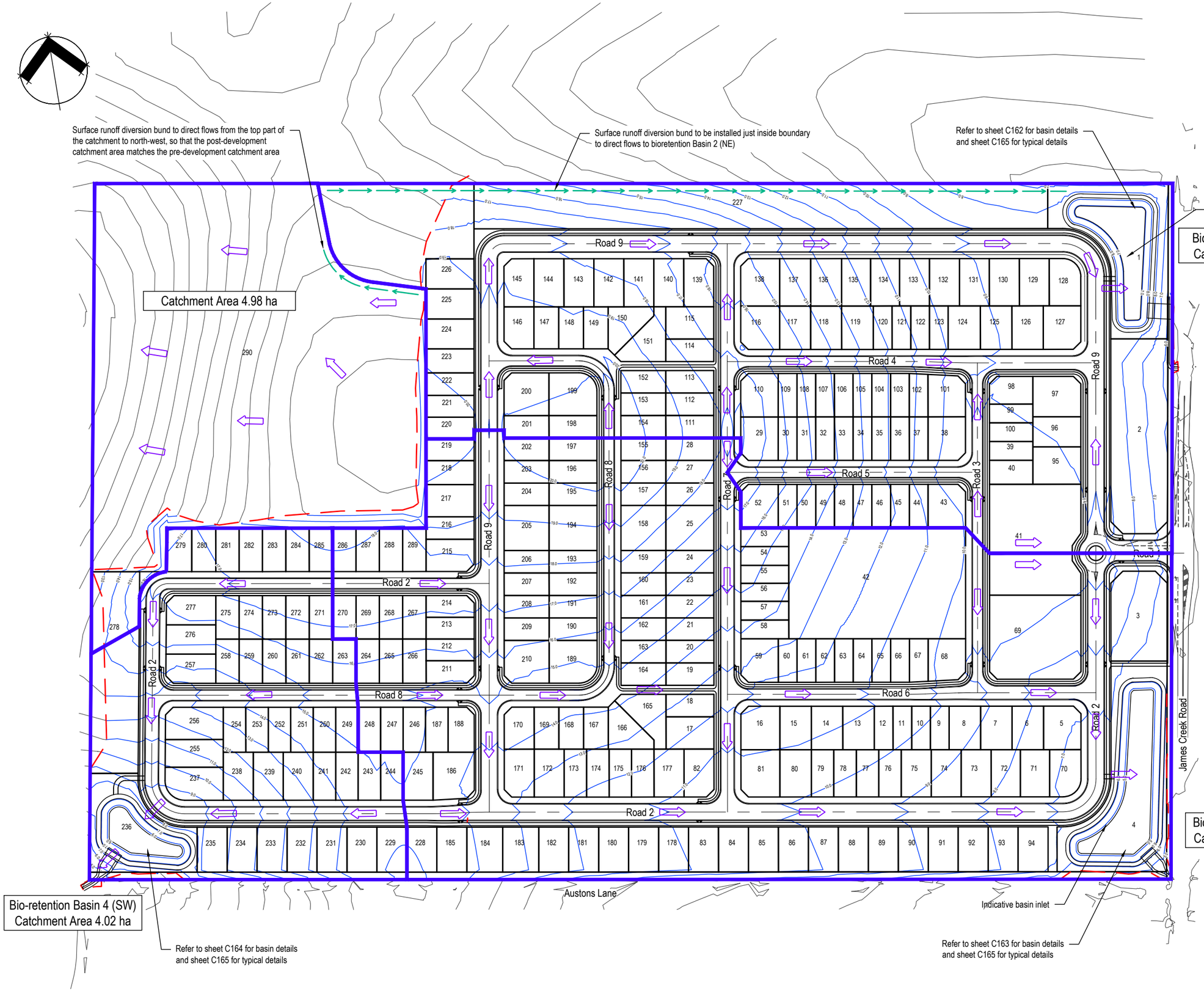
Drawing Title

Existing Stormwater Catchment and Overland Flow

3204-1134

Drawing Number *Revision*

3204/C160 C



Notes:

1. Stormwater pits and pipes not shown as locations will be determined as part of detailed design.
2. Stage boundaries are extent of works unless shown otherwise (refer to Legend).

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XREFs					

Scale

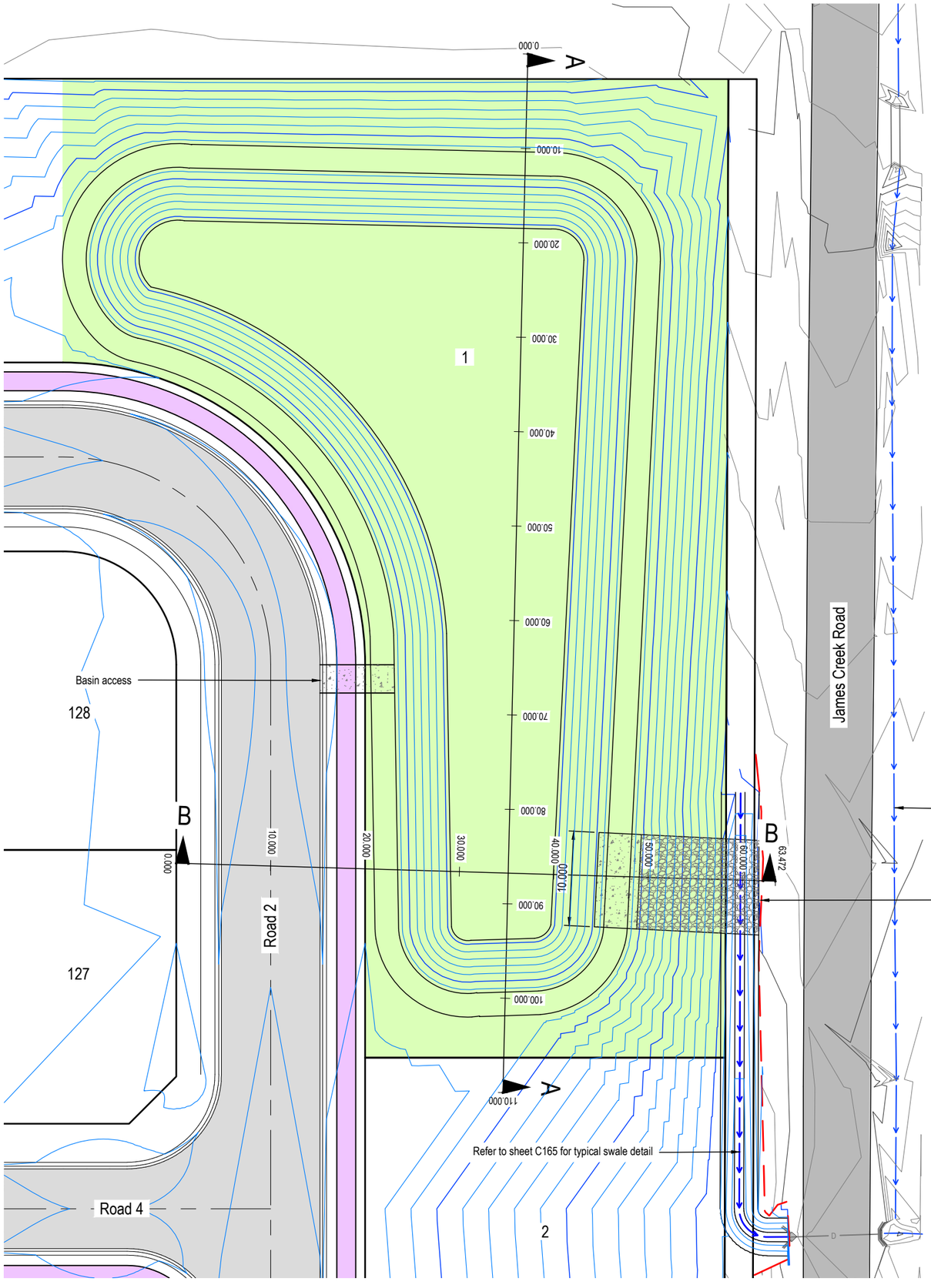
metres 0 12.5 25 37.5 50 62.5

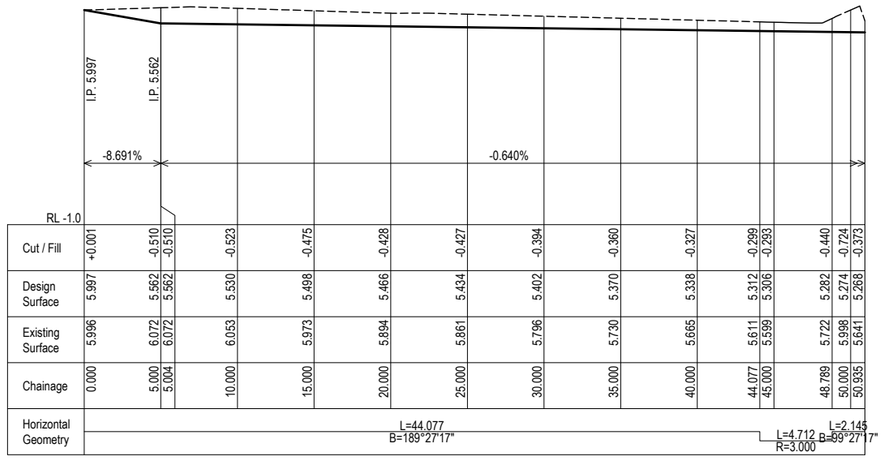
Drawing Title

Stormwater Design Layout

3204-1134

Drawing Number 3204/C161 *Revision* C

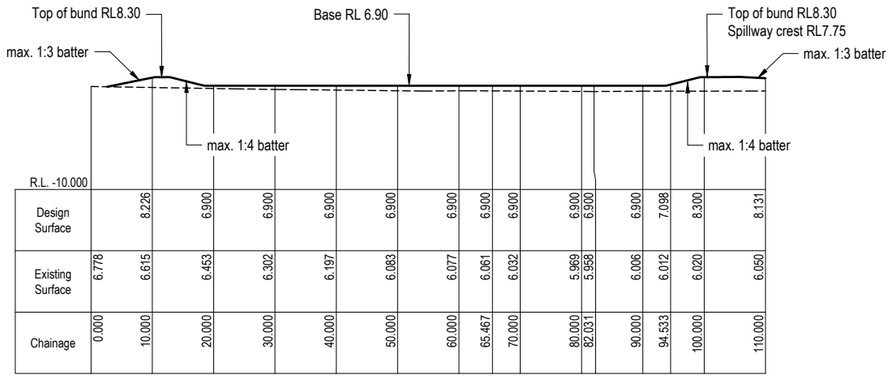




RL -1.0

Cut / Fill	+0.001	-0.510	-0.510	-0.523	-0.475	-0.428	-0.427	-0.394	-0.360	-0.327	-0.299	-0.293	-0.440	-0.724	-0.373
Design Surface	5.997	5.562	5.562	5.530	5.498	5.466	5.434	5.402	5.370	5.338	5.312	5.306	5.282	5.274	5.269
Existing Surface	5.996	6.072	6.072	6.053	5.973	5.894	5.861	5.796	5.730	5.665	5.611	5.599	5.722	5.998	5.641
Chainage	0.000	5.000	5.004	10.000	15.000	20.000	25.000	30.000	35.000	40.000	44.077	45.000	48.789	50.000	50.935
Horizontal Geometry		L=44.077 B=189°27'17"										L=4.712 R=3.000	L=2.145 B=99°27'17"		

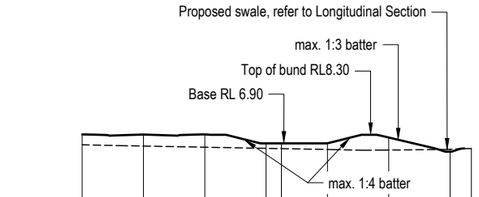
Longitudinal Section - Swale
Scale A



R.L. -10.000

Design Surface		8.226	6.900	6.900	6.900	6.900	6.900	6.900	6.900	6.900	6.900	6.900	7.098	8.300	8.131		
Existing Surface	6.778	6.615	6.453	6.302	6.197	6.083	6.077	6.061	6.032	5.869	5.558	6.006	6.012	6.020	6.050		
Chainage	0.000	10.000	20.000	30.000	40.000	50.000	60.000	65.467	70.000	80.000	82.031	90.000	94.533	100.000	110.000		

Section A-A
Scale A



R.L. -10.000

Design Surface	8.353	8.329	8.356	6.900	6.900	6.912	7.843	5.535
Existing Surface	6.658	6.451	6.267	6.082	6.036	5.888	5.806	5.933	6.041
Chainage	0.000	10.000	20.000	30.000	32.497	40.000	50.000	60.000	63.472

Section B-B
Scale A

LEGEND
- Existing road
- Road
- Path
- Basin / drainage reserve
- Rock scour protection
- Concrete

Existing and design contours are at 0.2m intervals

DEVELOPMENT APPLICATION

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Amendments

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Project Title
The Village at James Creek

Client
MPD Investments Pty Ltd

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Approved	MVE	Date	8/10/2021		
XREFs					

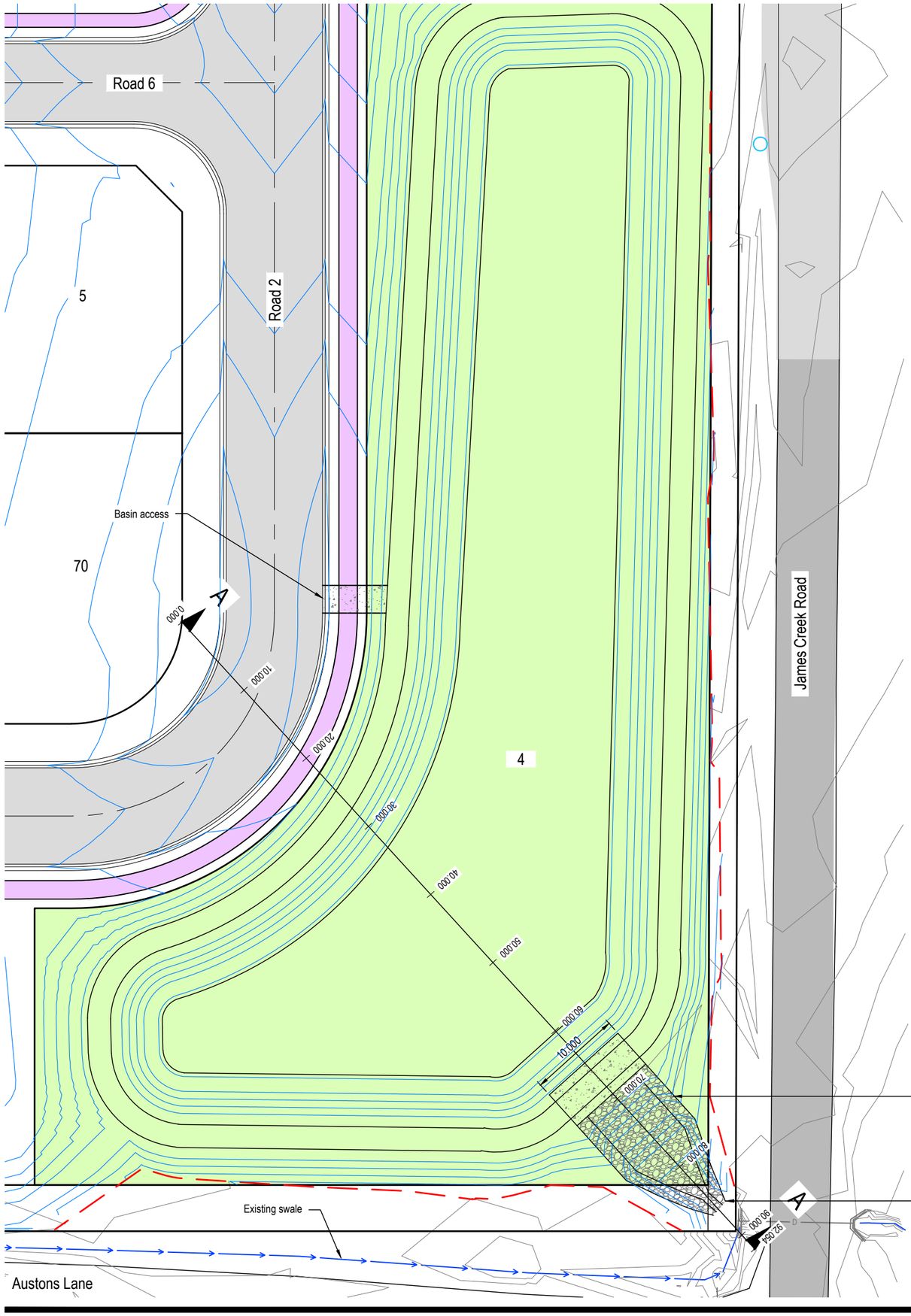
Scale

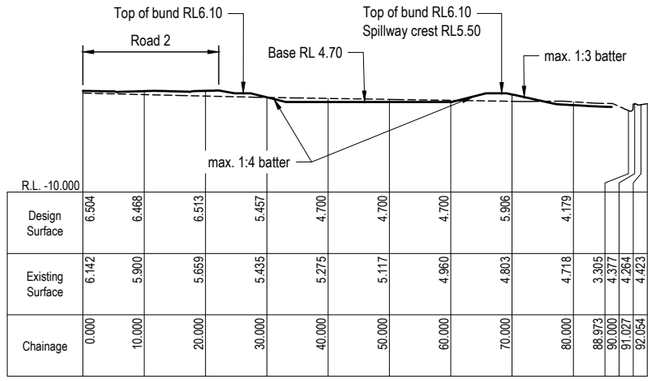
A	metres	0	5	10	15	20	25	
Layout		0	2.5	5	7.5	10	12.5	

Drawing Title
North-East Basin (2) Layout and Details

3204-1134

Drawing Number 3204/C162 *Revision* C





Design Surface	6.504	6.468	6.513	5.457	4.700	4.700	4.700	5.906	4.179			
Existing Surface	6.142	5.900	5.659	5.435	5.275	5.117	4.960	4.803	4.718	3.305	4.377	4.264	4.423
Chainage	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	88.973	90.000	91.027	92.054

Section A-A
Scale A

LEGEND

- Existing road
- Road
- Path
- Basin / drainage reserve
- Rock scour protection
- Concrete

Existing and design contours are at 0.2m intervals

DEVELOPMENT APPLICATION

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Client

MPD Investments Pty Ltd

Designed	JLC	Drawn	JLC	Checked	MVE
Approved	MVE	Date	8/10/2021		
XREFs					

Scale

A metres 0 5 10 15 20 25

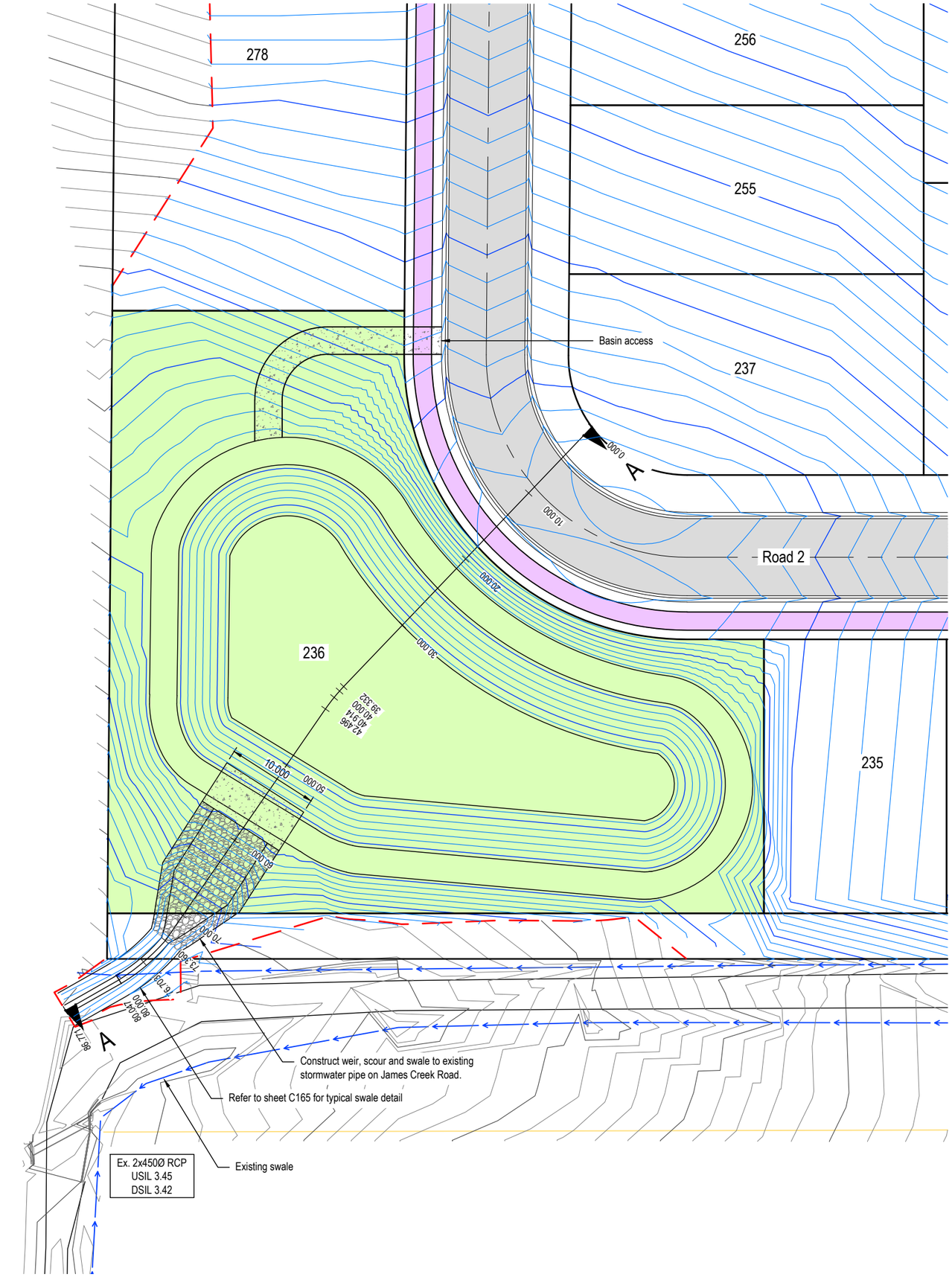
Layout 0 2.5 5 7.5 10 12.5

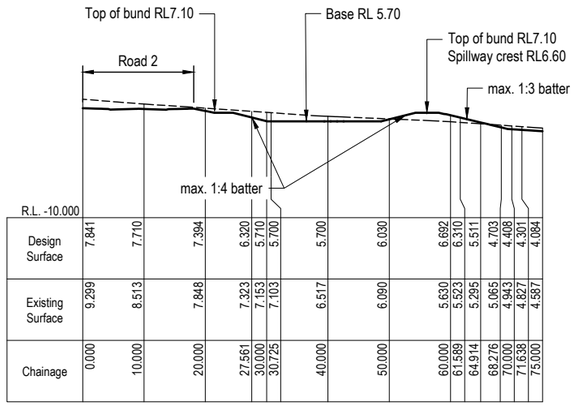
Drawing Title

South-East Basin (3)
Layout and Details

3204-1134

Drawing Number 3204/C163 *Revision* C





Design Surface	7.841	7.710	7.394	6.320	5.710	5.700	5.700	6.030	6.692	6.310	5.511	4.703	4.408	4.301	4.084
Existing Surface	9.299	8.513	7.848	7.323	7.153	7.103	6.517	6.090	5.630	5.523	5.295	5.065	4.943	4.827	4.587
Chainage	0.000	10.000	20.000	27.561	30.000	30.725	40.000	50.000	60.000	61.589	64.914	68.276	70.000	71.638	75.000

LEGEND

- Existing road
- Road
- Path
- Basin / drainage reserve
- Rock scour protection
- Concrete

Existing and design contours are at 0.2m intervals

DEVELOPMENT APPLICATION

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Client

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Approved	MVE	Date	8/10/2021		
XREFs					

Scale

A metres 0 5 10 15 20 25

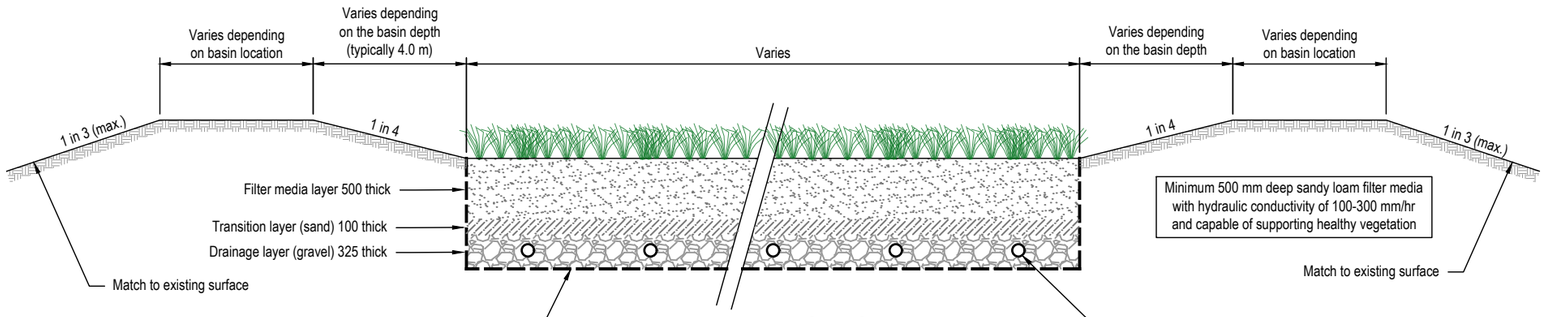
Layout 0 2.5 5 7.5 10 12.5

Drawing Title

South-West Basin (4)
Layout and Details

3204-1134

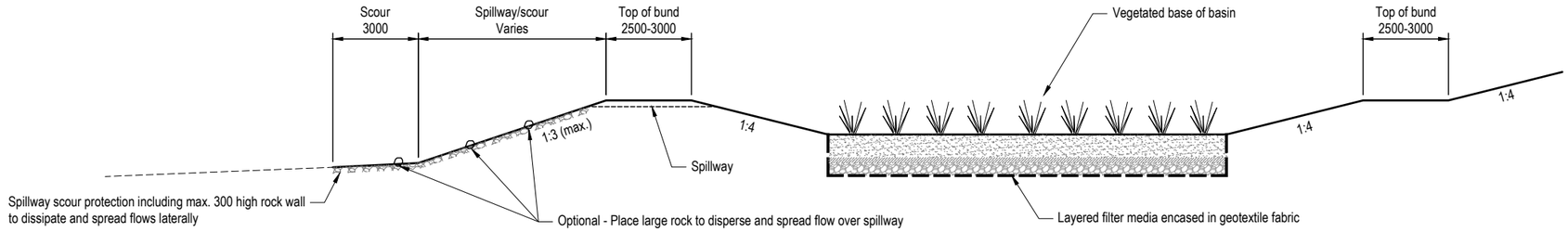
Drawing Number 3204/C164 *Revision* C



Typical Bio-retention Cross Section

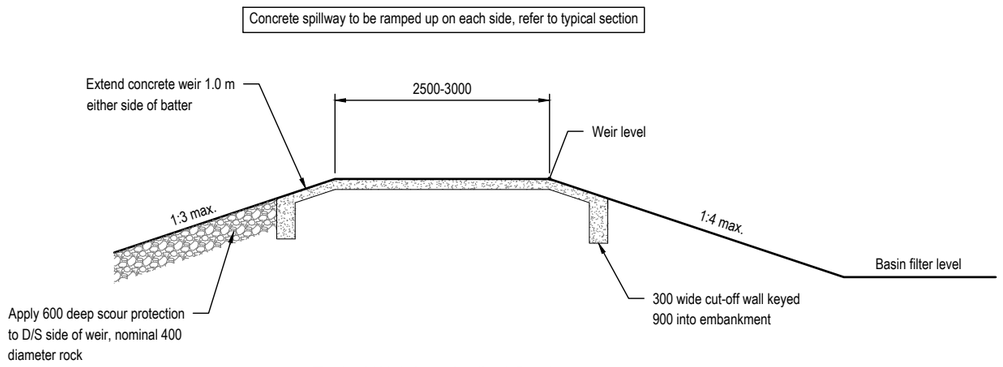
Not to Scale

Note: All dimensions in millimetres unless noted otherwise



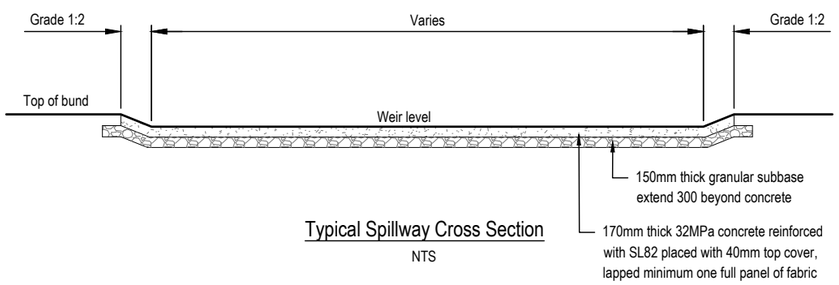
Typical Basin Section - Basins 2 (NE), 3 (SE) and 4 (SW)

NTS



Typical Weir Longitudinal Section

NTS



Typical Spillway Cross Section

NTS

DEVELOPMENT APPLICATION

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A	Updated to address Council's AIR	24/05/2022	JLC	MVE	MVE

Amendments

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Project Title

The Village at James Creek

Client

MPD Investments Pty Ltd

Designed	JLC	Drawn JLC	Checked MVE
Approved	MVE	Date 8/10/2021	
XREFs			
Scale	metres	Not To Scale	

Drawing Title

Typical Details

3204-1134

Drawing Number 3204/C165 *Revision* C

DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	App.	Chk.
C	Revised submission	22/11/2023	JLC	MVE	MVE
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XREFs					

Scale

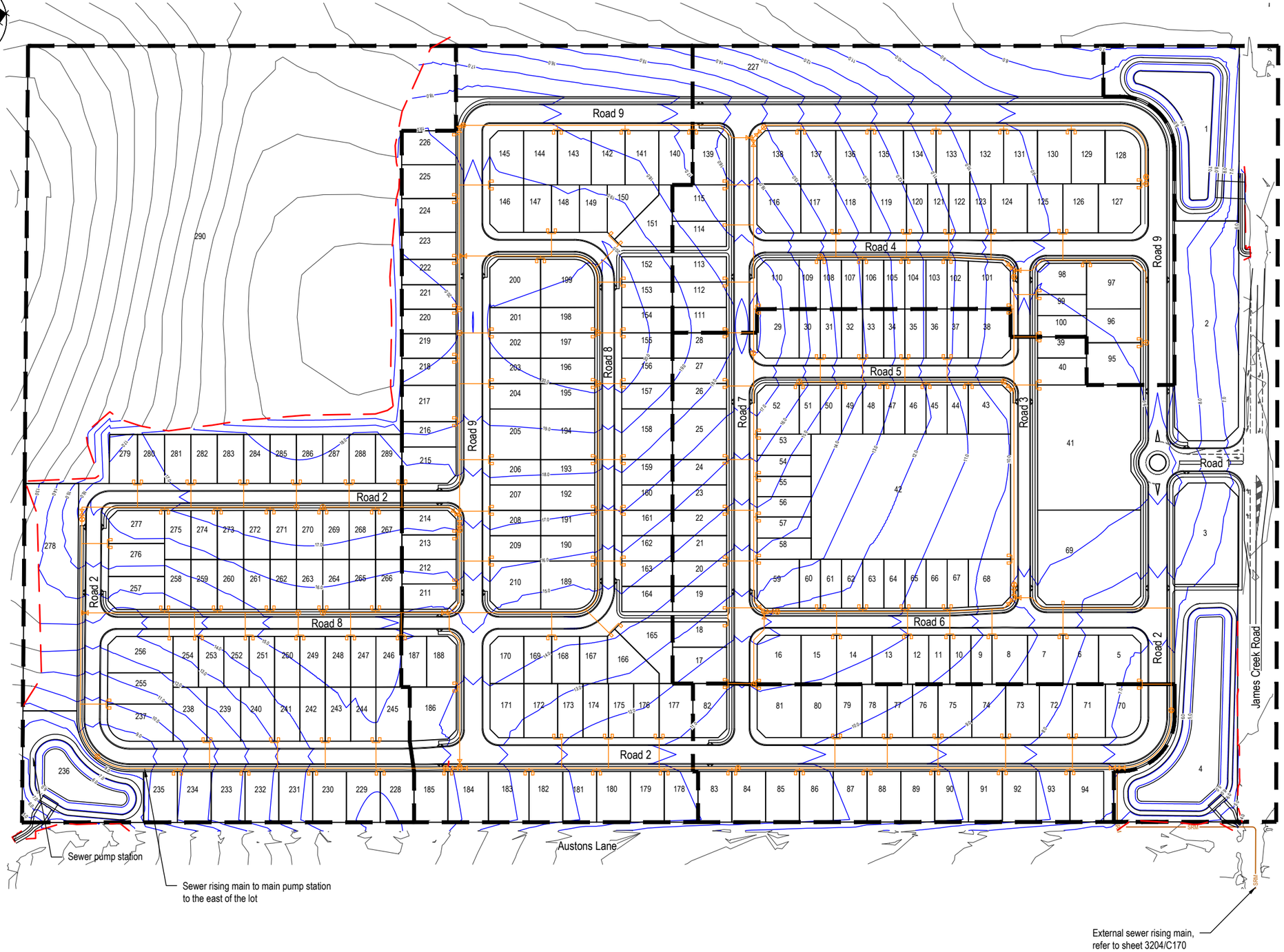
metres 0 50 100 150 200 250

Drawing Title

Sewerage Rising Main

3204-1135

Drawing Number 3204/C170 *Revision* C



LEGEND

- Stage boundary
- Extent of works
- S — Sewer pipe
- SRM — Sewer Rising Main
- Isolation / air relief valve
- Boundary kit / flushing point

Existing and design contours shown at 1.0m intervals

Note:
1. Developer to construct all sewer infrastructure from discharge point shown on sheet 3204/C170 up to and including the internal sewer network system.
2. Stage boundaries are extent of works unless shown otherwise (refer to Legend).

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XREFs			

Scale

metres 0 12.5 25 37.5 50 62.5

Drawing Title

Sewerage Layout
Low Pressure System

3204-1135

Drawing Number 3204/C171 *Revision* C

DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	App.	Chk.
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XREFs					

Scale

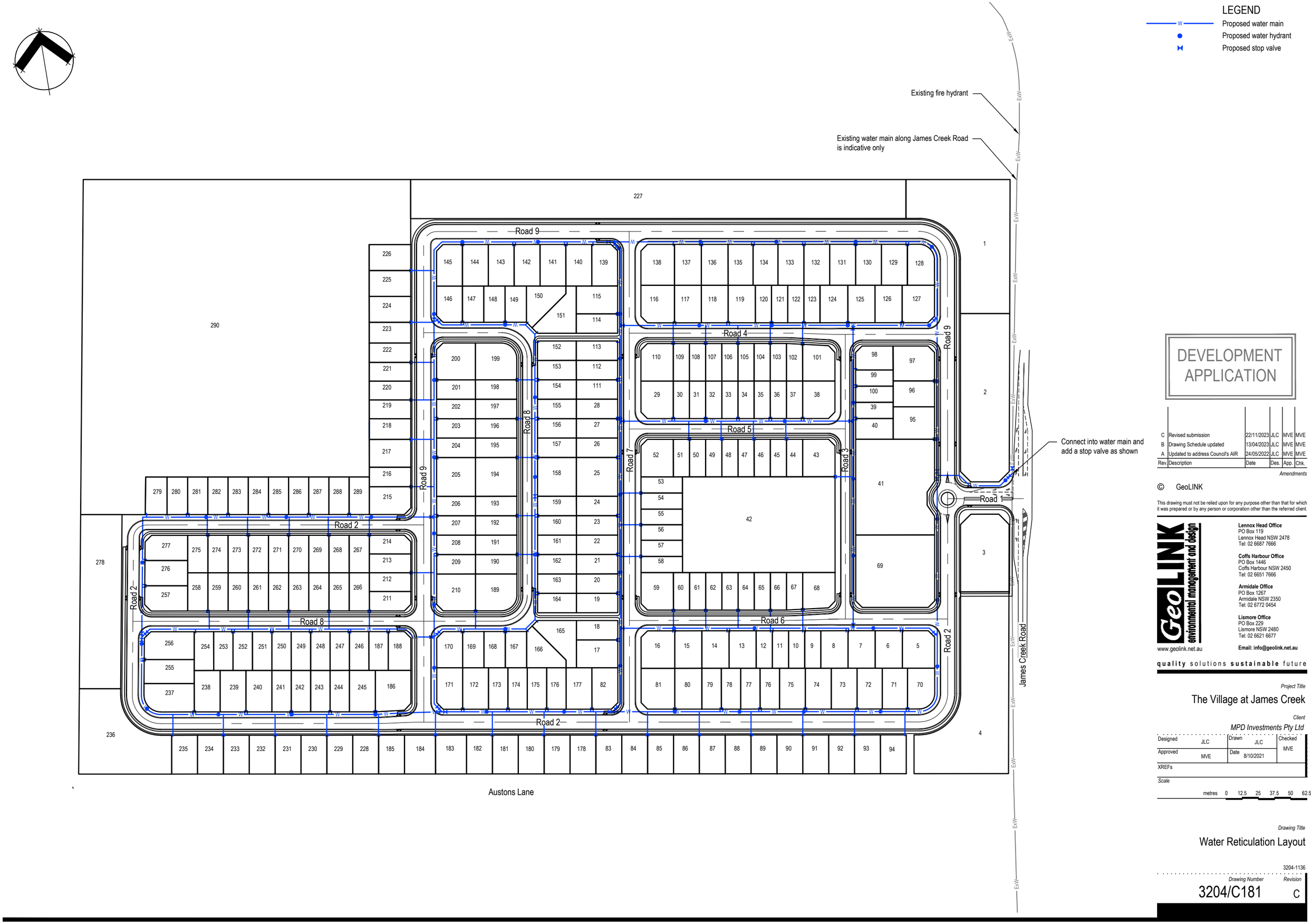
metres 0 20 40 60 80 100

Drawing Title

Water Overall Layout

3204-1136

Drawing Number 3204/C180 *Revision* C



DEVELOPMENT APPLICATION

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XREFs			

Scale

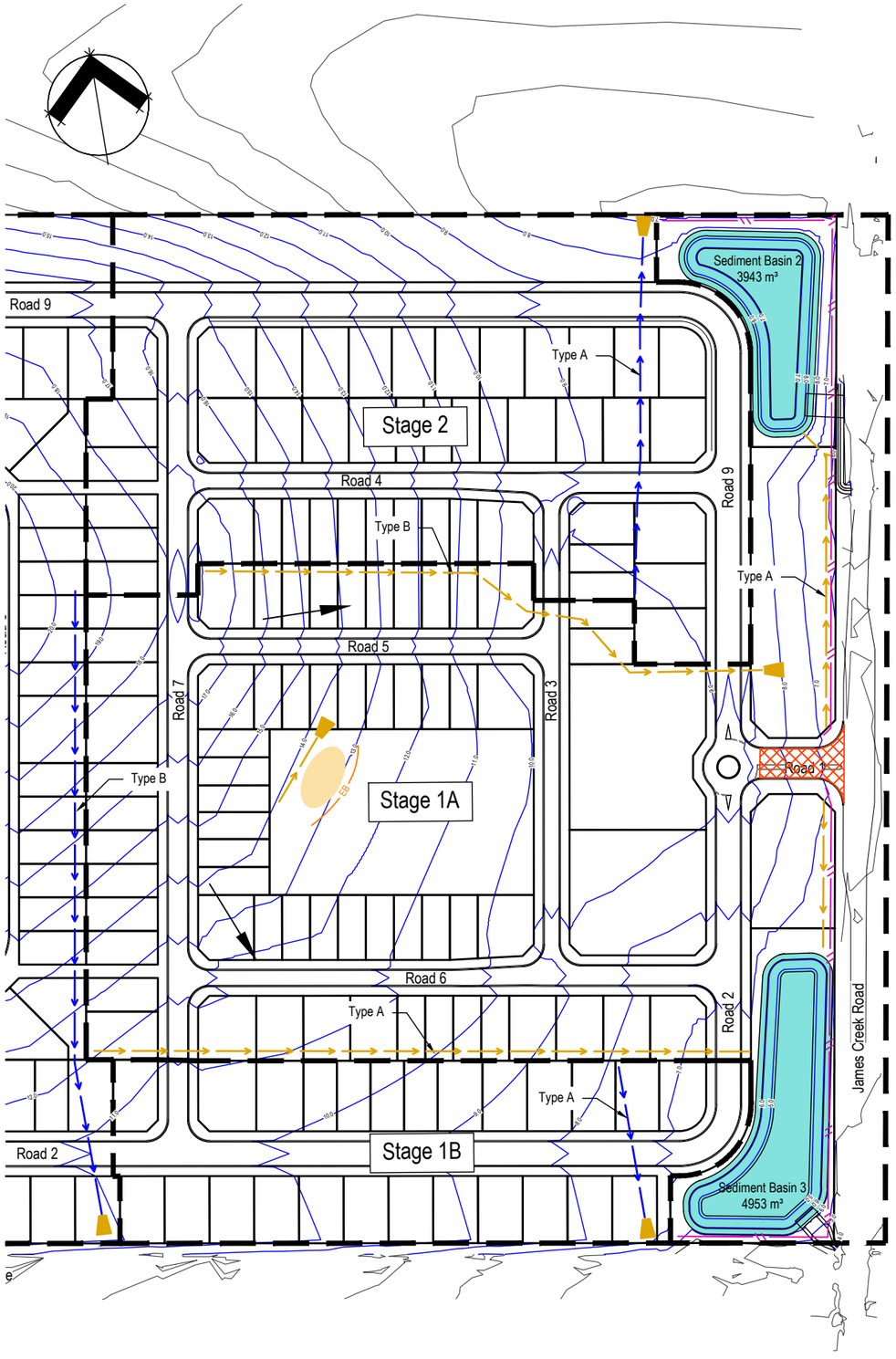
metres 0 12.5 25 37.5 50 62.5

Drawing Title

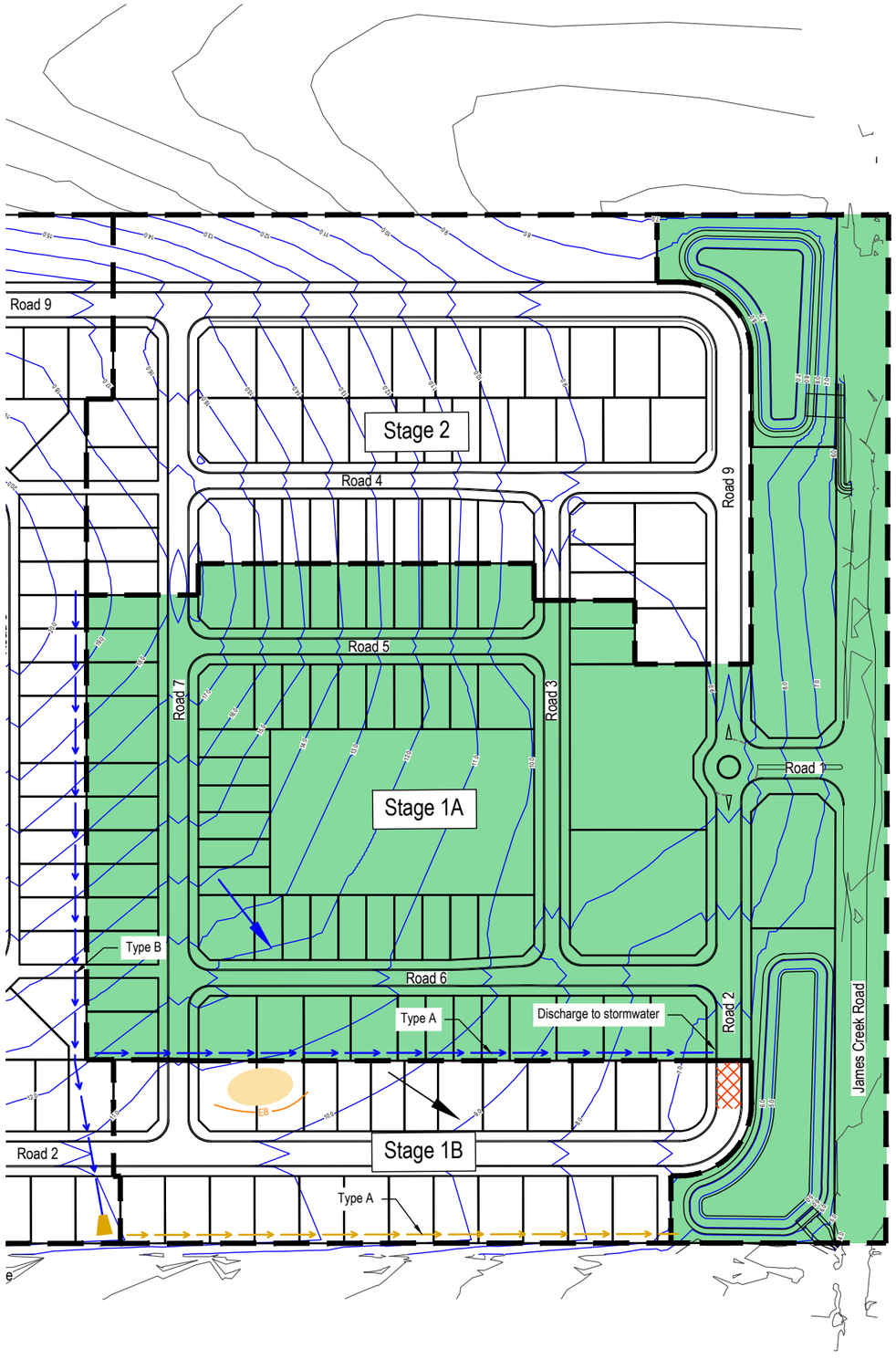
Water Reticulation Layout

3204-1136

Drawing Number 3204/C181 *Revision* C



Stage 1A Layout



Stage 1B Layout

LEGEND

- Stage boundary
- Dirty water diversion
- Dirty water flow direction
- Clean water diversion
- Clean water flow direction
- Earth bank
- Sediment fence
- Stabilised discharge point
- Stabilised site access
- Sediment Basin (construction phase only)
- Stockpiles

Existing and design contours shown at 1.0m intervals

Notes:

1. Bio-retention basin to double as a sediment basin during construction phase only.
2. All erosion and sediment controls are to be in accordance with the Soils and Construction Volume 1 - Managing Urban Stormwater 4th Ed. (the 'Blue Book').
3. Final erosion and sediment controls will vary depending of final staging and detailed design.

DEVELOPMENT APPLICATION

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Approved	MVE	Date 8/10/2021	
XREFs			

Scale

metres 0 12.5 25 37.5 50 62.5

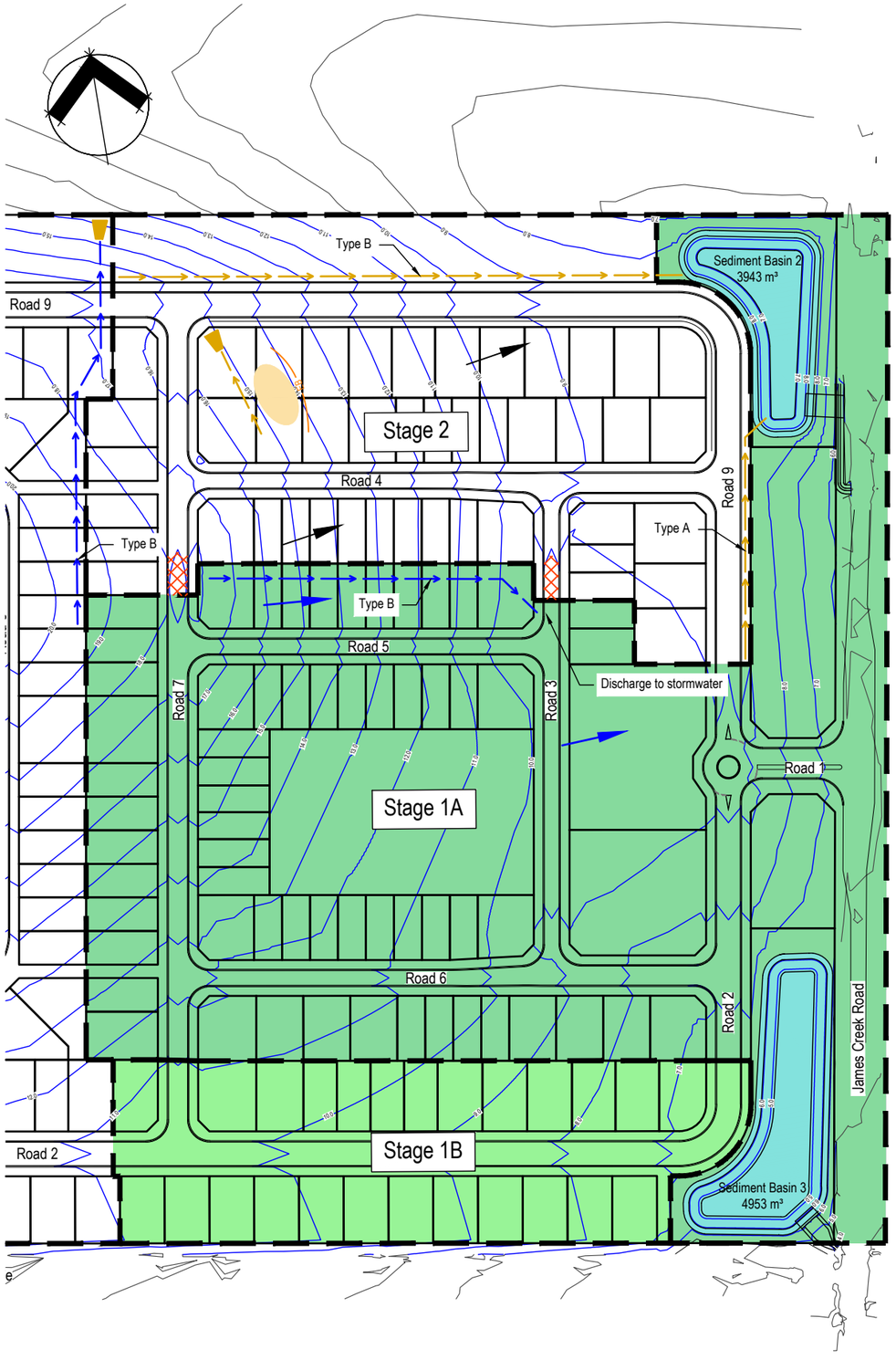
Drawing Title

Erosion and Sediment Control Layout
Stage 1A and 1B

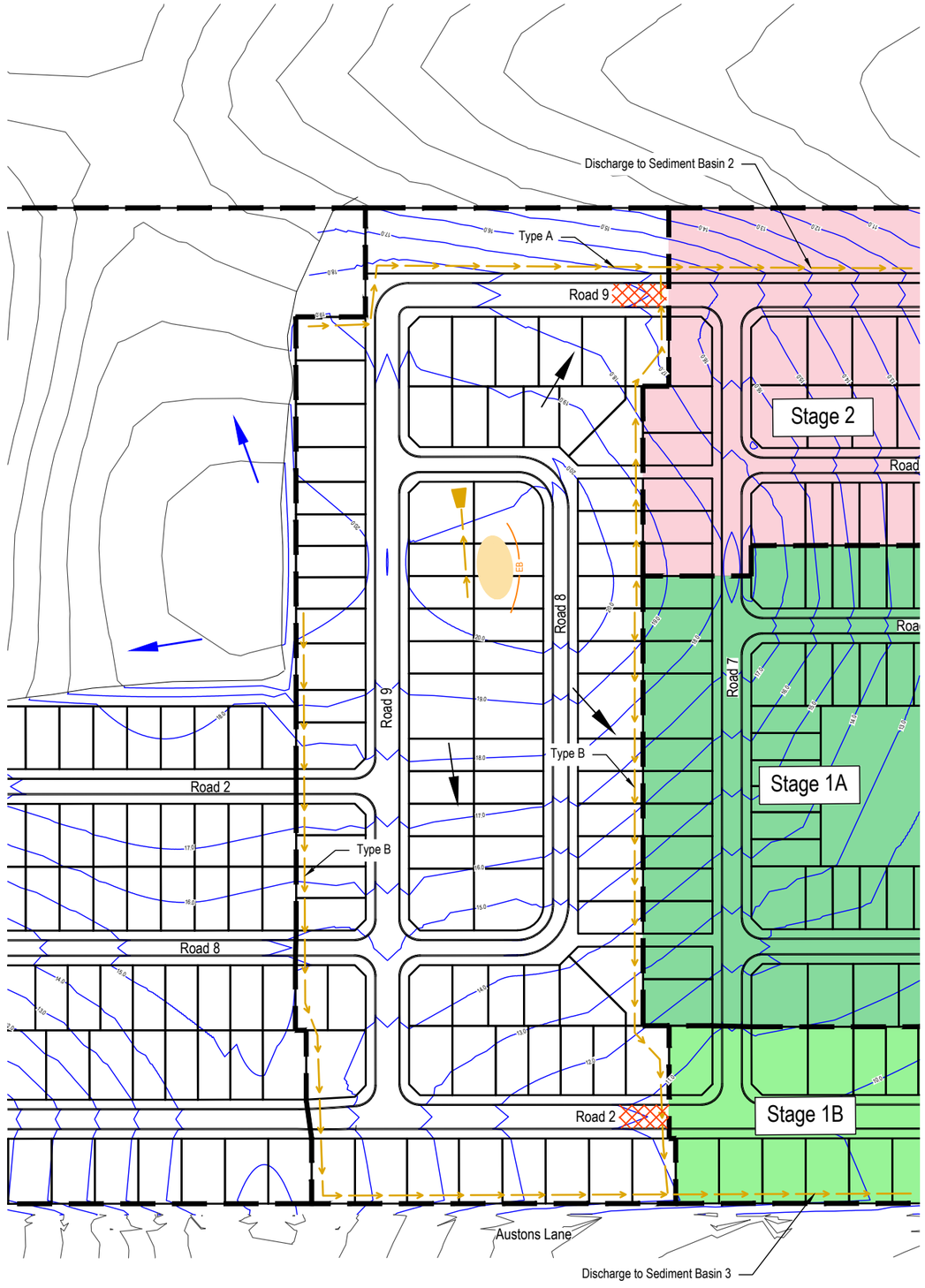
3204-1137

Drawing Number 3204/C190

Revision C



Stage 2 Layout



Stage 3 Layout

LEGEND

- Stage boundary
- Dirty water diversion
- Dirty water flow direction
- Clean water diversion
- Clean water flow direction
- Earth bank
- Sediment fence
- Stabilised discharge point
- Stabilised site access
- Sediment Basin (construction phase only)
- Stockpiles

Existing and design contours shown at 1.0m intervals

Notes:

1. Bio-retention basin to double as a sediment basin during construction phase only.
2. All erosion and sediment controls are to be in accordance with the Soils and Construction Volume 1 - Managing Urban Stormwater 4th Ed. (the 'Blue Book').
3. Final erosion and sediment controls will vary depending of final staging and detailed design.

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XREFs			

Scale

metres 0 12.5 25 37.5 50 62.5

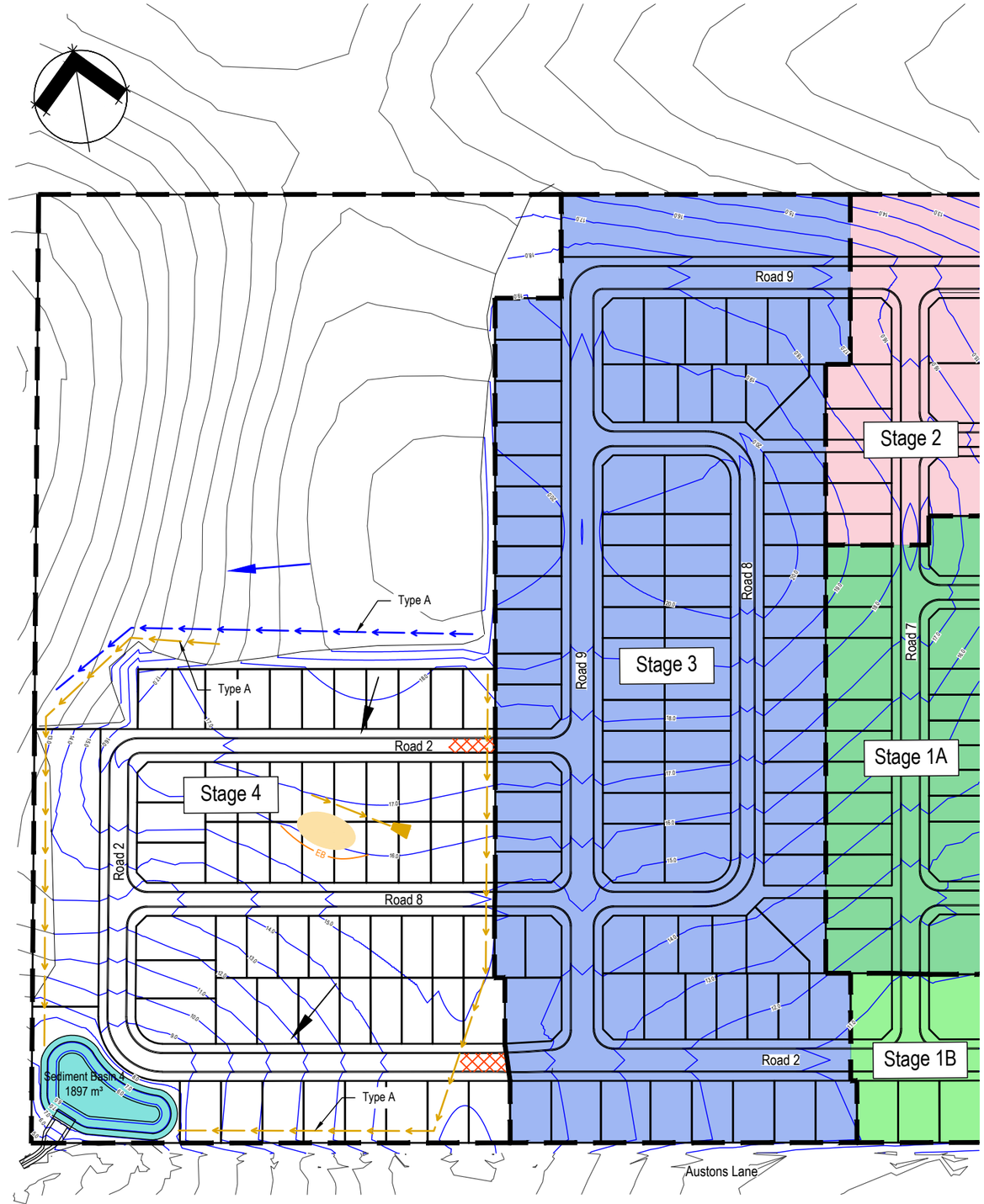
Drawing Title

Erosion and Sediment Control Layout
Stage 2 and 3

3204-1137

Drawing Number *Revision*

3204/C191 C



Stage 4 Layout

CONSTRUCTION SEQUENCE

1. Construct stabilised site access in the location specified within the plan as per standard drawing.
2. Install sediment fence as per standard drawing in the locations specified within the plan.
3. Construct sediment basins in the locations specified within the plan as per standard drawing with the volumes indicated within the design specifications.
4. Stabilise land surfaces disturbed by construction of the four sediment basins as soon as final levels are established.
5. Sediment basins are to remain in place until the completion of Stage Four.
6. Install all diversion drains in the locations specified within the plan as per the dimensions indicated within the design specifications. All diversion drains are to be lined with coir/jute fibre mats.
7. All spillways and their outlets will be constructed to be stable in at least the 50 year ARI, time of concentration storm event.
8. Discharge from all drains is to outlet in a non-erosive manner, either by way of rock outlet, level spreader or similar structure.
9. Check dams are to be placed in all drains as necessary in accordance with the Blue Book, or at least every 20m.
10. Construct earth banks in the location specified within the plan as per standard drawing.
11. Strip and stockpile topsoil in the location specified within the plan as per standard drawing.

MAINTENANCE

1. Erosion and sediment controls are to be checked and maintained as necessary weekly and following rain.
2. Sediment removed from any trapping device will be relocated where further pollution to downslope lands and waterways cannot occur.
3. Where basins require pumping out, the necessary dosing with an appropriate flocculant should occur within 24 hours of the conclusion of each storm event and the basin should be fully drained once suspended solids levels are less than 50 milligrams per litre, usually 36 to 48 hours later if gypsum is used.
4. Sediment basin water quality samples must be taken at a depth no greater than 200mm above the level of settled sediment.
5. Any waste material not identified for beneficial reuse will not remain on site and will be transported to the nearest licenced waste management facility.
6. Acceptable bins will be provided for any concrete and mortar slurries, paints, acid washings, lightweight waste materials and litter. Clearance services will be provided at least weekly.
7. Recently stabilised lands will be checked to ensure that the erosion hazard has been effectively reduced. Any repairs will be initiated as appropriate.

GENERAL NOTES

1. All erosion and sediment controls must be installed and maintained in accordance with the Blue Book.
2. Bio-retention basins are not to be installed until the completion of Stage Four.
3. All reasonable and practicable efforts must be taken to delay the removal of, or disturbance to, existing ground cover (organic or inorganic) prior to land-disturbing activities.
4. Land clearing must be limited to 5m from the edge of proposed constructed works, 2m of essential construction traffic routes, and a total of 10m width for construction access.
5. Unprotected slope lengths must not exceed 80m, or an equivalent vertical fall of 3m prior to specified shutdown periods or forecast rainfall.
6. Completed areas and stockpiles will achieve a C-factor of less than 0.15 (i.e. 50% groundcover) within 20 days of inactivity and set in motion a program that should ensure it will drop permanently, by vegetation, paving, armouring, etc. to less than 0.05 within a further 60 days.

LEGEND

- Stage boundary
- Dirty water diversion
- Dirty water flow direction
- Clean water diversion
- Clean water flow direction
- Earth bank
- Sediment fence (EB)
- Stabilised discharge point
- Stabilised site access
- Sediment Basin (construction phase only)
- Stockpiles

Existing and design contours shown at 1.0m intervals

Notes:
1. Bio-retention basin to double as a sediment basin during construction phase only.
2. All erosion and sediment controls are to be in accordance with the Soils and Construction Volume 1 - Managing Urban Stormwater 4th Ed. (the 'Blue Book').
3. Final erosion and sediment controls will vary depending of final staging and detailed design.

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XREFs					

Scale

metres 0 12.5 25 37.5 50 62.5

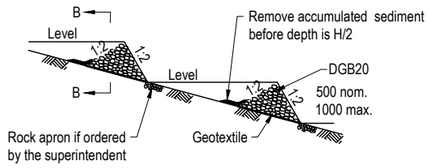
Drawing Title

Erosion and Sediment Control Layout Stage 4 and Notes

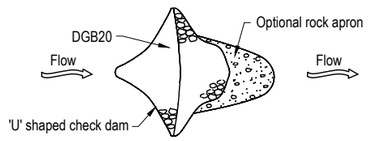
3204-1137

Drawing Number *Revision*

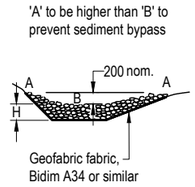
3204/C192 C



Elevation

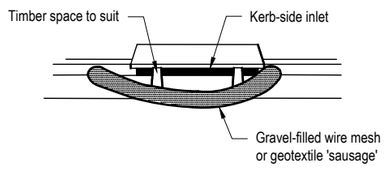


Plan

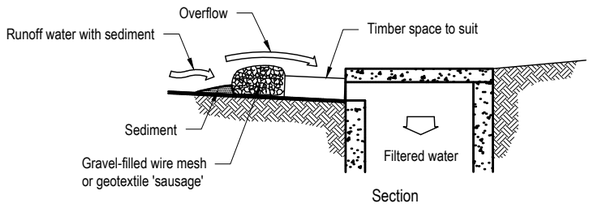


Section B-B

Check Dams - Flow Control



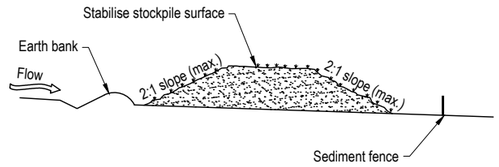
Plan



Section

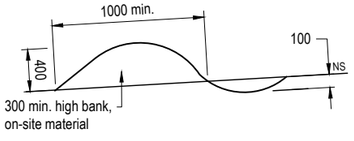
Mesh and Gravel Inlet Filter

Note:
1. This practice only to be used where specified in an approved SWMP/ESCP.

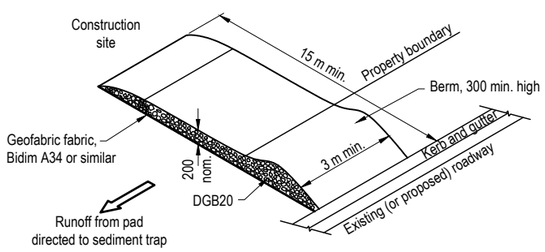


Typical Stockpile Elevation

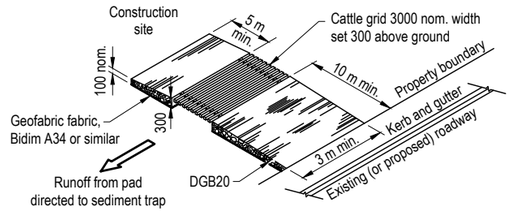
Construction Notes
1. Place stockpiles more than 2 (preferrably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
2. Construct on the contour as low, flat, elongated mounds.
3. Where there is sufficient area, topsoil stockpiles shall be less than 2 metrees in height.
4. Where they are to be in place for more than 10 days, stabilise following the approved ESCP or SWMP to reduce the C-factor to less than 0.10.
5. Construct earth banks on the upslope side to divert water around stockpiles and sediment fences 1 to 2 metres downslope.



Clean Water Diversion Bank



Alternative 2 Typical Detail



Alternative 1 Typical Detail

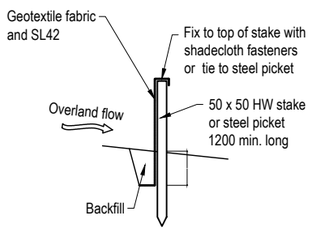
Entry / Exit Sediment Trap

Notes:

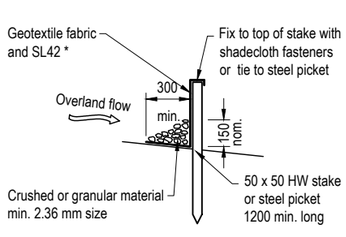
SL42 fabric may be omitted if post spacing is less than 2000 max

Returns are to be spaced at 20 m (max.) if fence is located along the contour, otherwise 5 to 10 m depending on the upstream slope

Elevation

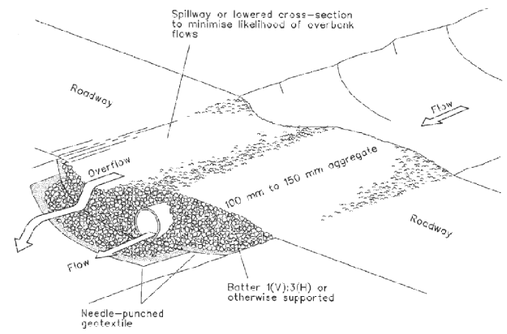


Alternative 1 Typical Section

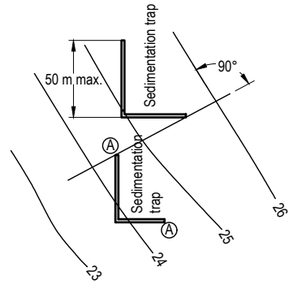


Alternative 2 Typical Section

Sediment Fence



Temporary Waterway Crossing



Typical Layout Across Grade
Points 'A' at same elevation

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Client

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Scale

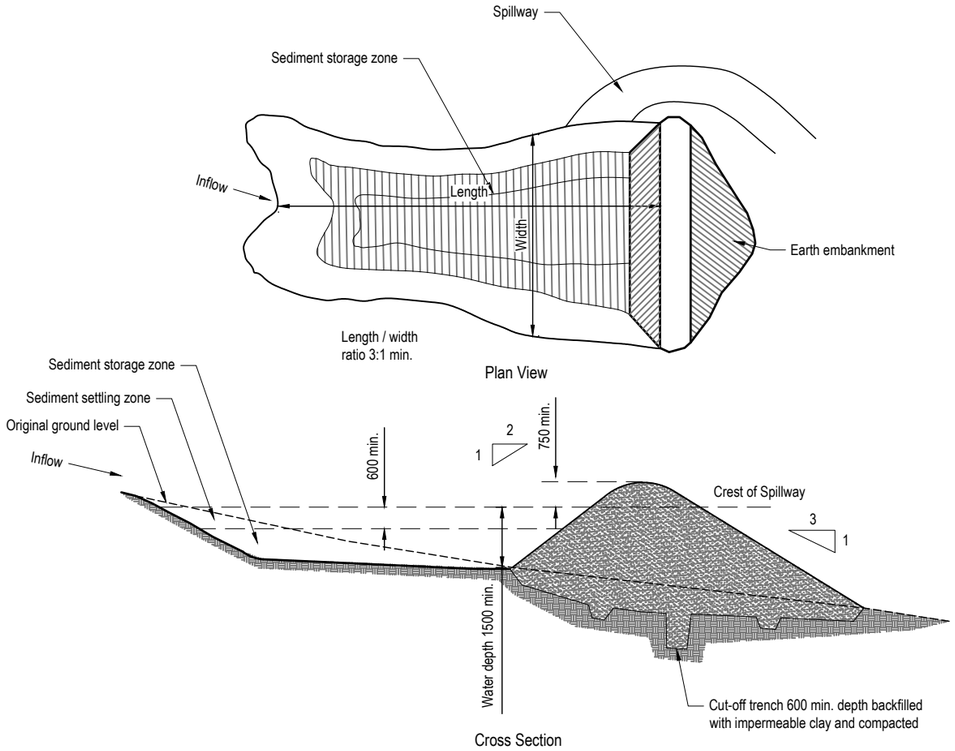
metres Not To Scale

Drawing Title

Erosion and Sediment Control Details Sheet 1 of 2

3204-1137

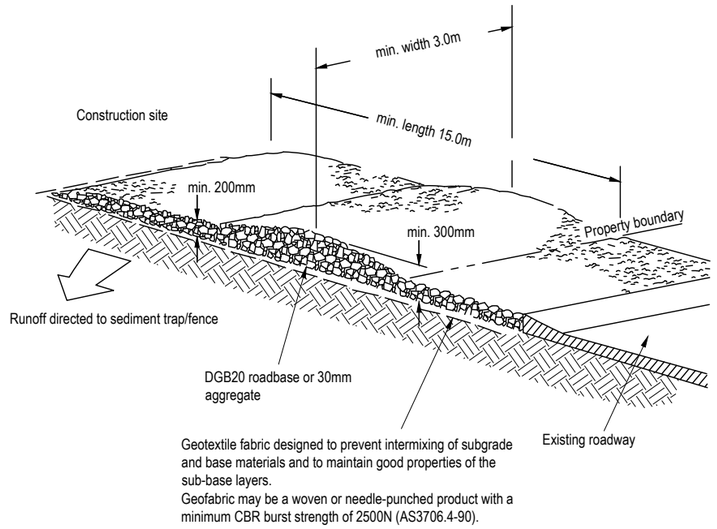
Drawing Number 3204/C193 *Revision* C



Earth Basin - Wet

Construction Notes

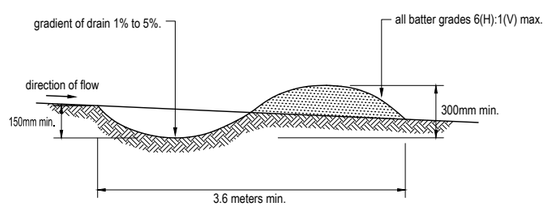
1. Remove all vegetation and topsoil from under the dam wall and from within the storage area.
2. Construct a cut-off trench 500 deep and 1200 wide along the centreline of the embankment extending to a point on the gully wall level with the riser crest.
3. Maintain the trench free of water and recompact the materials with equipment as specified in the SWMP to 95 percent Standard Proctor Density.
4. Select fill following the SWMP that is free of roots, wood, rock, large stones or foreign material.
5. Prepare the site under the embankment by ripping to at least 100 to help bond compacted fill to the existing substrate.
6. Spread the fill in 100 to 150 layers and compact it at optimum moisture content following the SWMP.
7. Construct the emergency spillway.
8. Rehabilitate the structure following the SWMP.



Stabilised Site Access

Construction Notes:

1. Strip topsoil and level site.
2. Compact subgrade.
3. Cover are with needle punched geotextile
4. Construct 200mm thick pad over geotextile using road base or 30mm aggregate. Minimum length - 15 metres or to building alignment. Minimum width 3 metres.
5. Construct hump immediately within boundary to divert water to a sediment fence or other sediment trap.

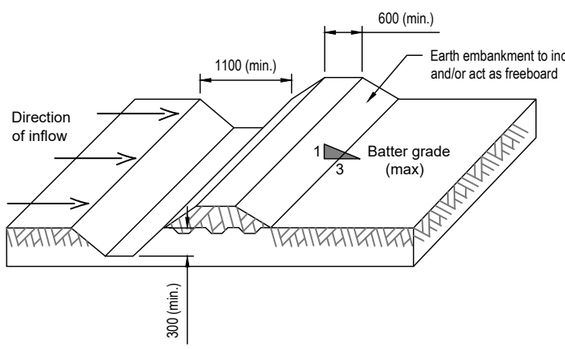


Earth Bank (Low Flow)

NTS

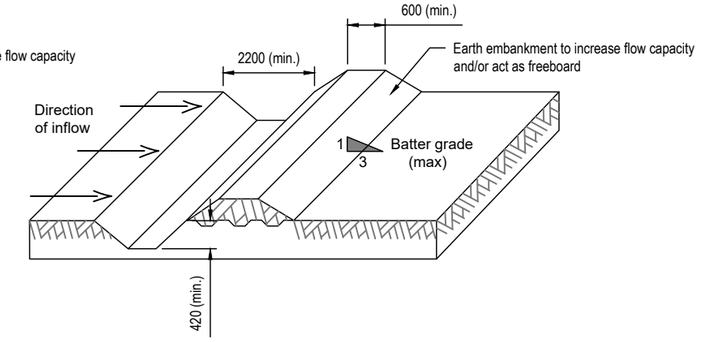
Construction Notes:

1. Construct with gradient of 1 per cent to 5 per cent.
2. Avoid removing trees and shrubs if possible - work around them.
3. Drains to be circular, parabolic or trapezoidal cross section, not v-shaped.
4. Earth banks to be adequately compacted in order to prevent failure.
5. Permanent or temporary stabilisation of the earth bank to be completed within 10 days of construction
6. All outlets from disturbed lands are to feed into sediment basin or similar.
7. Discharge runoff collected from undisturbed lands onto either a stabilised or an undisturbed disposal site within the same subcatchment area from which the water originated.
8. Compact bank with a suitable implement in situations where they are required to function for more than five days.
9. Ensure the structure are free of projections or other irregularities that will impede normal flow.



Diversion Drain - Type A

NTS



Diversion Drain - Type B

NTS

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Scale

metres Not To Scale

Drawing Title

Erosion and Sediment Control
Details Sheet 2 of 2

3204-1137

Drawing Number 3204/C194 *Revision* C

Enclosure 4

Preliminary Water and Sewer Servicing Plan report prepared by GeoLINK dated 27 November 2023

Preliminary Water and Sewer Servicing Plan

Lot 104 DP 751388, James Creek Road

Quality solutions. Sustainable future.

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Prepared for: MPD Investments

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UPR	Description	Issued By	Date Issued
3204-1014	First issue	MVE	6/09/2019
3204-1041	Second issue	MVE	1/10/2020
3204-1077	Third issue	MVE	15/10/2021
3204-1105	Fourth issue	MVE	24/05/2022
3204-1146	Fifth issue	MVE	27/11/2023

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Appendix A Extract from Civil Design Set
Appendix B Watermain Works - Deed of Agreement
Appendix C Preliminary SRM Design

1. Introduction

1.1 Background

GeoLINK has been engaged by MPD Investments to prepare a preliminary water and sewer servicing plan for a proposed residential subdivision at Lot 104 DP 751388 James Creek Road, James Creek. This report summarises the water supply and sewerage servicing strategy for the proposed development and should be read in conjunction with the Statement of Environmental Effects prepared by Place Design Group and the associated civil engineering design drawings prepared by GeoLINK.

1.2 Site Description

Lot 104 DP 751388 (the site) is rectangular in shape and has an area of approximately 33 ha. It is situated mid-way along James Creek Road in James Creek, bounded by James Creek Road to the east and Austons Lane to the south, with large rural lots to the north and west. The lot to the north is densely vegetated. Approximately 650 m further to the west flows James Creek and approximately 1.3 km to the east flows Palmers Channel. Both waterways flow north, discharging into the Clarence River approximately 1.7 km north of the site.

James Creek is a small, rural locality on the north coast of NSW. The nearest townships are Maclean, Gulmarrad and Yamba, all within 10-15 minutes' drive of the site. Grafton is the nearest larger centre, located 45 minutes' drive southwest.

The site has been historically cleared and modified for agriculture, sugar cane production and cattle grazing. It is currently essentially clear of vegetation other than grass. The crest of a small hill is located slightly to the north-west of the centre of the site. From this crest, the land falls away in all directions with slopes on the site typically in the range of 3% to 10%.

The site is predominantly zoned R1 General Residential, with a portion zoned R3 Medium Density Residential. There is also a small area approximately 2,100 m² zoned B1 Neighbourhood Centre. This area has the potential to include a neighbourhood shop or similar commercial development.

1.3 Previous Proposal

An earlier iteration of the proposal to subdivision Lot 104 DP 751388 was submitted for development application (DA) approval in March 2023. The application was rejected by the Regional Planning Panel in late June 2023, reflecting Clarence Valley Council's recommendation to refuse the application.

Three issues cited by Clarence Valley Council (Council) as reasons preventing their support that affect water and sewer services for the site were:

- that the layout needed to reflect the intent of the Rezoning Plan (R3 Zoning implemented);
- that a legal point of discharge and easement for discharging stormwater onto downstream private property (relating to the norther western catchment) had not been obtained; and
- that Council's Pressure Sewer Police 2008 includes James Creek as an area earmarked for pressure sewer in lieu of gravity sewer; and
- that a stormwater easement to be granted by the downstream owner from the site's north-west catchment of the site (objectors to the application), was not forthcoming.

A revised subdivision plan has been prepared accordingly to address these and other items of concern raised by Council. Notably all proposed development within the northwest catchment has

been removed from the current proposal and the design now includes provision for low pressure sewer reticulation rather than the previously proposed gravity sewer network.

Refer to **Appendix A** for an excerpt from GeoLINK's civil engineering design plans.

1.4 Proposed Development

The proposal is for subdivision of the site resulting in 280 residential lots, a childcare centre, a commercial centre, and associated infrastructure (e.g. roads, services). The 280 lots comprise 242 single-dwelling lots, 37 duplex lots, and a 0.87 ha medium density lot with 38 units proposed. Thus, the ultimate number of residential dwellings expected is 354 lots.

At the time of writing, the subdivision is proposed to occur in five stages, however it is noted that the number of stages, the number of lots in each stage and the sequence of staging will be influenced by the market at the time and possibly by the provision of services.

2. Water Supply

2.1 Water Supply Plan

Since commencing the application process for a previous iteration of the proposal, an external watermain has been extended to service the site by Council. A Deed has been agreed by Kahuna No. 1 Pty Ltd (the current owner of the site) and Council for the apportionment of costs against the title. Refer to **Appendix B**.

Details of the installed external watermain (DN225 PVC) and proposed internal water reticulation layout for the site are included in **Appendix A**.

2.2 Water Supply Demand

Water supply infrastructure for the site is required to service 354 tenancies, assumed to be all three bedrooms.

The information below pertains to the proposed water supply main. In accordance with the Northern Rivers Development Design Manual, Section D11, the water supply design requirements are as follows:

- Minimum 200 kPa to each lot – D11.05.1
- Peak instantaneous demand of 0.15 L/s/tenement – D11.05.2
- Desirable maximum pressure of 780 kPa – D11.05.4
- Firefighting pressure shall be 118 kPa at 11 L/s – D11.05.5
- Demand per person is 850 L/day – D11.06.1
- Each tenancy is assumed to have 3.2 equivalent persons – D11.06.1

With the above criteria considered, the following minimum requirements will need to be met:

- Peak instantaneous demand of 53.1 L/s
- Daily demand of 962,880 L (approximately 963 kL)

2.3 Water Supply Proposal

In order to fulfil the criteria in **Section 2.2**, the site will need to be serviced by the new section of DN225 PVC main approximately 1,500 m in length that connects to the DN250 water main on James Creek Road at a point approximately 1 km from the intersection with Yamba Road. The trunk water main connected to the DN250 water main runs along Yamba Road and is serviced by the Maclean 21 ML Reservoir, which is reported to have 55 m head at the connection point. Refer to **Figure 2.1** for the water main alignment extent. This will adequately service the minimum flow and pressure requirements of the site whilst accounting for system pressure losses.

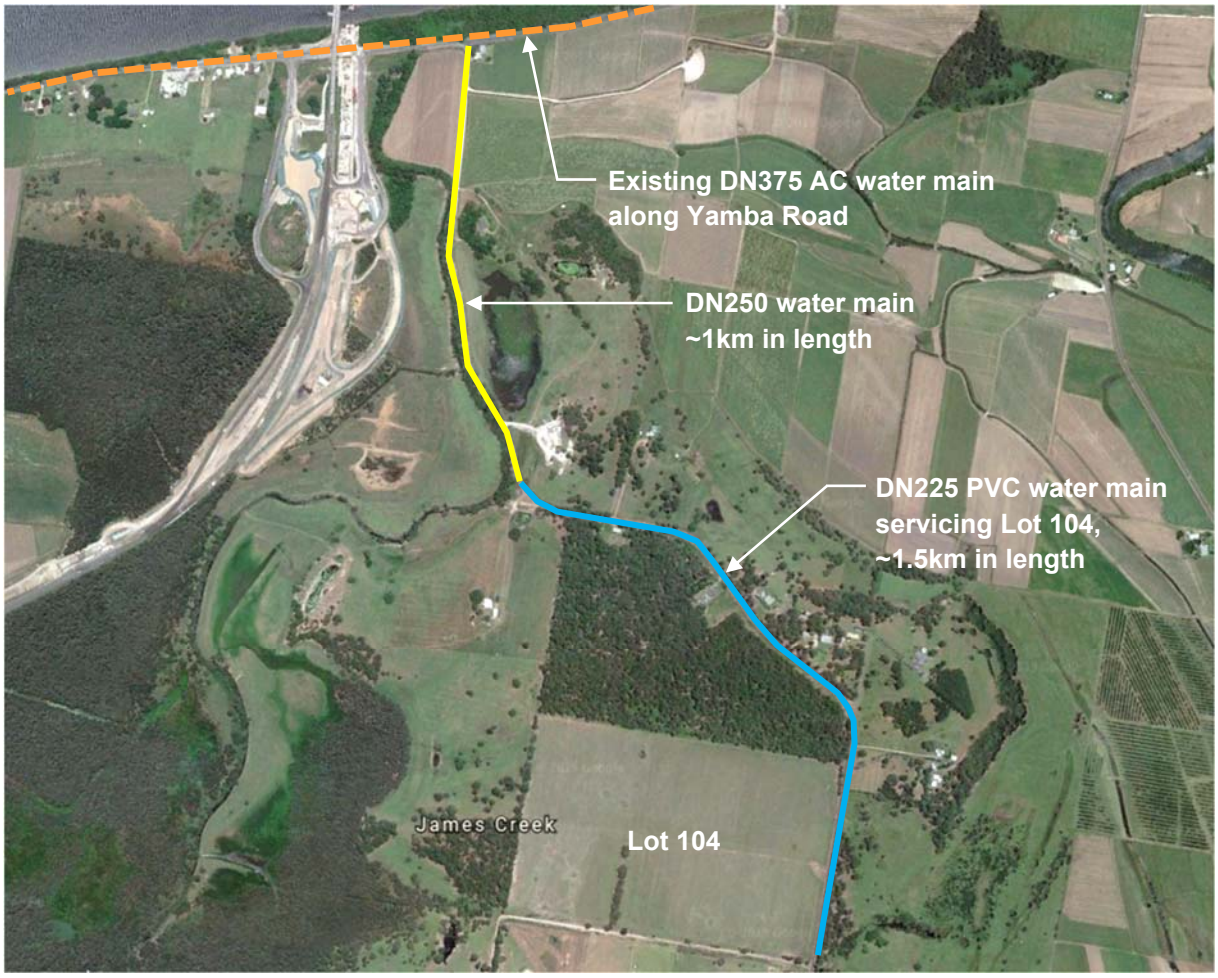

Figure 2.1 Water main alignment extent

3. Sewer

3.1 Sewage Generation

Sewerage infrastructure for the site is required to service the same catchment as the water supply, being 281 lots and a likely ultimate 354 tenancies, all assumed to be three bedroom dwellings.

The site will be serviced by a low-pressure sewerage system that will discharge into a receiving manhole and subsequently collect in a new sewage pump station (SPS). The SPS will transfer the sewage via approximately 5 km of new DN110 PE100 sewer rising main (SRM) to the proposed discharge point along Diamond Street in Townsend.

The below information pertains to the proposed pressure sewer main. In accordance with the Northern Rivers Development Design Manual, Section D12, the sewerage system design requirements are as follows:

- Demand is 150 L/EP/day – D12.06.2 and verbal guidance from Clarence Valley
- Each lot is assumed to have 3.2 equivalent persons – D12.06.1
- Minimum velocity is 0.6 m/sec (1.0 m/sec is preferred) – D12.28
- Maximum velocity 3.0 m/sec – D12.28

With the above criteria considered, the following minimum requirements will need to be met:

- Design flow = 5.90 L/s

Note: Peak dry weather flow (PDWF) has been adopted for design flow (5.90 L/s) as the reticulation sewer is a low-pressure system and no wet weather considerations are to be accounted for.

3.2 Sewerage Rising Main Proposal

A DN110 PE100 PN16 SRM has been determined to be the most suitable for the transfer of all sewage generated from the site. This has been sized to accommodate required design flow.

The alignment of this main is shown in the attached SRM design prepared by Willow and Sparrow (refer **Appendix C**). Note, however that the sizing of the main shown in these plans was for the previous proposal whereby the site was to be serviced by gravity sewer reticulation. The current proposal is to service the site a via low-pressure sewer system.

The above design assumptions will need to be confirmed during subsequent SPS design.

Refer to **Figure 3.1** overleaf for the proposed SRM alignment extent.

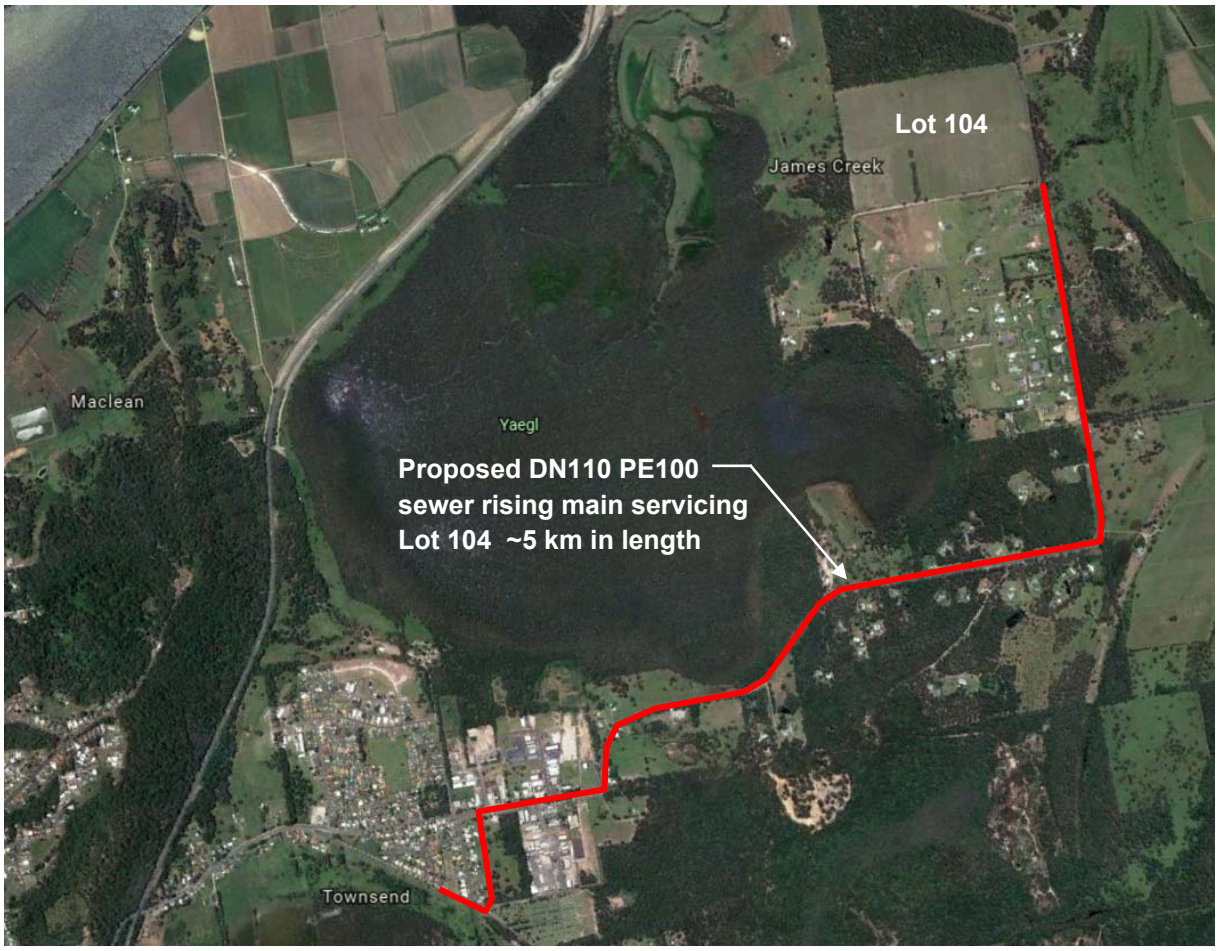

Figure 3.1 Proposed sewer rising main alignment extent

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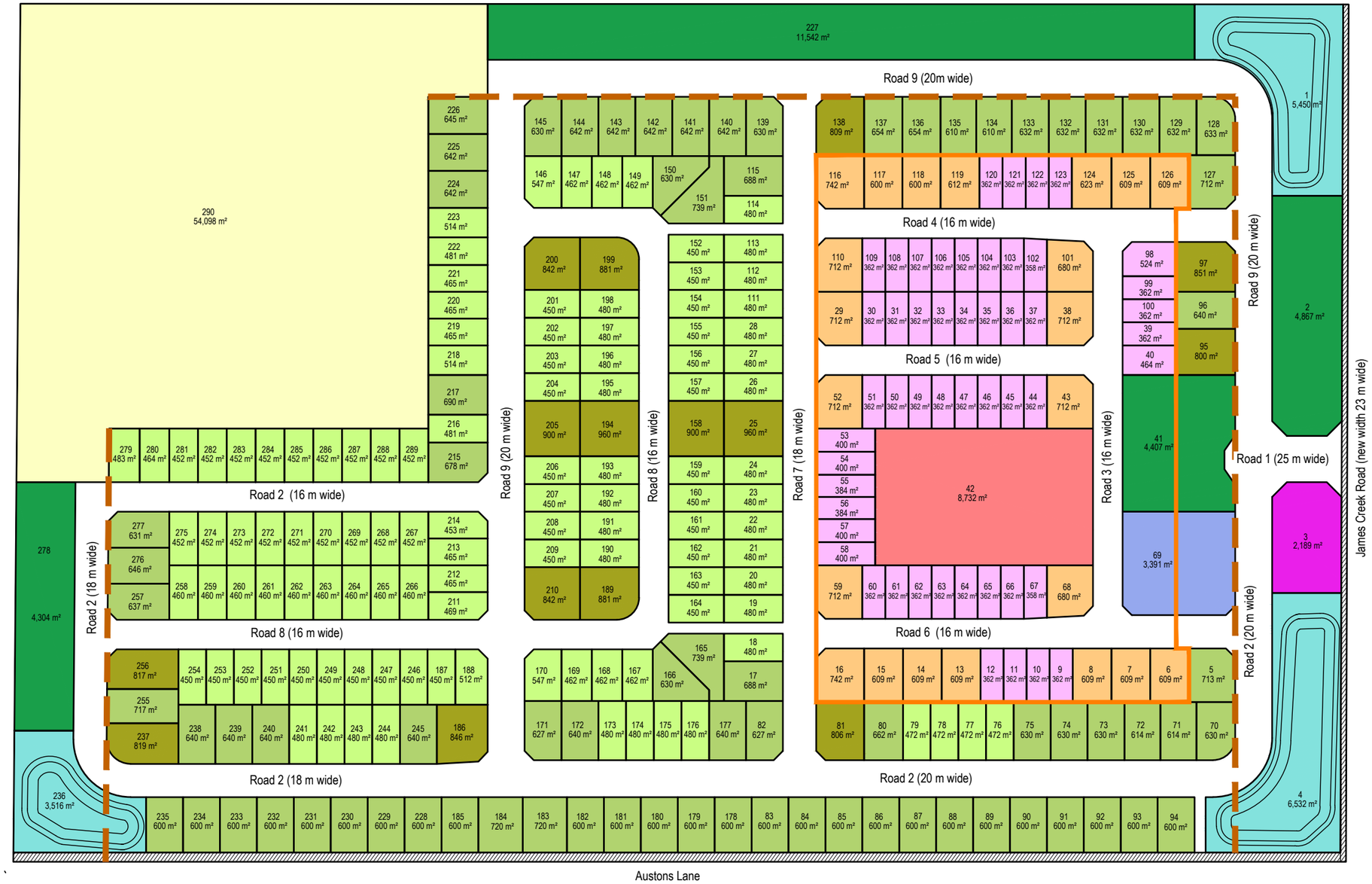
The dimensions, number, size and shape of lots shown on drawings are subject to detailed engineering design, final survey and Council conditions of consent.

Appendix A

Extract from Civil Design Set



LEGEND

Residential R1 Zone

	>450 m²	113 Lots
	>600 m²	78 Lots
	>800 m²	15 Lots

Residential R3 Zone

	>350 m²	51 Lots
	>600 m²	22 Lots
	R3 medium density	1 Lot
	Total residential lots	***280 Lots***

Other

	Balance Lot	1 Lot
	Drainage reserve	3 Lots
	Open space	4 Lots
	Childcare centre	1 Lot
	Commercial centre	1 Lot
	50 m offset to rural land	
	Proposed R3 Zone	
	Road reserve widening (dedicated to Council)	

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Client

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XREFs			
Scale			

metres 0 12.5 25 37.5 50 62.5

Drawing Title

Lot Layout and Lot Areas

3204-1130

Drawing Number 3204/C111 *Revision* C

DEVELOPMENT APPLICATION

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Scale

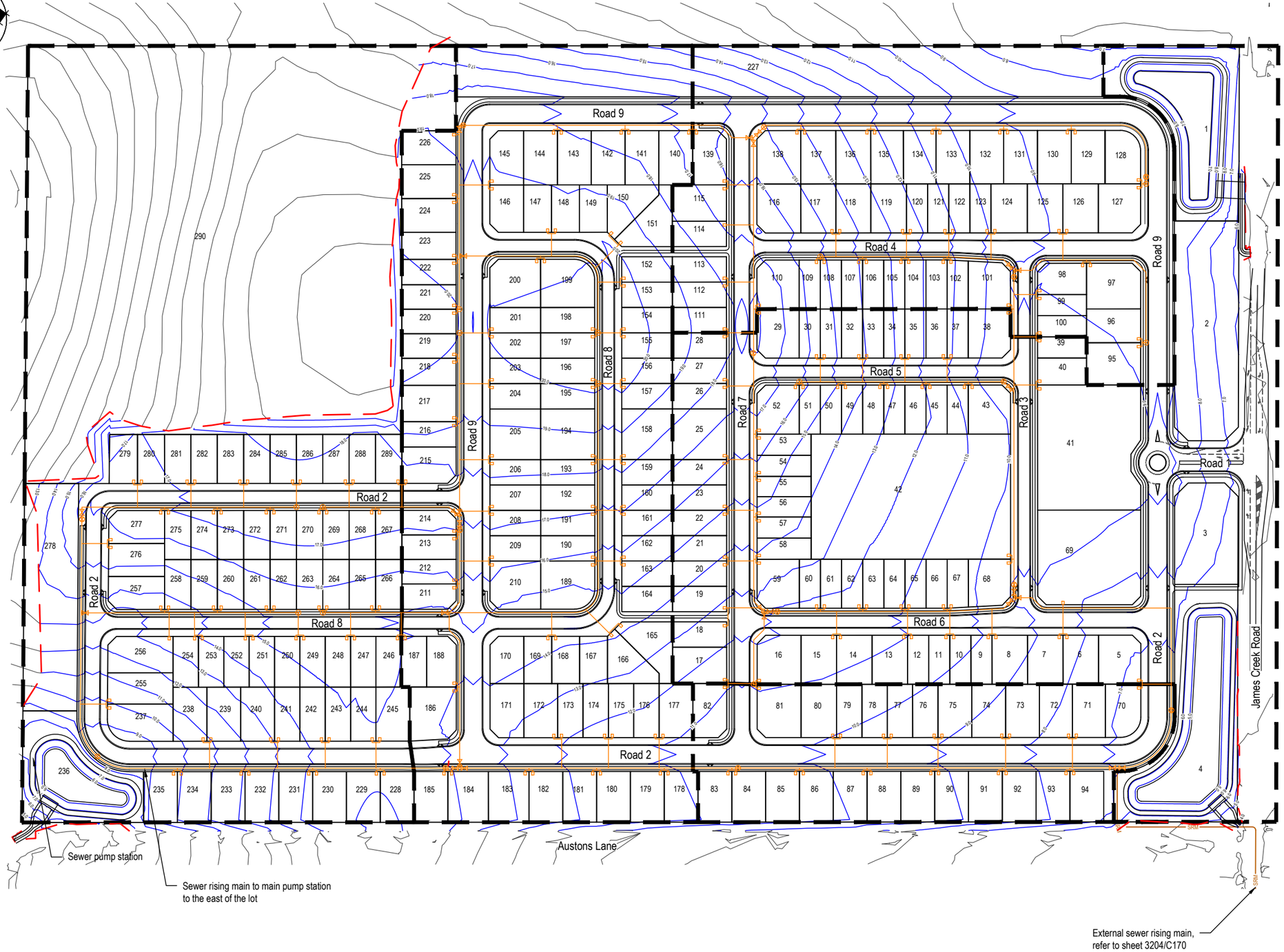
metres 0 50 100 150 200 250

Drawing Title

Sewerage Rising Main

3204-1135

Drawing Number 3204/C170 *Revision* C



LEGEND

- Stage boundary
- Extent of works
- S — Sewer pipe
- SRM — Sewer Rising Main
- Isolation / air relief valve
- Boundary kit / flushing point

Existing and design contours shown at 1.0m intervals

Note:
1. Developer to construct all sewer infrastructure from discharge point shown on sheet 3204/C170 up to and including the internal sewer network system.
2. Stage boundaries are extent of works unless shown otherwise (refer to Legend).

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Scale

metres 0 12.5 25 37.5 50 62.5

Drawing Title

Sewerage Layout
Low Pressure System

3204-1135

Drawing Number 3204/C171 *Revision* C

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Scale

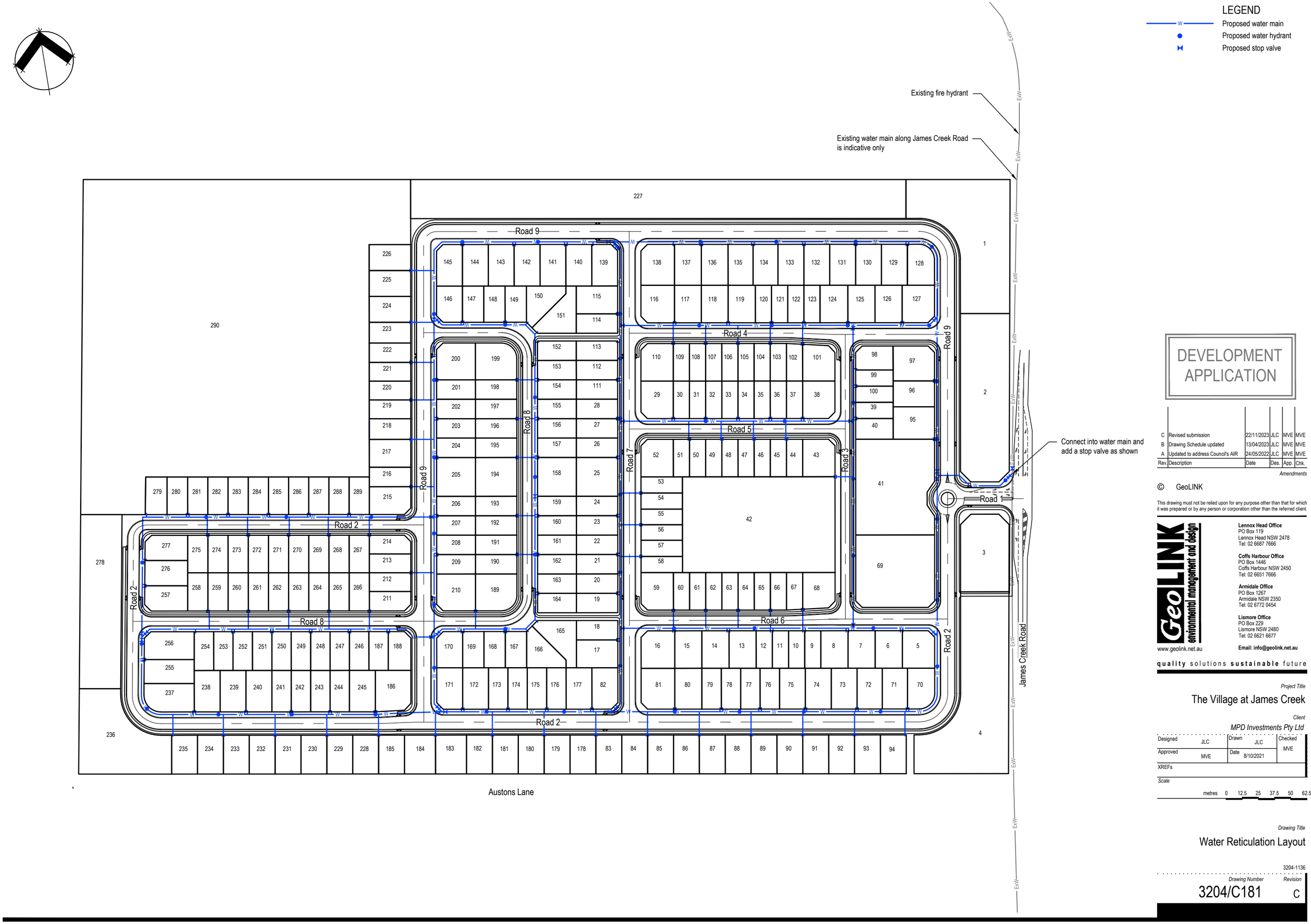
metres 0 20 40 60 80 100

Drawing Title

Water Overall Layout

3204-1136

Drawing Number 3204/C180 *Revision* C



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Scale

metres 0 12.5 25 37.5 50 62.5

Drawing Title

Water Reticulation Layout

3204-1136

Drawing Number 3204/C181 *Revision* C

Appendix B

Watermain Works - Deed of Agreement

Attach (2)

CLARENCE VALLEY COUNCIL

AND

KAHUNA NO. 1 PTY LTD

DEED

Burridge Harris & Flynn Lawyers
1st Floor, 94 Fitzroy Street,
GRAFTON NSW 2460
Phone: (02) 6642 2922
Fax: (02) 6642 5430
Email: info@bhflawyers.com.au
Ref: SF:SR 20190282

DEED

THIS DEED dated day of ..... 2019 is made between

Clarence Valley Council ('the Council') of
Civic Centre, 2 Prince Street, Grafton, New South Wales

AND **Kahuna No. 1 Pty Ltd ACN 105 202 551** ('the Developer') of
Registered office: Unit 25, 2-6 Hawker Street, Currumbin, Queensland

BACKGROUND

A. The Developer is the registered proprietor of lot 104/751388 ("Lot 104") being land located in James Creek Road, Gulmarrad.

B. The Developer proposes to subdivide Lot 104.

C. Lot 104 is not presently served by a mains water supply.

D. The Council is the authority under the Roads Act 1993 that has responsibility for James Creek Road.

E. The Council intends to carry out roadworks in late July 2019 to resurface part of James Creek Road from its intersection with Yamba Road for a distance of about 1 kilometre ("the Roadworks").

F. The Council also proposes to construct a new watermain within the road reserve and beneath the Roadworks ("the Watermain Works") the construction of which watermain would provide a water main for some distance within James Creek Road and which would reduce the length of future extension of that watermain in order to service Lot 104.

G. The Council considers that the Watermain Works should be carried out before the Roadworks are carried out.

H. The Developer has agreed that it would be of benefit to it that the Watermain Works were carried out before the Roadworks were carried out.

I. The Developer proposes to reimburse the Council for the construction costs of the Watermain Works.

J. The specific details of the Watermain Works are set out in a quotation ("the Quotation") which the Council has given to the Developer. The cost of the Watermain Works set out in the Quotation is called in this Deed 'the Quotation Amount'.

OPERATIVE PART

1. Interpretation

This deed is governed by the laws of New South Wales and the parties submit to the non-exclusive jurisdiction of the courts of that State.

In the interpretation of this deed:

(a) References to legislation or provisions of legislation include changes or re-enactments of the legislation and statutory instruments and regulations issued under the legislation;

(b) Words denoting the singular include the plural and vice versa, words denoting individuals or persons include bodies corporate and vice versa, references to documents or agreements also mean those documents or agreements as changed, novated or replaced, and words denoting one gender include all genders;

(c) Grammatical forms of defined words or phrases have corresponding meanings;

(d) Parties must perform their obligations on the dates and times fixed by reference to the capital city of ;

(e) Reference to an amount of money is a reference to the amount in the lawful currency of the Commonwealth of Australia;

(f) If the day on or by which anything is to be done is a Saturday, a Sunday or a public holiday in the place in which it is to be done, then it must be done on the next business day;

(g) References to a party are intended to bind their executors, administrators and permitted transferees; and

(h) Obligations under this deed affecting more than one party bind them jointly and each of them severally.

2. The parties agree as follows:

2.1 The Council will carry out the Watermain Works in accordance with the Quotation.

2.2 The Developer agrees to reimburse the Council the Quotation Amount.

2.3 The Council agrees that if the actual construction costs exceed the Quotation Amount that it will still complete the Watermain Works and that the Developer will not be responsible to reimburse the Council for any more than Quotation Amount.

2.4 The Developer will reimburse the Quotation Amount, as increased in accordance with clause 2.5, to the Council when it applies to the Council for a subdivision certificate in respect to Lot 104.

2.5 The Developer agrees that the Quotation Amount will be increased in accordance with the changes to the Consumer Price Index (All Groups Sydney) calculated from the quarter ended immediately before the completion of the Watermain Works to the quarter ended immediately before the date that the Developer pays the Council. A reference in this Deed to the Quotation Amount includes that amount as increased in accordance with this clause.

2.6 The Developer agrees that the Council cannot be required to issue a subdivision certificate in respect to Lot 104 unless the Quotation Amount is paid.

2.7 The Developer charges Lot 104 with repayment of the Quotation Amount and consents to the Council placing and maintaining a caveat on the title to Lot 104 until the Quotation Amount is repaid.

2.8 The Council agrees it will not unreasonably refuse consent to the registration of a mortgage by the Developer over Lot 104 provided it can be reasonably satisfied that the Developer will be able to repay the Quotation Amount to it when it is due for repayment and provided it can maintain its caveat on the title to Lot 104.

2.9 A reference in this Deed to Lot 104 means and includes any lot created by way of subdivision amalgamation or boundary adjustment of or that included Lot 104

3.1 **Confidentiality**

The parties must keep the terms of this deed confidential, save for any necessary disclosure to their respective legal and financial advisers.

3.2 **Entire agreement**

This deed is the entire agreement and understanding between the parties on everything connected with the subject matter of this deed, and supersedes any prior understanding, arrangement, representation or agreements between the parties as to the subject matter contained in this deed.

3.3 **Amendment**

An amendment or variation to this deed is not effective unless it is in writing and signed by all the parties.

3.4 **Dispute resolution**

If a dispute arises between the parties, the complainant must not commence any court or arbitration proceedings, except where that party seeks urgent interlocutory relief, unless it has first complied with this clause:

(a) Notification

The complainant must inform the respondent in writing of the following:

(i) The nature of the dispute;
(ii) The outcome the complainant desires, and
(iii) The action the complainant believes will settle the dispute.

(b) Endeavour to resolve dispute

On receipt of the complaint by the respondent, both parties will make every effort to resolve the dispute by mutual negotiation within 14 business days.

(c) Mediation

Any unresolved dispute or difference whatsoever arising out of or in connection with this contract shall be submitted to mediation under the Mediation Rules of the Resolution Institute.

(d) Survival of this clause

This clause survives termination of this deed.

3.5 **Waiver and amendments**

Any waiver by any party to a breach of this deed shall not be deemed to be a waiver of a subsequent breach of the same or of a different kind.

3.6 **Events beyond control**

Neither party shall be liable to the other party for any loss caused by any failure to observe the terms and conditions of this deed, where such failure is occasioned by causes beyond its reasonable control including but not limited by fire, flood, riot, strike, war, restrictions and prohibitions or any other actions by any government or semi government authorities.

3.7 **Severance**

If anything in this deed is unenforceable, illegal or void, it is severed and the rest of the deed remains in force.

3.8 **Notices**

A notice or other communication to a party must be in writing and delivered to that party or that party's practitioner in one of the following ways:

(a) Delivered personally: or

(b) Posted to their address when it will be treated as having been received on the second business day after posting: or

(c) Faxed to their facsimile number when it will be treated as received when it is transmitted: or

(d) Sent by email to their email address when it will be treated as received when it enters the recipient's information system.

3.9 **Counterparts**

This deed may be executed in any number of counterparts each of which will be an original but such counterparts together will constitute one and the same instrument and the date of the deed will be the date on which it is executed by the last party.

3.10 **Costs**

Each party will pay their own costs in relation to this Deed.

EXECUTED AS A DEED BY THE PARTIES

EXECUTED by the Authorised)	
Officer for **CLARENCE VALLEY**)	
COUNCIL in the presence of:)	
	Signature
Signature of witness	**Ashley Lindsay**
	Name of Authorised Officer
Lesley McBay	**General Manager**
Print name of witness	Authority

EXECUTED on behalf of **KAHUNA NO.1 PTY LTD** by the Authorised Persons whose signatures appear below pursuant to Section 127 of the Corporations Act :

Signature	Signature
Name of Authorised Person	Name of Authorised Person
Office Held	Office Held

Appendix C

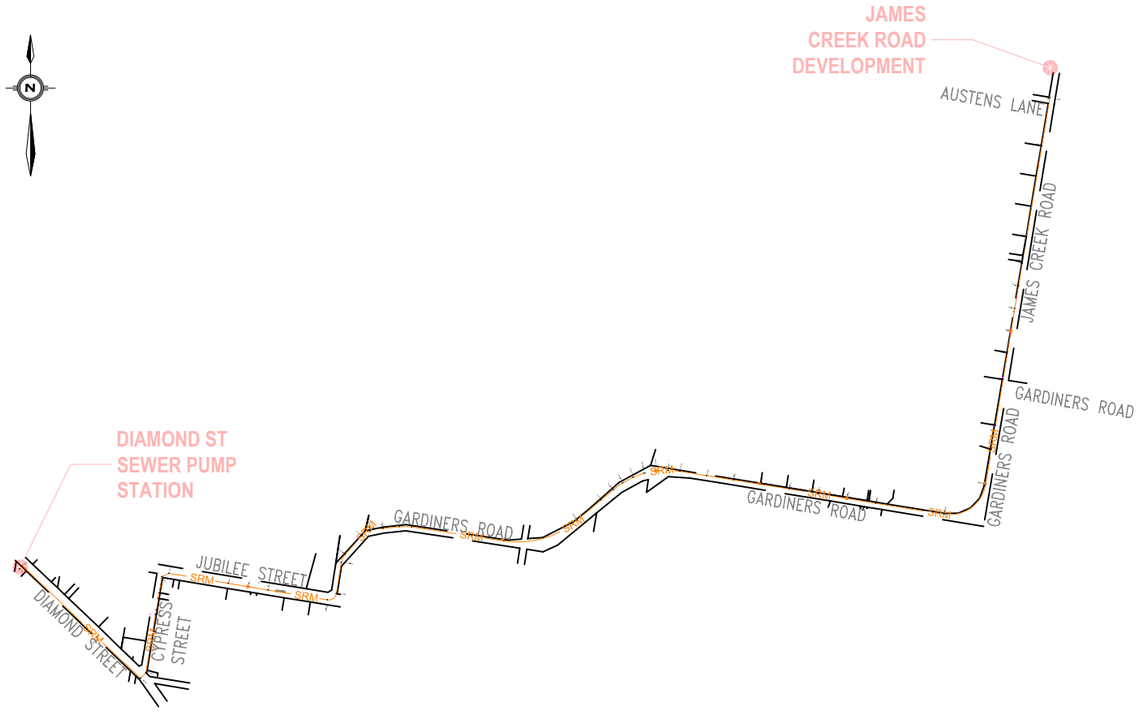
Preliminary SRM Design

EXTERNAL SEWER RISING MAIN FROM JAMES CRK ROAD DEVELOPMENT TO DIAMOND STREET SEWER PUMP STATION

CONSULTANT: WILLOW & SPARROW PTY LTD
CONTACT: MICHAEL CHAMBERLAIN
TELEPHONE: 0401415220

DRAWING INDEX	
DWG. No.	DESCRIPTION
C000	COVER SHEET & SEWER LOCALITY PLAN
C001	GENERAL NOTES - SHEET 1 OF 2
C002	GENERAL NOTES - SHEET 2 OF 2
C003	SEWER RISING MAIN OVERALL LAYOUT PLAN - SHEET 1 OF 2
C004	SEWER RISING MAIN OVERALL LAYOUT PLAN - SHEET 2 OF 2
C005	SEWER LONGITUDINAL SECTIONS SHEET 1 OF 10
C006	SEWER LONGITUDINAL SECTIONS SHEET 2 OF 10
C007	SEWER LONGITUDINAL SECTIONS SHEET 3 OF 10
C008	SEWER LONGITUDINAL SECTIONS SHEET 4 OF 10
C009	SEWER LONGITUDINAL SECTIONS SHEET 5 OF 10
C010	SEWER LONGITUDINAL SECTIONS SHEET 6 OF 10
C011	SEWER LONGITUDINAL SECTIONS SHEET 7 OF 10
C012	SEWER LONGITUDINAL SECTIONS SHEET 8 OF 10
C013	SEWER LONGITUDINAL SECTIONS SHEET 9 OF 10
C014	SEWER LONGITUDINAL SECTIONS SHEET 10 OF 10
C020	SEWER RISING MAIN DETAILS - SHEET 1 OF 2
C021	SEWER RISING MAIN DETAILS - SHEET 2 OF 2

SEWER SPECIFICATIONS & STANDARD DRAWING LIST	
DWG. No.	DESCRIPTION
	SPECIFICATIONS
	PRESSURE SEWAGE CODE OF AUSTRALIA (WSA 07-2007-1.1)
	THE CLARENCE VALLEY COUNCIL D12 SEWERAGE SYSTEM SPECIFICATION AND DEVELOPMENT CONSTRUCTION SPECIFICATION (SEWER SUPPLY-C402)
	NSW CODE OF PRACTICE FOR PLUMBING AND DRAINAGE AND AS/NZ3500
	PRESSURE SEWERAGE CODE OF AUSTRALIA STANDARD DRAWINGS
PSS-1000	EMBEDMENT & TRENCH FILL TYPICAL ARRANGEMENT
PSS-1006	TYPICAL ARRANGEMENTS VALVE AND VENT SHAFT DETAILS
PSS-1007	TYPICAL APPURTENANCE DETAILS - FLUSHING POINT
PSS-1005	TYPICAL VALVE INSTALLATION SHROULD PIPE AND FITTINGS ASSEMBLY
	WATER SUPPLY CODE OF AUSTRALIA STANDARD DRAWINGS
WAT1205	THRUST BLOCK DETAILS CONCRETE BLOCKS
WAT-1207-V	THRUST AND ANCHOR BLOCK GATE VALVES AND VERTICAL BENDS
WAT-1307	TYPICAL APPURTENANCE INSTALLATION SCOUR ARRANGEMENTS



LOCALITY PLAN
SCALE 1:10000

CAUTION

EXISTING SERVICES ALLOCATED IN FOOTPATH RESERVE ARE SUBJECT TO VARIABLE PLACEMENT.
THE CONTRACTOR IS REQUIRED TO ACQUIRE LATEST SEARCH INFORMATION AND FIELD CHECK AT TIME OF WORKS.

DIAL BEFORE YOU DIG

DIAL BEFORE YOU DIG www.1100.com.au

IMPORTANT: THE CONTRACTOR IS TO MAINTAIN A CURRENT SET OF "DIAL BEFORE YOU DIG" DRAWINGS ON SITE AT ALL TIMES.

Willow+ Sparrow
ENGINEERING+DESIGN
Dillions Lane, Alstonville NSW 2477
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Email: michael@waseng.com.au
WILLOW & SPARROW PTY LTD A.C.N. 606732512

Scale: SCALE 100 0 100 200 300 400 500 1:10,000
Certifier

Issue: ISSUE FOR APPROVAL

Designed	Drawn
GC	GC
Checked	Date
MC	01/04/22

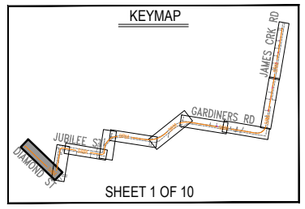
Issue	Description	Date	By
A	ISSUE FOR APPROVAL	01/04/22	

CLIENT
MPD INVESTMENTS PTY LTD

PROJECT
JAMES CREEK ROAD SUBDIVISION
PROPOSED SEWER RISING MAIN
JAMES CRK RD TO DIAMOND ST PUMP STATION

TITLE
COVER SHEET
AND SEWER LOCALITY PLAN

Job No.	Drawing No.	Rev No.
2022041-CC	C000	A



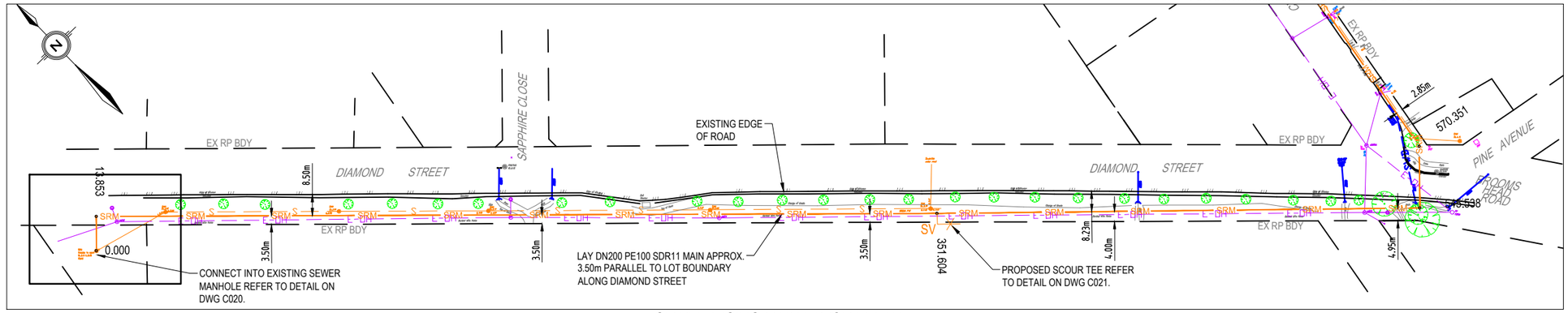
LEGEND

- LIMIT OF WORKS
- SRM — PROPOSED SEWER RISING MAIN DN200 PE100 PN16
- AV — PROPOSED AIR VALVE
- SV — PROPOSED SCOUR TEE
- EXISTING KERB AND CHANNEL
- EXISTING EDGE OF BITUMEN
- 5.0 — (0.5m) INTERVAL EXISTING SURFACE CONTOURS
- S — EXISTING SEWER MAIN
- W — EXISTING WATER RETICULATION
- SWD — EXISTING STORMWATER DRAINAGE
- E-OH — EXISTING OVERHEAD ELECTRICAL
- T — EXISTING TELSTRA
- I — EXISTING FENCE
- FH — EXISTING FIRE HYDRANT
- WM — EXISTING WATER METER
- SV — EXISTING WATER VALVE
- PP — EXISTING POWER POLE
- SMH — EXISTING SEWER MANHOLE
- EPIT — EXISTING ELECTRICITY PIT
- TPIT — EXISTING TELSTRA PIT
- EXISTING TREE

GENERAL SEWER NOTES:

2. REFER TO DWG C001 & C002 FOR DRAWING SET NOTES.
2. FOR PRESSURE SEWER TRENCH DETAIL REFER TO WSA STD DWG PSS-1000.
3. FLUSHING POINT DETAILS REFER TO WSA STD DWG PSS-1007 AND DWG C031.
4. TYPICAL VALVE DETAILS REFER TO WSA STD DWG PSS-1005 & WAT-1207-V AND DWG C021.
5. SCOUR ARRANGEMENT DETAILS REFER TO WSA STD DWG WAT-1307 AND DWG C021.
6. THRUST BLOCK DETAILS REFER TO WSA STD DWG WAT-1205 AND DWG C020.
7. CONTRACTOR IS RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL UNDERGROUND SERVICES PRIOR TO COMMENCEMENT OF WORKS.
8. ALL MAINS TO BE LOCATED IN ROAD VERGE IF SHOWN OTHERWISE CONTACT SITE SUPERINTENDENT. SRM IS NOT TO BE CONSTRUCTED UNDER ROADS UNLESS REQUIRED FOR ROAD CROSSINGS.

FOR CONTINUATION REFER TO SHEET 2 ON DWG C011



SEWER RISING MAIN LAYOUT PLAN

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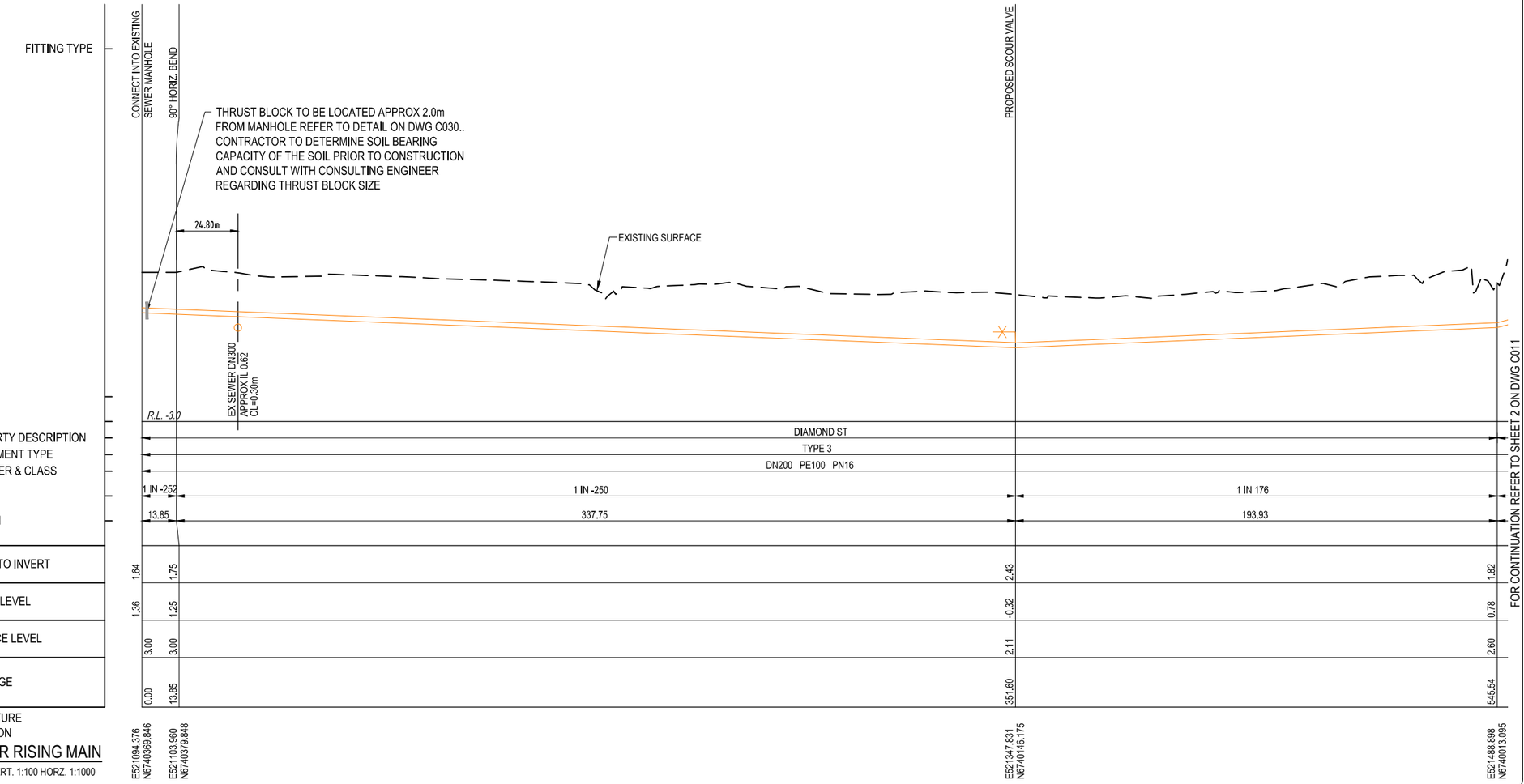

SEWER RISING MAIN

SCALE VERT. 1:100 HORZ. 1:1000

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Scale
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VERT 1 0 1 2 3 4 5 1:100
Certifier

Issue: ISSUE FOR APPROVAL

Designed	Drawn
GC	GC
Checked	Date
MC	01/04/22

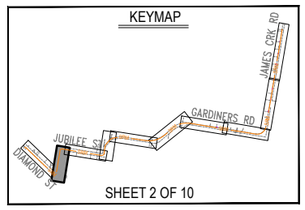
Issue	Description	Date	By
A	ISSUE FOR APPROVAL	01/04/22	

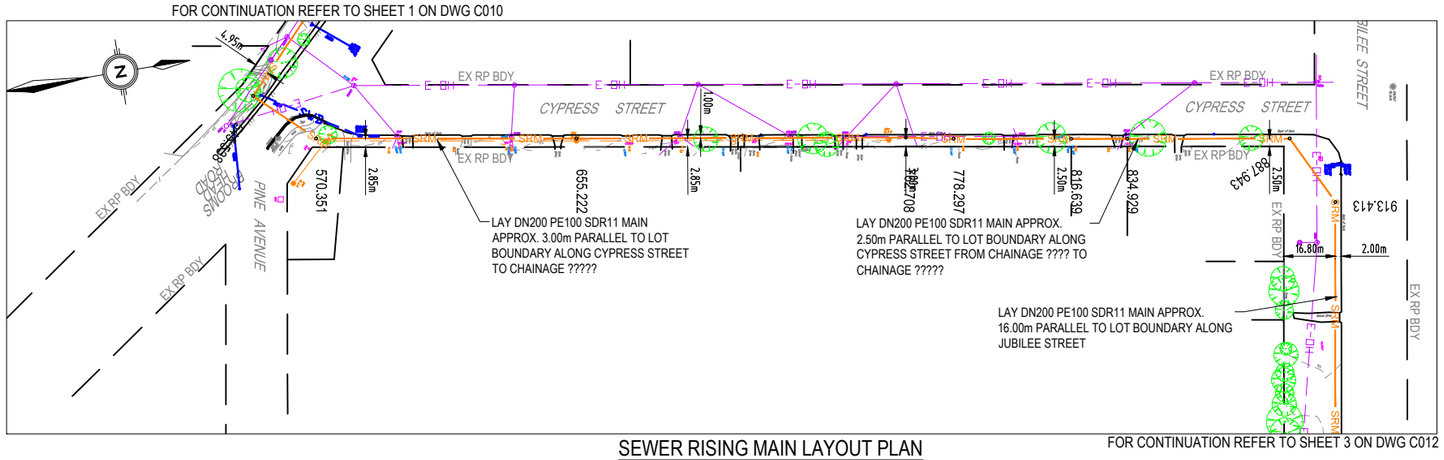
CLIENT
MPD INVESTMENTS PTY LTD

PROJECT
JAMES CREEK ROAD SUBDIVISION
PROPOSED SEWER RISING MAIN
JAMES CRK RD TO DIAMOND ST PUMP STATION

TITLE
SEWER RISING MAIN
LONGITUDINAL SECTION
SHEET 1 OF 10

Job No.	Drawing No.	Rev No.
2022041-CC	C010	A





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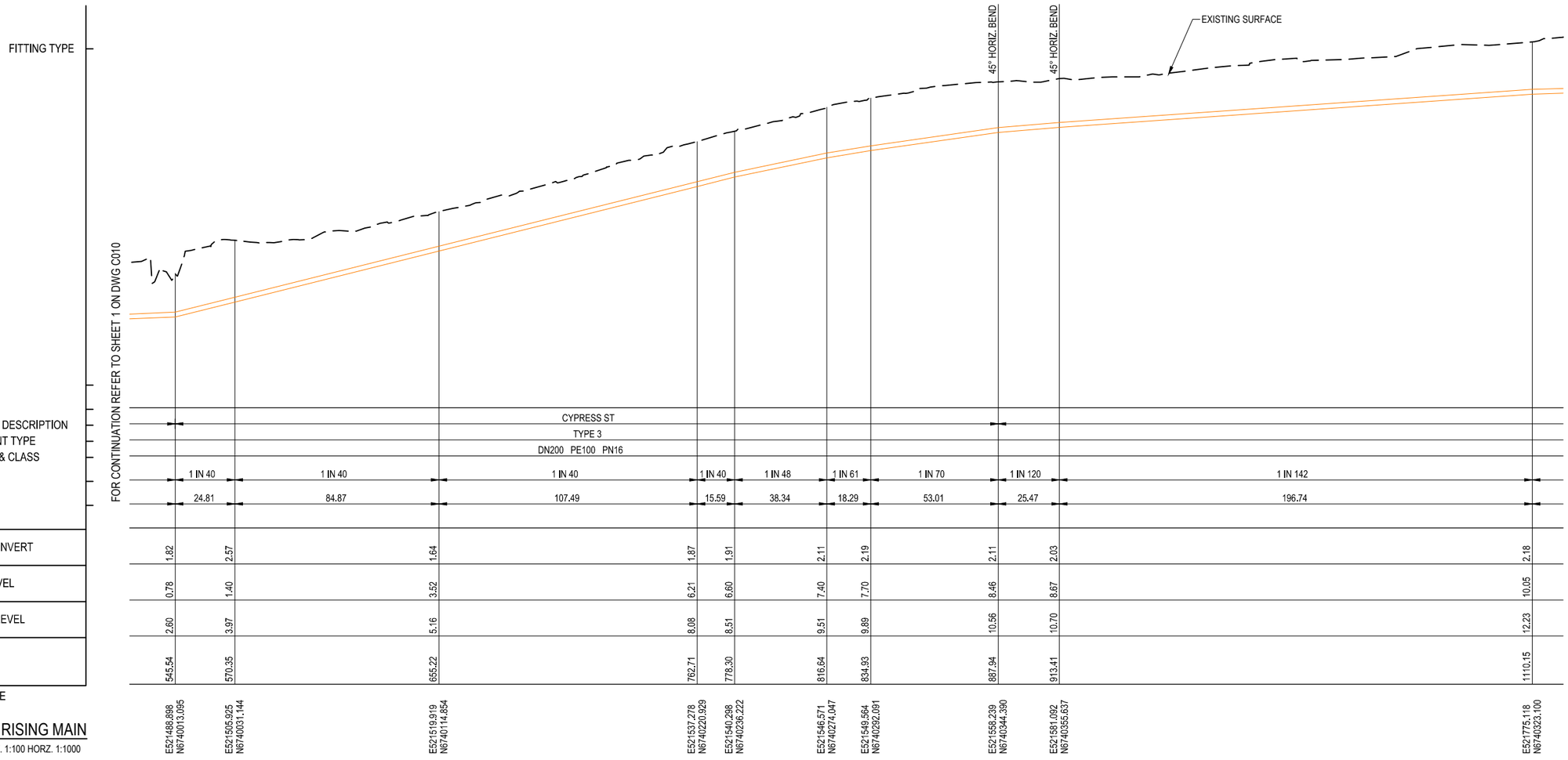

SEWER RISING MAIN
SCALE VERT. 1:100 HORZ. 1:1000

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Scale
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VERT 1 0 1 2 3 4 5 1:100
Certifier

Issue: ISSUE FOR APPROVAL
Designed GC | Drawn GC
Checked MC | Date 01/04/22

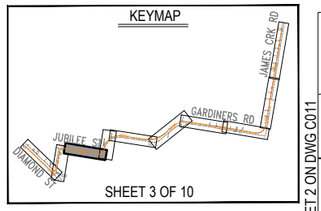
Issue	Description	Date	By
A	ISSUE FOR APPROVAL	01/04/22	

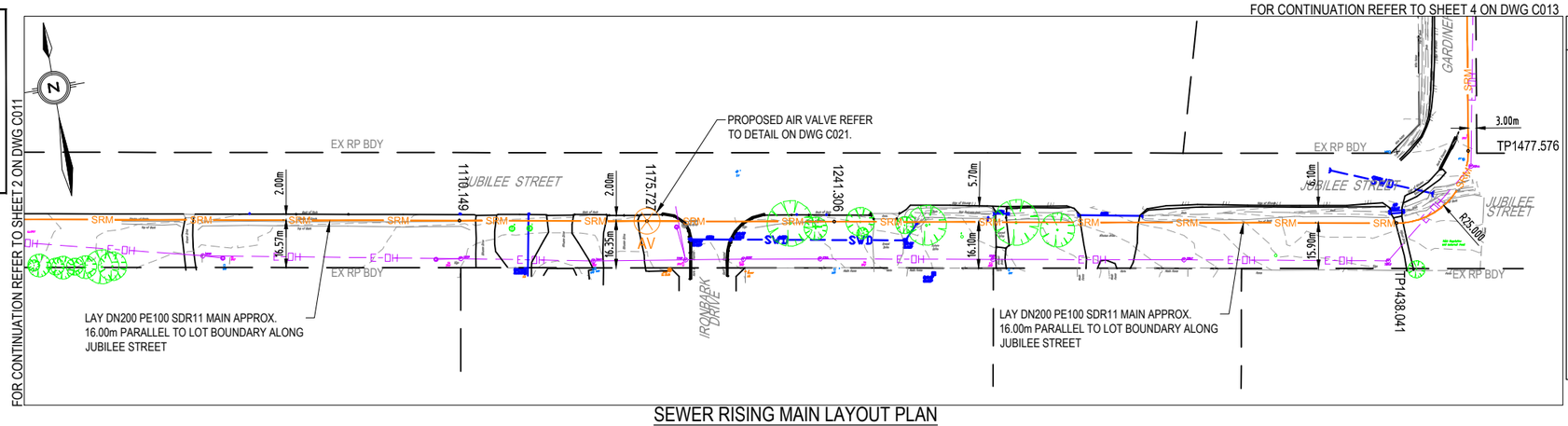
CLIENT
MPD INVESTMENTS PTY LTD

PROJECT
JAMES CREEK ROAD SUBDIVISION
PROPOSED SEWER RISING MAIN
JAMES CRK RD TO DIAMOND ST PUMP STATION

TITLE
SEWER RISING MAIN
LONGITUDINAL SECTION
SHEET 2 OF 10

Job No.	Drawing No.	Rev No.
2022041-CC	C011	A





SEWER RISING MAIN LAYOUT PLAN

SCALE 10 0 10 20 30 40 50 1:1000

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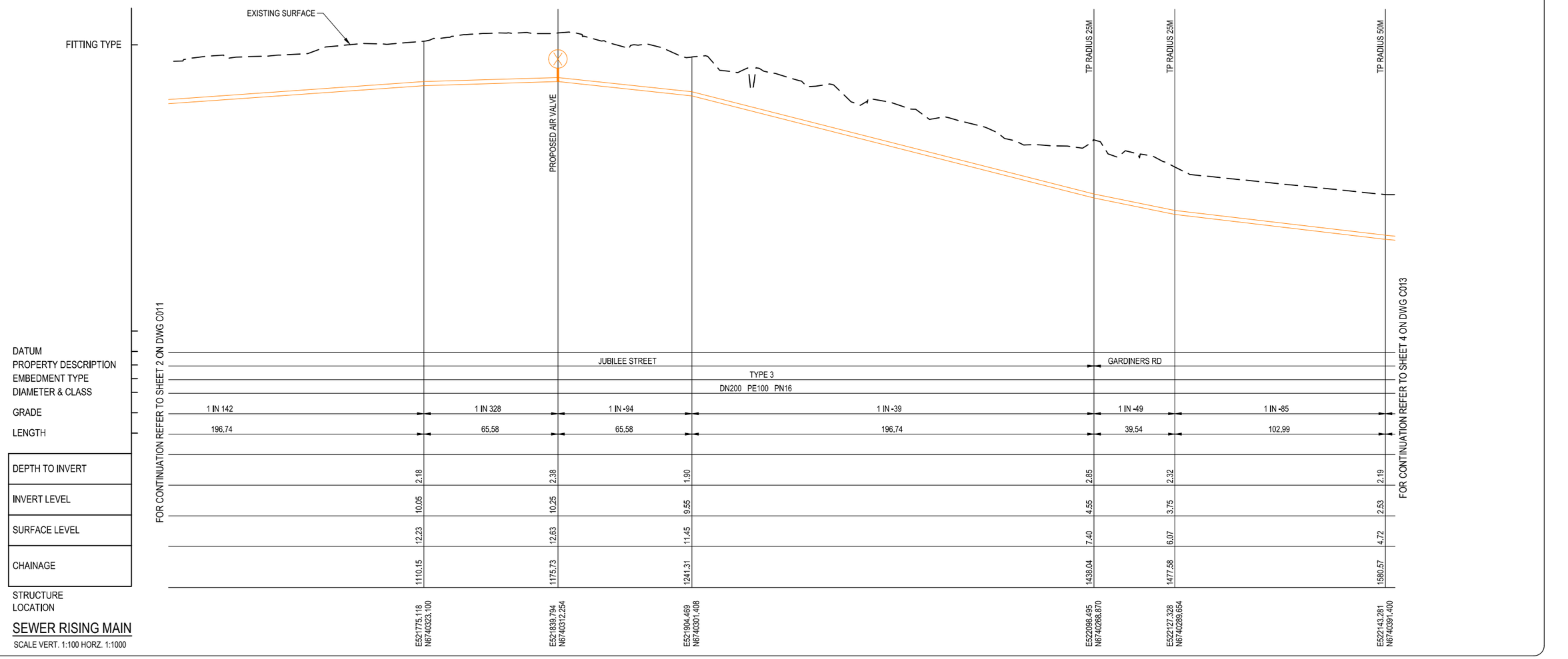

SEWER RISING MAIN

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Certifier

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GC	GC
Checked	Date
MC	01/04/22

Issue	Description	Date	By
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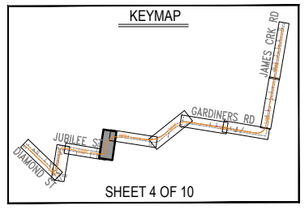
CLIENT
MPD INVESTMENTS PTY LTD

PROJECT
JAMES CREEK ROAD SUBDIVISION
PROPOSED SEWER RISING MAIN
JAMES CRK RD TO DIAMOND ST PUMP STATION

TITLE
SEWER RISING MAIN
LONGITUDINAL SECTION
SHEET 3 OF 10

Job No.	Drawing No.	Rev No.
2022041-CC	C012	A



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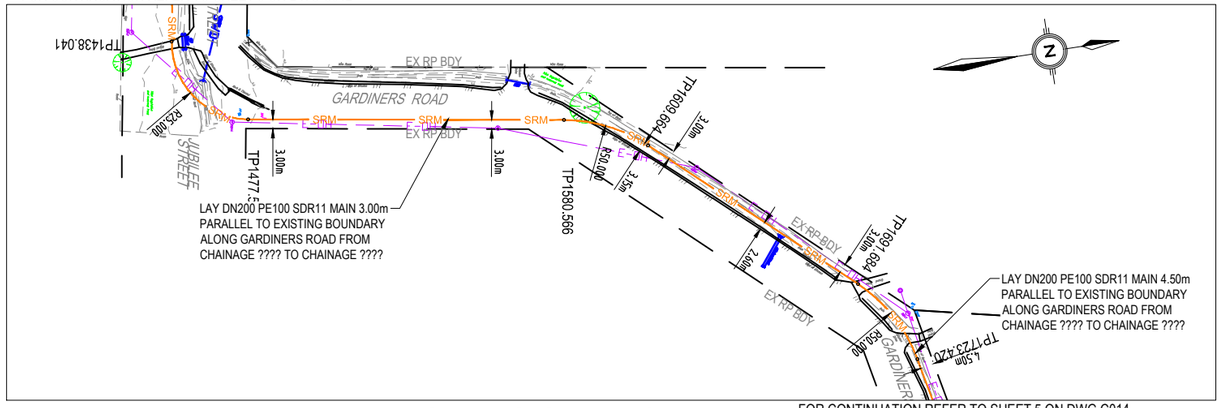
FOR CONTINUATION REFER TO SHEET 3 ON DWG C012



FOR CONTINUATION REFER TO SHEET 5 ON DWG C014

SEWER RISING MAIN LAYOUT PLAN

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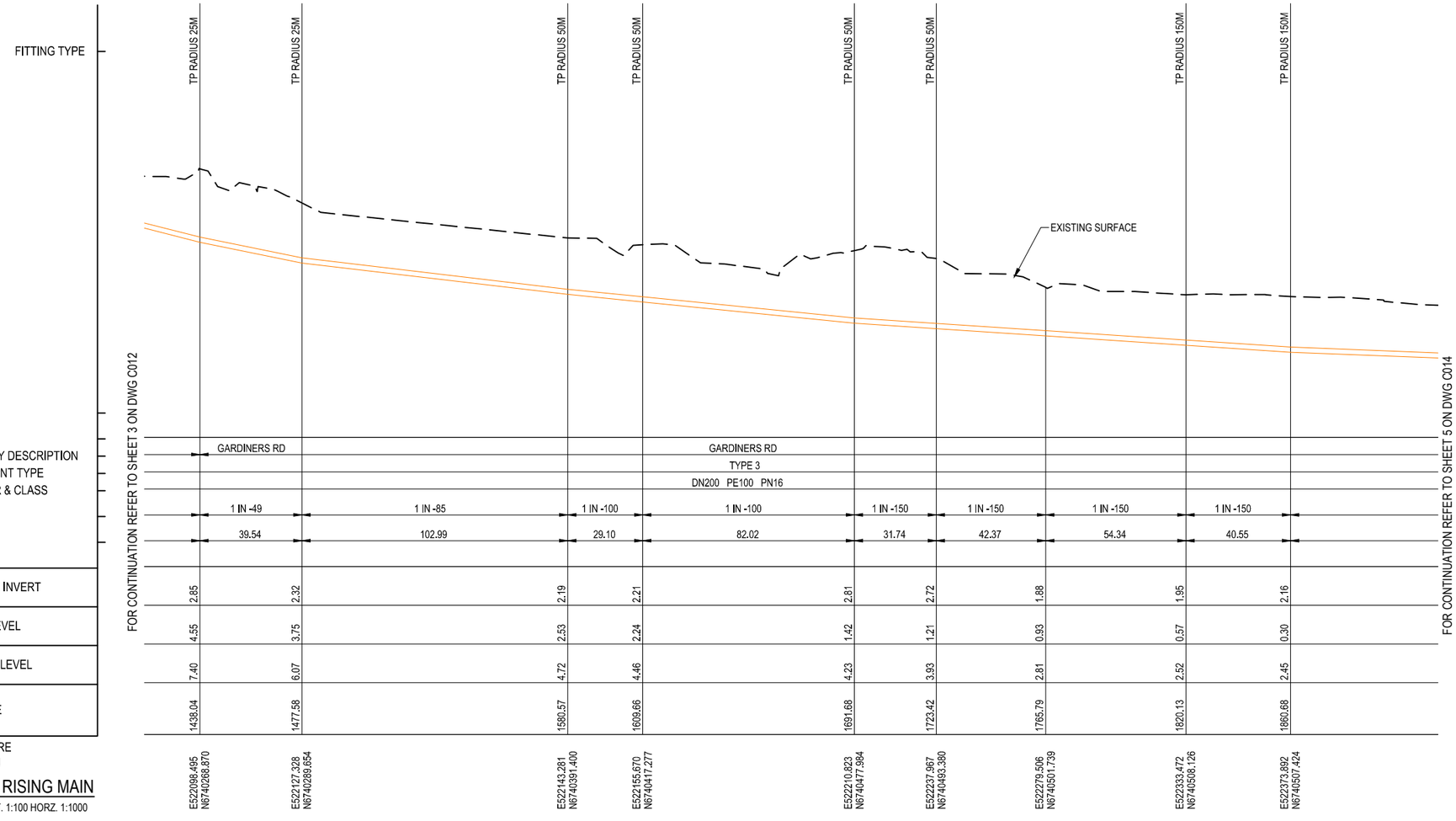

SEWER RISING MAIN

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GC	GC
Checked	Date
MC	01/04/22

Issue	Description	Date	By
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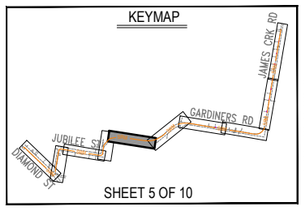
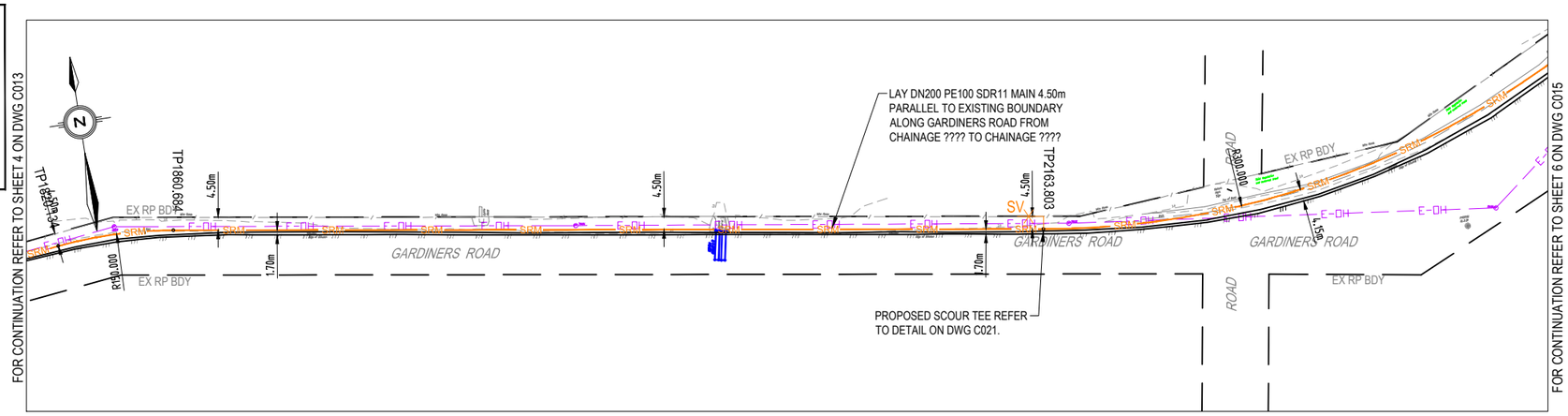
CLIENT
MPD INVESTMENTS PTY LTD

PROJECT
JAMES CREEK ROAD SUBDIVISION
PROPOSED SEWER RISING MAIN
JAMES CRK RD TO DIAMOND ST PUMP STATION

TITLE
SEWER RISING MAIN
LONGITUDINAL SECTION
SHEET 4 OF 10

Job No.	Drawing No.	Rev No.
2022041-CC	C013	A





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3. FLUSHING POINT DETAILS REFER TO WSA STD DWG PSS-1007 AND DWG C021.
4. TYPICAL VALVE DETAILS REFER TO WSA STD DWG PSS-1005 & WAT-1207-V AND DWG C021.
5. SCOUR ARRANGEMENT DETAILS REFER TO WSA STD DWG WAT-1307 AND DWG C021.
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8. ALL MAINS TO BE LOCATED IN ROAD VERGE IF SHOWN OTHERWISE CONTACT SITE SUPERINTENDENT. SRM IS NOT TO BE CONSTRUCTED UNDER ROADS UNLESS REQUIRED FOR ROAD CROSSINGS.
9. REFER TO LEGEND ON DWG C010.

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SEWER RISING MAIN

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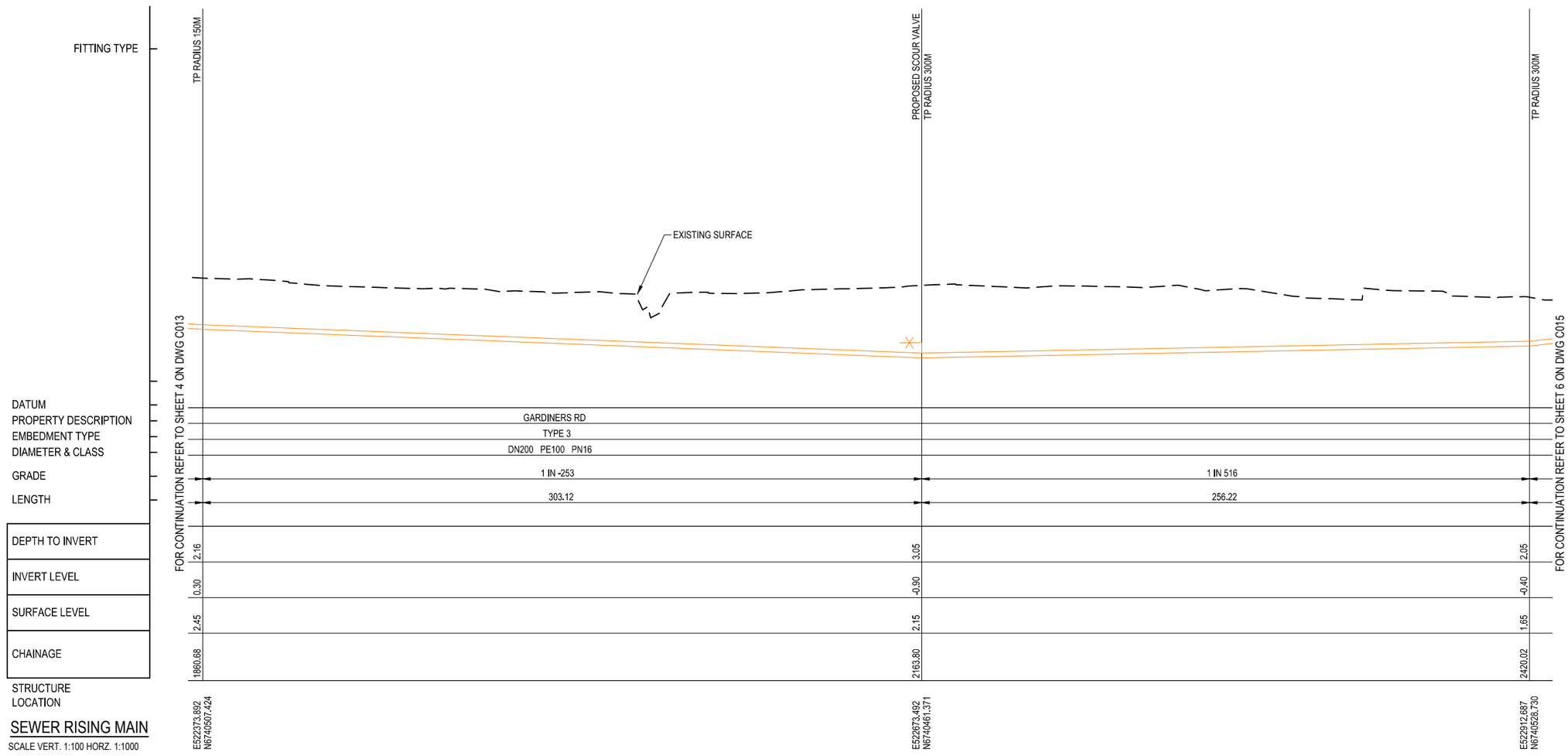

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PROPOSED SEWER RISING MAIN
JAMES CRK RD TO DIAMOND ST PUMP STATION

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SEWER RISING MAIN
LONGITUDINAL SECTION
SHEET 5 OF 10

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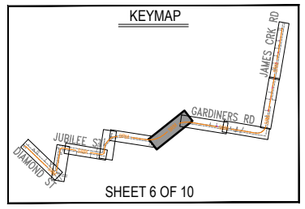

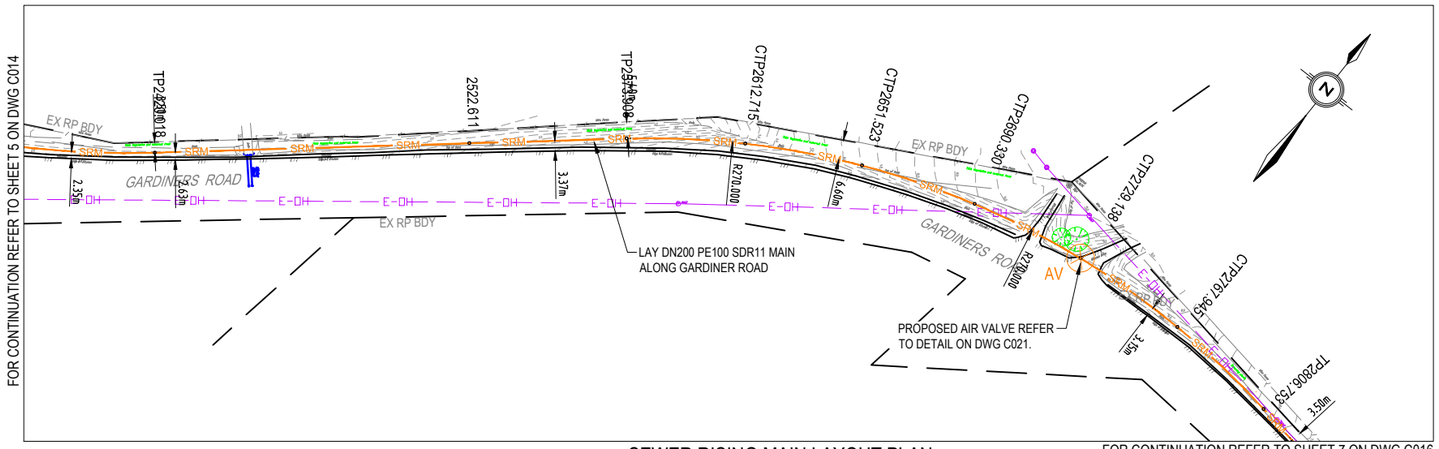

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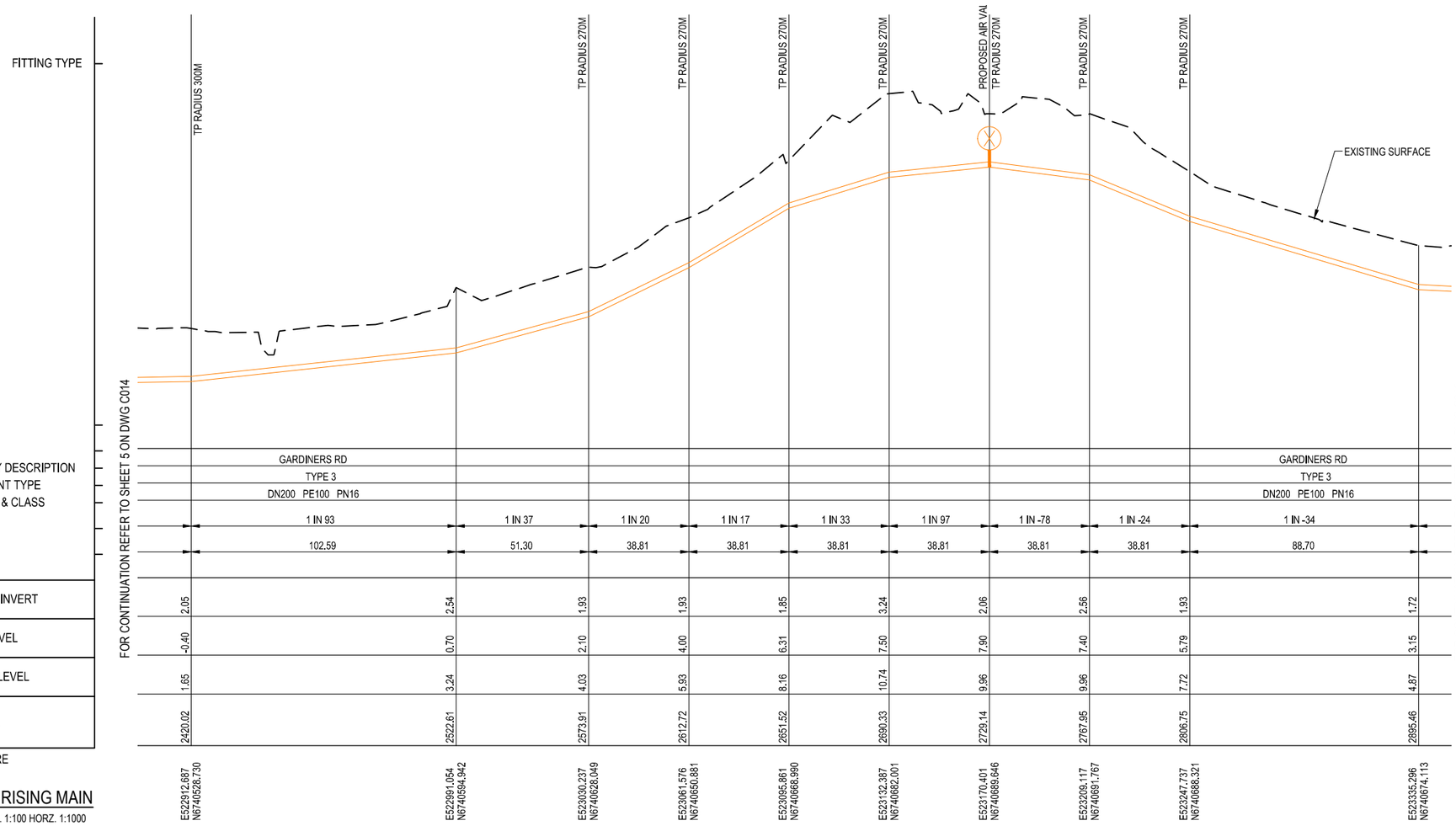

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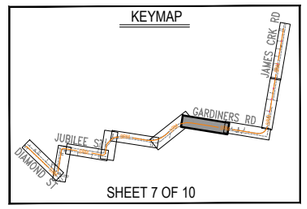

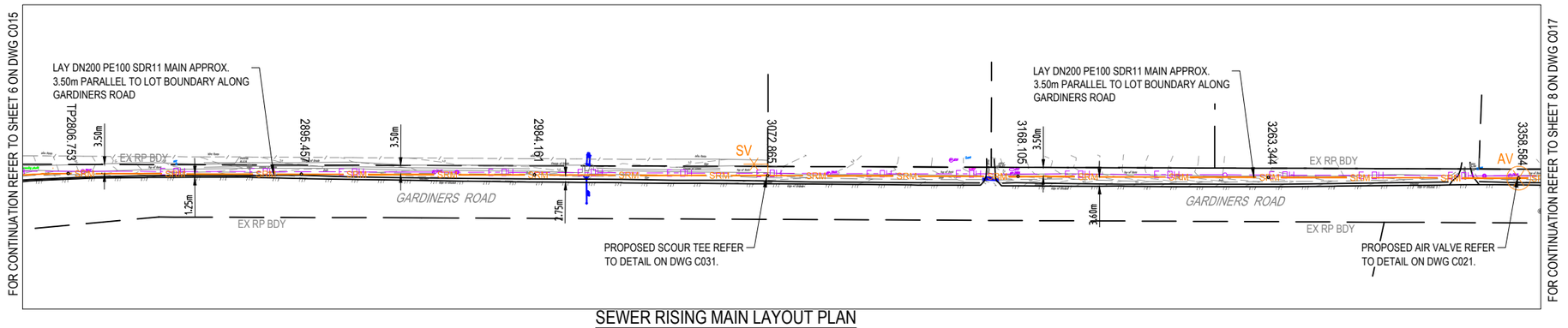

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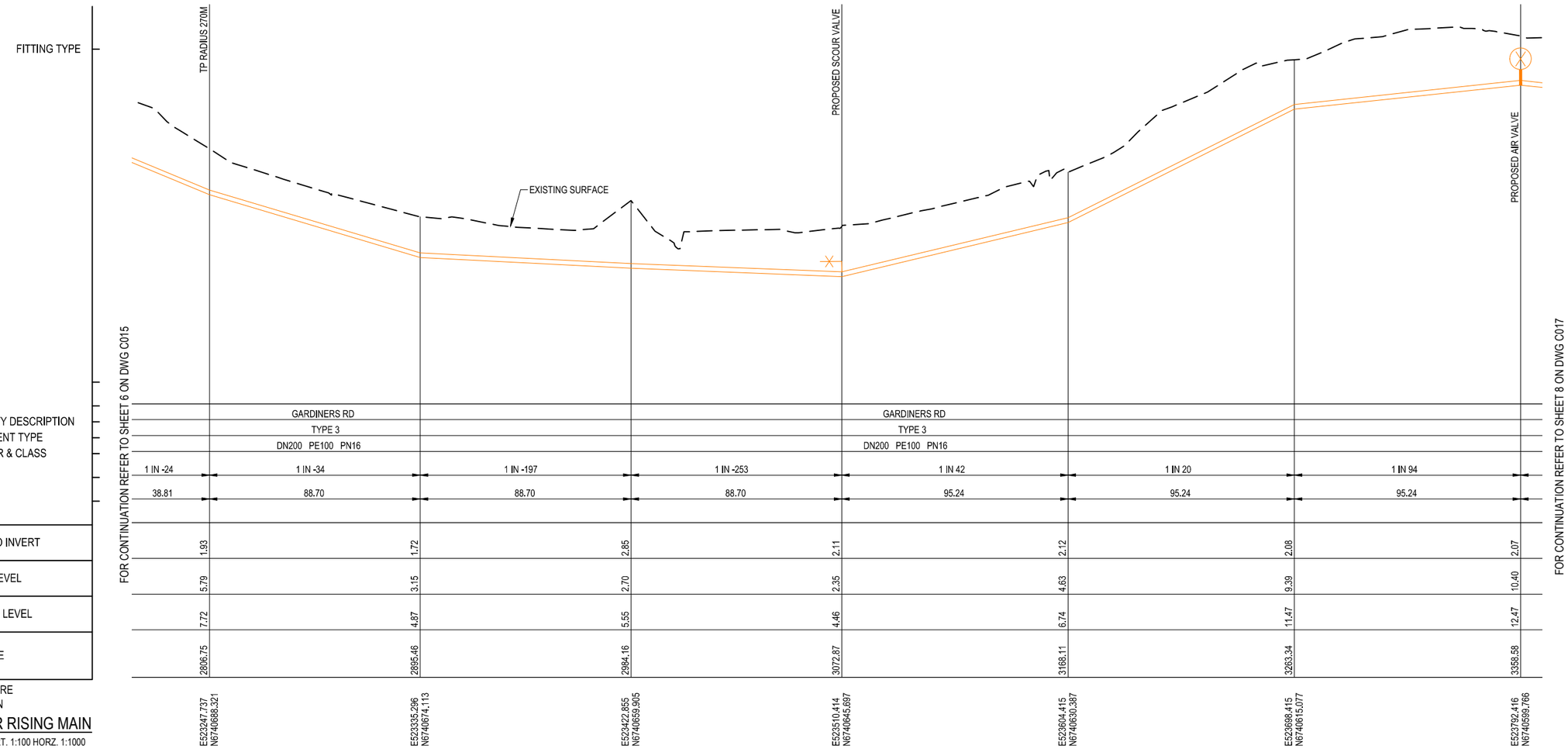

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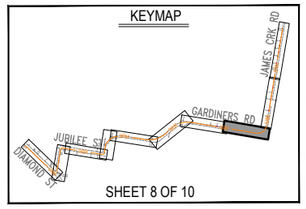

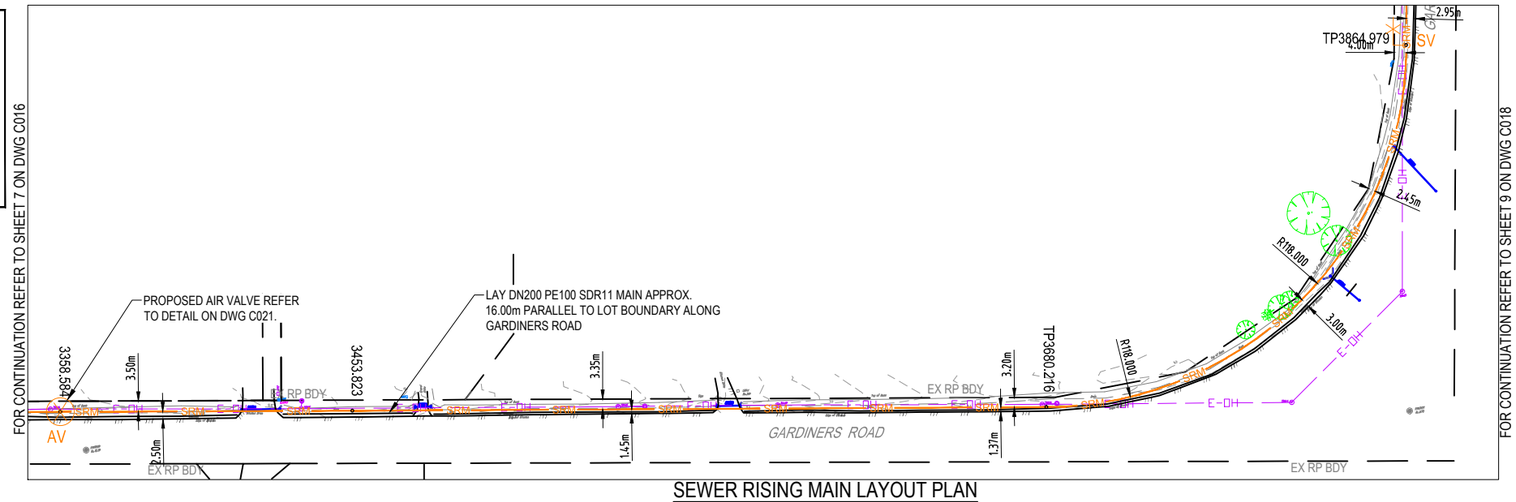

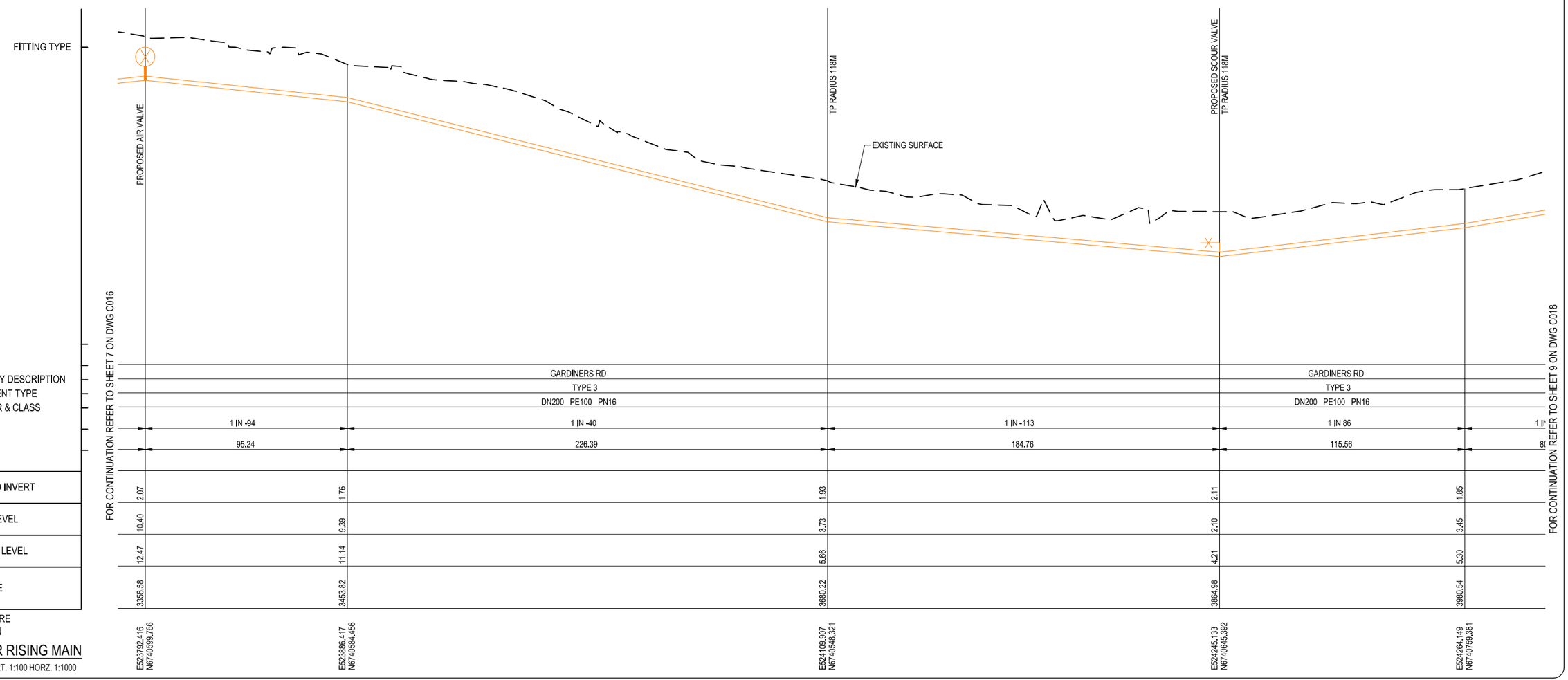

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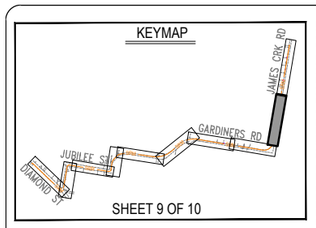

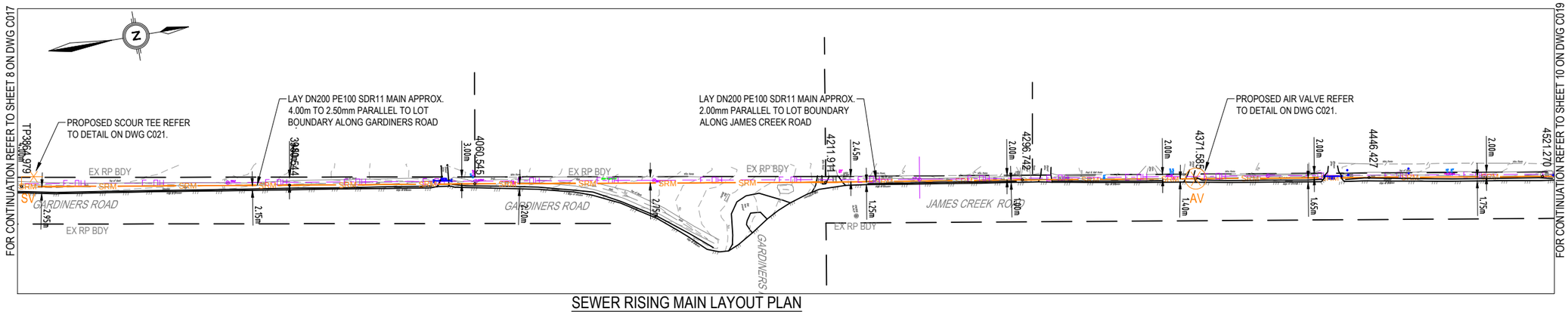

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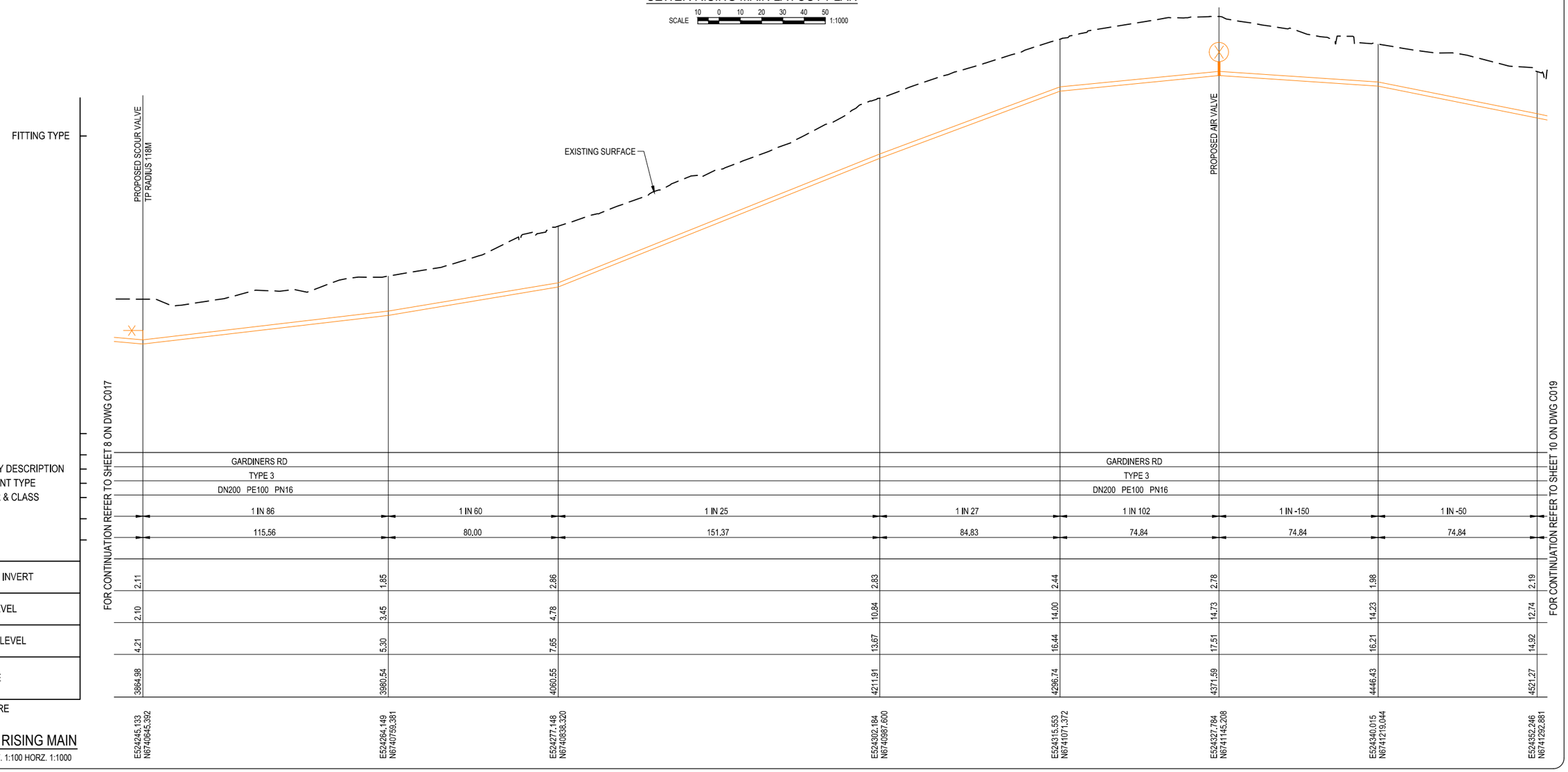

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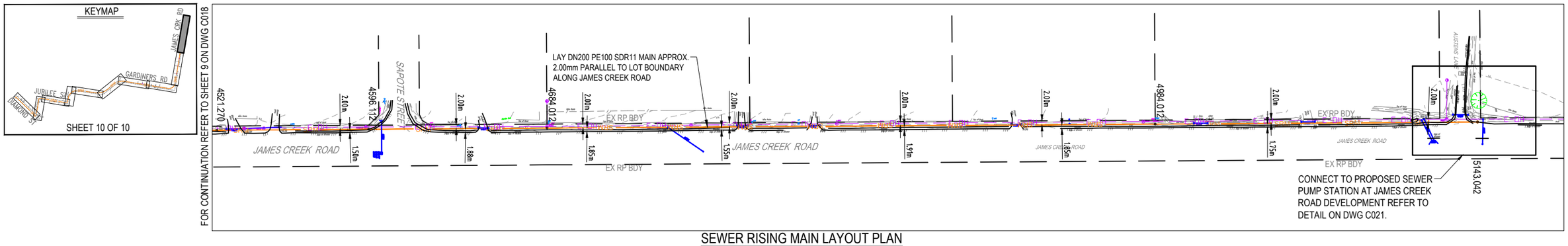

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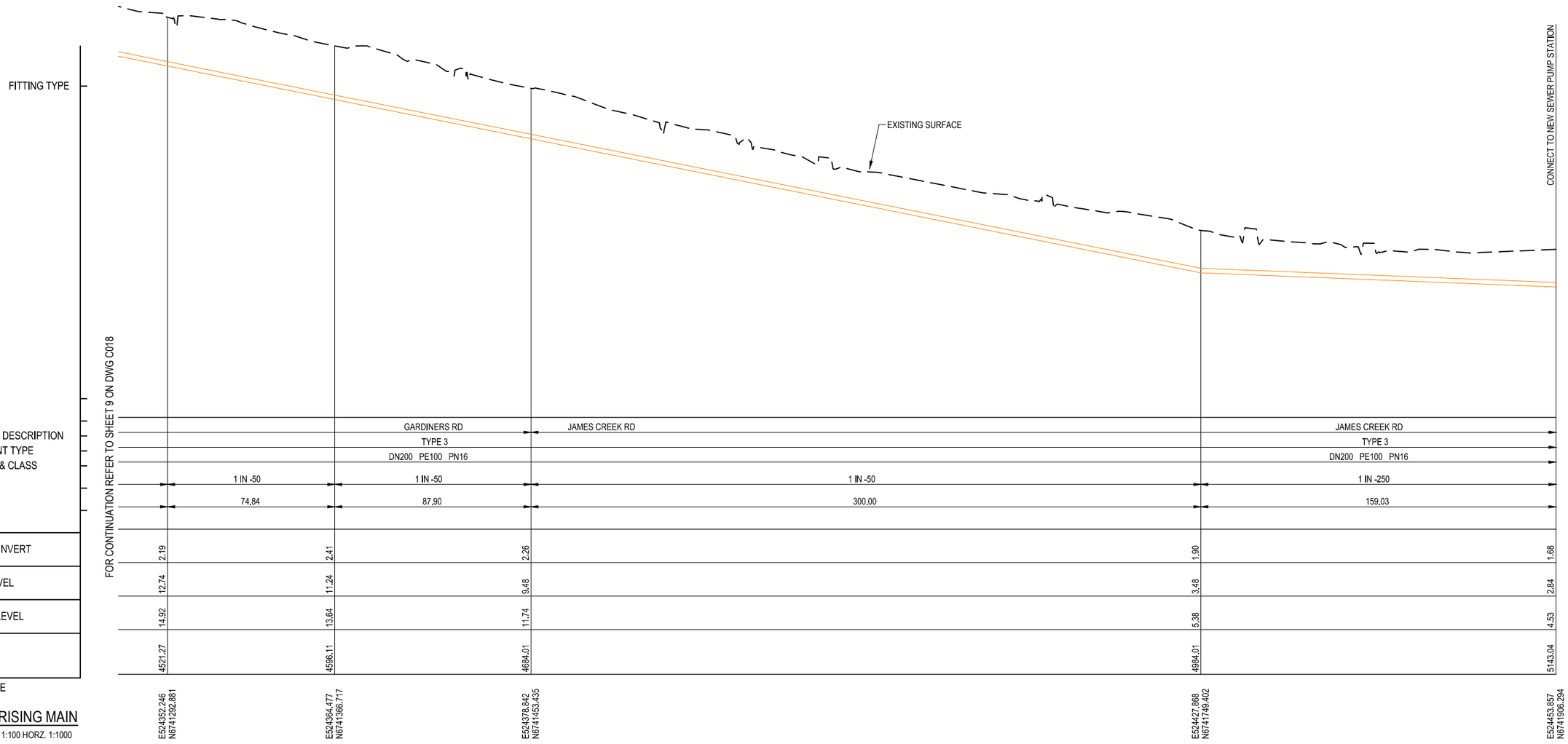

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SHEET 10 OF 10

Job No.	Drawing No.	Rev No.
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Enclosure 5

Traffic Impact Assessment report prepared by GeoLINK dated 24 November 2023

Traffic Impact Assessment

Lot 104 DP 751388, James Creek Road

Quality solutions. Sustainable future.

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Prepared for: MPD Investments
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UPR	Description	Issued By	Date Issued
3204-1010	First Issue to client for review	MVE	16/08/2019
3204-1015	Second Issue	MVE	21/08/2019
3204-1040	Third issue for DA submission	MVE	6/10/2020
3204-1076	Fourth issue	MVE	13/10/2021
3204-1080	Fifth issue for revised DA submission	MVE	21/10/2021
3204-1100	Sixth issue	MVE	18/05/2022
3204-1117	Seventh issue for revised DA submission	MVE	24/03/2023
3204-1126	Eighth Issue for new DA	MVE	24/11/2023

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Appendix A Sidra Intersection Analysis

1. Introduction

1.1 Background

GeoLINK has been engaged by MPD Investments to prepare a traffic impact assessment (TIA) for a proposed residential subdivision at Lot 104 DP 751388 James Creek Road, James Creek. This report aims to summarise the effect the proposed development is likely to have on the operation of adjacent roads, considering the impacts on all road users. It should be read in conjunction with the Statement of Environmental Effects and the associated design drawings.

1.2 Site Description

Lot 104 DP 751388 (the site) is rectangular in shape and has an area of approximately 33 ha. It is situated mid-way along James Creek Road in James Creek, bounded by James Creek Road to the east and Austons Lane to the south, with large rural lots to the north and west. The lot to the north is densely vegetated. Approximately 650 m further to the west flows James Creek and approximately 1.3 km to the east flows Palmers Channel. Both waterways flow north, discharging into the Clarence River approximately 1.7 km north of the site.

James Creek is a small, rural locality on the north coast of NSW. The nearest townships are Maclean, Gulmarrad and Yamba, all within 10-15 minutes' drive of the site. Grafton is the nearest larger centre, located 45 minutes' drive southwest.

The site has been historically cleared and modified for agriculture, sugar cane production and cattle grazing. It is currently essentially clear of vegetation other than grass. The crest of a small hill is located slightly to the north-west of the centre of the site. From this crest, the land falls away in all directions with slopes on the site typically in the range of 3% to 10%.

The site is predominantly zoned R1 General Residential, with a portion zoned R3 Medium Density Residential. There is also a small area approximately 2,100 m² zoned B1 Neighbourhood Centre. This area has the potential to include a neighbourhood shop or similar commercial development.

1.3 Proposed Development

The proposal is for subdivision of the site resulting in 280 residential lots, a childcare centre, a commercial centre, and associated infrastructure (e.g. roads, services). The 280 lots comprise 242 single-dwelling lots, 37 duplex lots, and a 0.87 ha medium density lot with 38 units proposed. Thus, the ultimate number of residential dwellings expected is 354 lots.

At the time of writing, the subdivision is proposed to occur in five stages, however it is noted that the number of stages, the number of lots in each stage and the sequence of staging will be influenced by the market at the time and possibly by the provision of services.

Access for all proposed lots will be a single intersection on James Creek Road located approximately midway along the eastern boundary.

The internal road network comprises a permeable semi-symmetric layout, including a main ring road and several smaller loop roads.

The proposal also includes a shared path extending from the development frontage, south along James Creek Road to the James Creek / Gardiners Road intersection.

2. Existing Conditions

2.1 Road Conditions

2.1.1 James Creek Road

All traffic to or from the site will use James Creek Road. James Creek Road is approximately 3.6 km in length, joining with Yamba Road to the north and Gardiners Road to the south. The northern-most 1.0 km portion of the existing road has been sealed by Clarence Valley Council (Council).

James Creek Road is a rural road with variable width, nominally 7.0 m from edge of seal to edge of seal. There is no kerbing and the shoulders are generally 1.0 m wide and unsealed. The road pavement appears to be in good condition.

Linemarking is provided only at the intersection with Gardiners Road and at the recently upgraded intersection with Yamba Road.

The alignment is generally flat with minimal horizontal curves. Crossfall varies from centre crown to one-way as required for superelevation and drainage.

There are a number of rural driveways along James Creek Road providing access to 25-30 rural dwellings. Austons Lane, which bounds the site to the south is a rural unsealed driveway providing access to a further two properties. Sapote Street is located approximately 450 m from the southern end of James Creek Road and provides access to a rural residential area of around 40 residences. There is also a concrete batching plant located near the Yamba Road intersection.

The speed zone is 80 km/h for the northern portion, dropping to 60 km/h along the property frontage towards the southern boundary of the site.

Figure 2.1 James Creek Road, view to the south near the site

Figure 2.2 James Creek Road, view to the south at Sapote Street intersection

2.1.2 James Creek Road / Yamba Road Intersection

This rural tee-intersection currently comprises a full length auxiliary left turn lane (AUL) for traffic travelling from Yamba and turning left onto James Creek Road, and a basic right turn treatment (BAR) for traffic travelling from Maclean or the Pacific Highway turning right onto James Creek Road.

There are no acceleration lanes provided for vehicles exiting James Creek Road onto Yamba Road in either direction.

Radii at the intersection are sufficient for heavy vehicles to easily to navigate the intersection.

Figure 2.3 James Creek Road / Yamba Road intersection ***[Source: Nearmap]***

2.1.3 James Creek Road / Gardiners Road Intersection

This rural tee-intersection currently comprises basic left and right turning treatments for vehicles turning off Gardiners Road onto James Creek Road from either east or west.

There are no acceleration lanes provided for vehicles exiting James Creek Road onto Gardiners Road in either direction.

Radii at the intersection are sufficient for heavy vehicles to easily to navigate the intersection.

Figure 2.4 James Creek Road / Gardiners Road intersection ***[Source: Cardno Eppell Olsen]***

Figure 2.5 James Creek Road / Gardiners Road intersection ***[Source: Google Maps]***

2.1.4 Yamba Road

Yamba Road links Maclean in the west to Yamba in the east. It is a fully linemarked two-lane two-way rural road in very good condition. It provides connection to the Pacific Highway in both north and south directions via on and off ramps located south of the Yamba Road alignment.

The speed zone varies along the road's length, with 50 km/h through built-up areas, 80 km/h in the vicinity of the James Creek Road intersection, and 100 km/h to the west of the Pacific Highway.

Figure 2.6 Yamba Road, view to the west, 400 m east of James Creek Road

2.1.5 Gardiners Road

Gardiners Road links Townsend in the west to James Creek Road. Further east of the James Creek Road intersection, Gardiners Road provides access for a few large rural properties before merging into Amos Road then Palmers Channel South Bank Road. In Townsend, Gardiners Road becomes Jubilee Street, which currently crosses under the Pacific Highway and continues into Maclean.

Figure 2.7 Gardiners Road between James Creek Road and Townsend, view to the west

2.1.6 Pacific Highway

The Pacific Highway is the main connection between Sydney and Brisbane, or more locally, between Coffs Harbour, Grafton, Ballina and Tweed Heads. The highway has recently undergone major upgrade works to provide dual carriageway between Woolgoolga and Ballina. The works include bypassing Grafton and several other small townships.

The upgraded highway includes on and off ramps for north and southbound traffic at the Yamba Road interchange just south of the Harwood Bridge, and at the Maclean interchange approximately 5.5 km to the south. Refer to **Figure 2.8**.

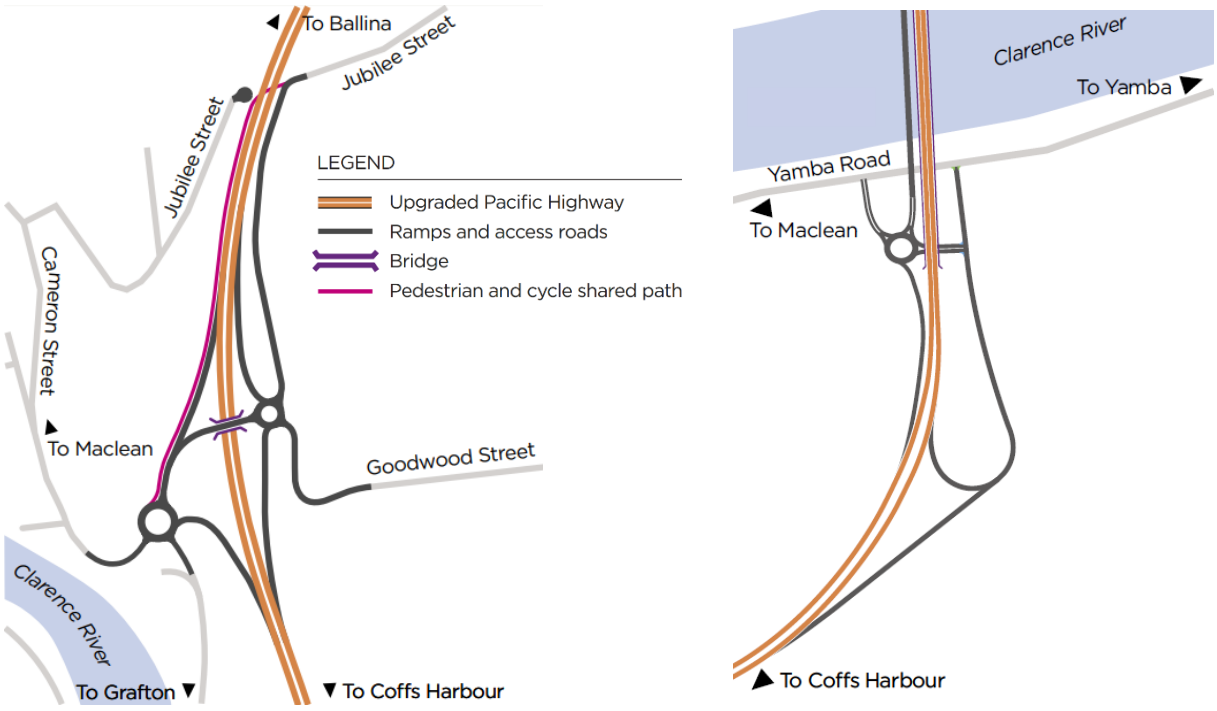

Figure 2.8 Maclean (left) and Yamba (right) interchanges

2.2 Traffic Flows

2.2.1 James Creek Road

Existing traffic data from 2019 has been provided by Council for James Creek Road and additional counts have been collected in 2022. The data is summarised below.

Table 2.1 Traffic Data for James Creek Road

Location	Dates	AADT	Heavy Vehicles
50 m south of Yamba Rd	24/06/2019 – 01/07/2019	362	14.1%
100 m north of Gardiners Rd		230	23.0%
At site frontage	22/03/2022 – 5/04/2022	311	13.2%

This data indicates that the average annual daily traffic (AADT) on James Creek Road is 362 veh/day close to Yamba Road, 230 veh/day close to Gardiners Road, and 311 veh/day at the site frontage. This suggests that the majority of traffic on James Creek Road travels north to their destination via Yamba Road, rather than south via Gardiners Road.

Peak hourly counts determined from the data collected in March 2022 were 32 veh/hour in the AM peak and 28 veh/hour in the PM peak. Directional split was measured to be approximately 50/50 overall throughout the day. However, during the AM hours, approximately 55% of traffic is heading north and 45% is southbound. In the PM hours, approximately 40% is northbound and 60% is southbound.

2.2.2 Yamba Road

Traffic volumes on Yamba Road were determined by Cardno Eppell Olsen (CEO) in late 2010 as part of Council's *Maclean Urban Catchment Local Growth Management Strategy 2011*. Existing AADT at the time was found to be 6,500 veh/day.

Additional data collected at the Yamba Road / James Creek Road intersection in March 2022 indicates an AADT on Yamba Road of 9,000 veh/day. This suggests an annual growth rate of 2.8% per year between 2010 and 2022.

Data presented in a TIA undertaken by PlanIt in 2018 calculated the 2018 AADT on Yamba Road to be 9,725 veh/day. These volumes were determined by taking seven days' traffic counts on Yamba Road, near to the intersection with Treelands Drive, on the western fringe of the Yamba township. Traffic volumes on Yamba Drive closer to the James Creek Road are expected to be less than these figures.

Assuming a 3.5% annual traffic growth, the volumes on Yamba Road can be expected to be up around 13,000 veh/day in ten years (2032).

Hourly traffic data collected in March 2022 indicates that the AM and PM peaks are 750 veh/hour for traffic travelling in both directions. Applying a 3.5% growth rate compounded annually, this becomes around 1,060 veh/hour in ten years (2032). The direction split is approximately 47% eastbound to 53% westbound in the AM peak and the reverse for the early PM peak (3:00-4:00 PM). The split is more pronounced at the later PM peak (4:30-5:30 PM), being around 57% eastbound and 43% westbound.

2.2.3 Gardiners Road

Data collected at the Gardiners Road / James Creek Road intersection in March 2022 indicates an AADT on Gardiners Road of no more than 2,000 veh/day. Assuming a 1.5% annual traffic growth rate, the volumes on Gardiners Road can be expected to be between 2,000 and 2,500 veh/day in ten years (2032), with peak hourly volumes around 200 veh/hour.

Hourly traffic data collected in March 2022 indicates that the AM and PM peaks are both close to 150 veh/hour for traffic travelling in both directions. Applying a 1.5% growth rate compounded annually, this becomes around 180 veh/hour in ten years (2032). The direction split is approximately 70% eastbound to 30% westbound in the AM peak and close to 50/50 during the PM peak.

2.3 Public Transport

The Grafton regional area is serviced by Busways North Coast Pty. Ltd. (Busways), including services between Grafton, Westlawn, Jackadgery, Ulmarra, Maclean, Yamba, Harwood and Iluka. Routes 380 and 386 operate between Grafton and Yamba (via Maclean), and Maclean and Iluka respectively. Both stop at a shelter on the southern side of Yamba Road directly west of the bridges.

Typical of regional and rural areas, the site currently has limited access to public transport services. The nearest bus stop to the site is on Yamba Road, located between the old Harwood Bridge and the road linking to the Pacific Highway northbound on and off ramps. This location is approximately 2.8 km from the site, being a 4-minute drive or a 30-minute walk.

On weekdays, there are eight services a day to Grafton via Maclean, Tyndale, Cowper Public School, Ulmarra and South Grafton, and eight a day in the reverse direction. There are also eight services each weekday to Yamba via Palmers Island Public School, West Yamba, Angourie and Wooloweyah, and the same in the reverse direction. Weekends and public holidays offer half the number of services per day.

Approximate bus trip times to/from Bus Stop ID 246311 on Yamba Road are as follows:

- 5 minutes to Maclean (River Street)
- 10 minutes to Maclean TAFE
- 10 minutes to West Yamba shops
- 20 minutes to Yamba
- 30 minutes to Ulmarra
- 40 minutes to Iluka (switching to Route 386 in Maclean. Note this route only operates twice a day)
- 1 hour to Grafton

In addition to the local regional bus services, there is also one service each day in each direction between Grafton and Byron Bay, via Maclean. This service takes approximately 3 hours each way between Maclean and Byron, and timing is such to allow connection with the train services in Grafton to Coffs Harbour, Newcastle and Sydney. Similarly, from Byron, there are several coach services onwards to Brisbane.

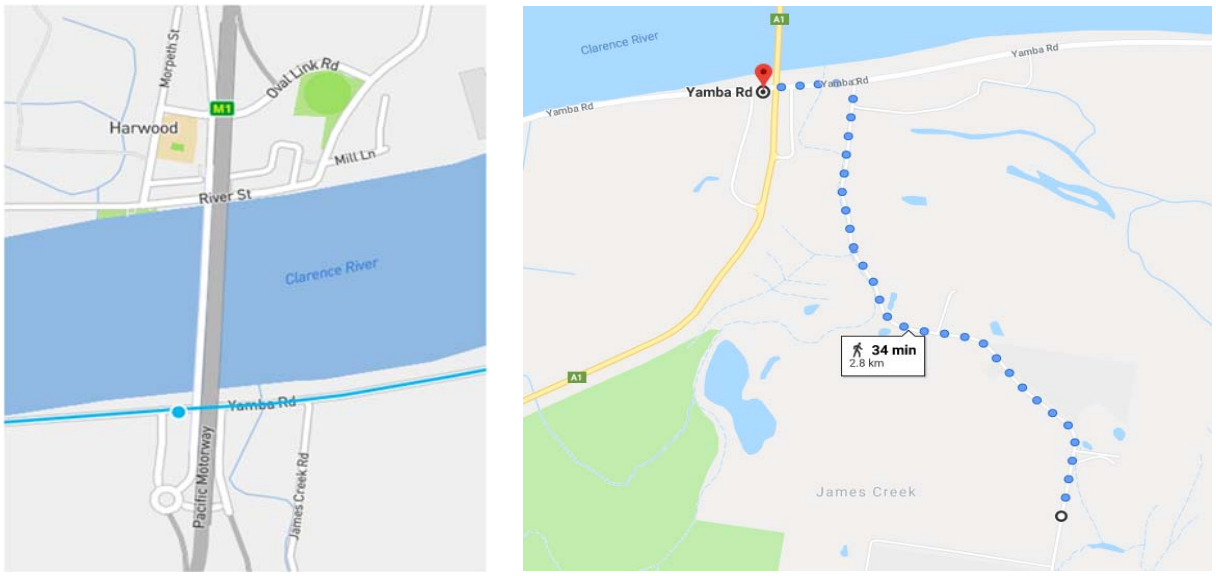

Figure 2.9 Yamba Rd at Pacific Hwy Bridge Bus Stop ID 246311

2.4 Pedestrians and Cyclists

There are no pedestrian or cycleway facilities currently provided on James Creek Road. However, given that it is a low volume and generally flat road, it is reasonable to assume that James Creek Road may be used by cyclists either recreationally or commuting to Townsend (5 km), Gulmarrad (7 km), Maclean (8 km) or Yamba (15 km).

There are several footpaths, cycle paths and shared paths within Maclean and Yamba. The Pacific Highway upgrade works include a shared path connection from Townsend to Maclean. However, any cycling between the site and nearby destinations will require some, if not most of the journey riding on the roadway.

Council's *Bike Plan* (2015) indicates a future cycleway route extending from Yamba to Tyndale to Wooli, as part of the NSW 'Coastline Cycleway' project. This project aims to create a continuous cycling route along the NSW coast from the Queensland boarder to the Victoria border. In the vicinity of the site, the route turns off Yamba Road on Palmers Channel South Bank Road (1.6 km east of the Yamba Road / James Creek Road intersection). South Bank Road merges into Amos Road then Gardiners Road, which passes by the southern end of James Creek Road. As such, if the future cycleway eventuates, the site would be well connected to other coastal townships.

The *Bike Plan* also gives the cycle route between Maclean and Yamba a 'high' priority rating.

Given the rural nature of the location and the proximity to the Pacific Highway, it is considered that pedestrian activity to, from, or near the site is unlikely.

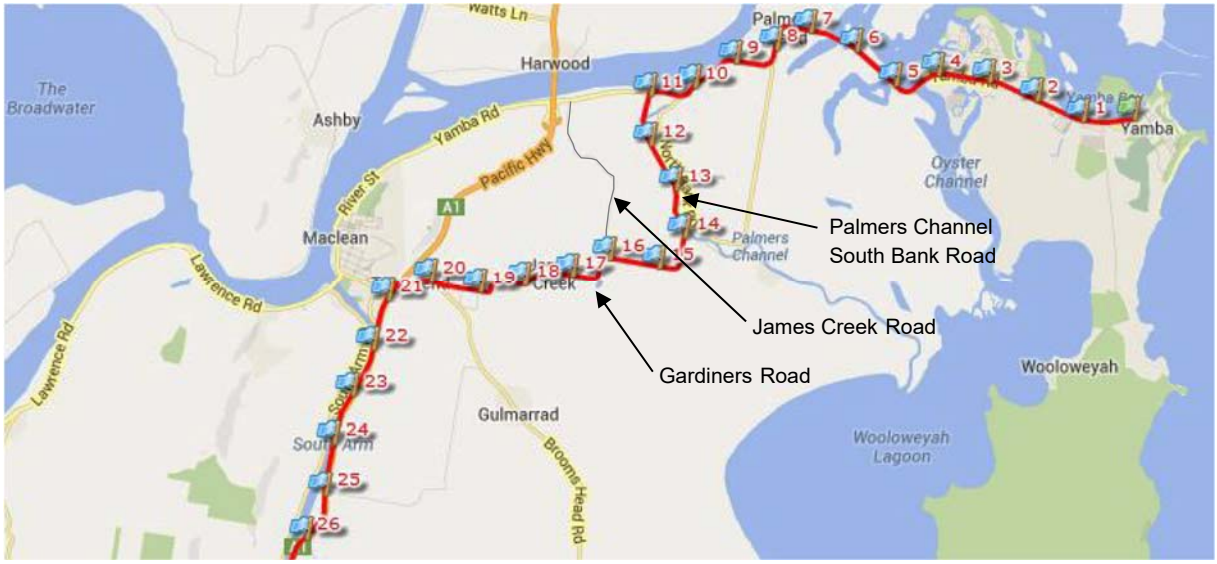

Figure 2.10 Extract from Council's *Bike Plan* (2015)

3. Assessment

3.1 Traffic Generation

The RMS *Guide to Traffic Generating Developments* (2002) provides generic rates for trip generation for various land uses. For residential dwellings, the RMS Guide suggests each dwelling generates 9 vehicle trips per day, and 0.85 trips per dwelling for the weekday peak hour. The RMS Technical Direction TDT 2013/04a, *Guide to Traffic Generating Developments: Updated Traffic Surveys* (RMS, 2013) provides a revised rate of 7.4 daily vehicle trips and 0.78 peak hour trips per dwelling in regional areas, such as James Creek.

Based on these rates, it can be anticipated that the proposed residential components of the development will generate 354 x 7.4 = 2,620 vehicle trips per day, or 277 trips during the weekday peak hour.

It should be noted that the rates used are considered 'worst case', as a proportion of the trips generated will be internal to the development. Furthermore, facilities promoting alternative modes of transport such as walking, cycling and public transport are likely to be improved in the future, which would further reduce the passenger vehicle trips generated by the development.

In addition to the residential development, the site has the potential to include a small commercial centre (e.g. a corner store, a bakery, hairdresser etc.) Based on the available space and the need for on-site car parking provisions, it is expected that such a development would comprise no more than 750 m² gross floor area (gfa). The RMS Guide suggests rates of 10 daily trips or 2 peak hour trips per 100 m² gfa for office and commercial spaces, equating to 75 veh/day and 15 veh/peak hour for the 750 m³ gfa commercial centre. However, it is expected that most (70-75%) of the traffic generated by the commercial area will be from within the development.

The proposal also includes a childcare centre. The RMS Guide recommends estimating traffic generation for 'pre-school' type childcare centres as follows:

- 7:00 – 9:00 am – 1.4 trips per child
- 2:30 – 4:00 pm – 0.8 trips per child.

The childcare centre is proposed to accommodate 103 children. Thus the centre is expected to generate 145 trips during the AM peak and 83 trips during the PM peak. This equates to around 2,266 additional trips per weekday. However, as per the commercial centre, it is expected that at around 85% of the trips generated by the childcare centre will be from within the development. Further, is it assumed that close to 100% of these will be commuters on their way to work. As such, the bulk of the trips expected to be generated by the childcare centre are already included in the estimated trips generated by the development overall. The additional 15% of trips generated by the development are assumed to be traffic already travelling on James Creek Road i.e. the childcare centre is expected to be utilised only by those who already travel along James Creek Road, or reside within the proposed development. The modelling has taken into account this additional traffic likely to enter and exit the development during he AM and PM peak.

Thus, the total traffic expected to be generated by the development based on the RMS Guide and assumptions described herein, is taken to be 3,000 vehicle trips per day, or 300 peak hour trips. After construction is complete, it is expected that the traffic generated will consist almost entirely of light vehicles.

3.2 Roadway Capacity

The level of service (LOS) is a qualitative stratification of the performance measure or measures representing quality of service (AGTM03, 2020). The performance measures encompass speed, travel time, delays, density, freedom to manoeuvre, traffic interruptions, comfort, convenience and safety. LOS ranges from A to F, with LOS A representing the best operating conditions and service quality from the users' perspective (i.e. free flow) and LOS F the worst.

Roadway conditions that affect capacity and LOS include the type of road, lane widths, design speed, composition of traffic, and the horizontal and vertical alignment.

According to the Austroads *Guide to Traffic Management Part 3: Traffic Studies and Analysis* (2020), the capacity of a single traffic lane, C, measured in vehicles per hour, is a function of the lane width and lateral clearances, and the percentage of heavy vehicles, as follows:

$C = 1800\ f_W\ F_{HV}$

Where: f_W = 0.9 (Table 4.1 of AGTM03)
$F_{HV} = 1 / [1 + P_{HV} (E_{HV} – 1)]$
P_{HV} = Proportion of heavy vehicles in traffic stream = 0.23 (worst case from Table 2.1)
E_{HV} = Ave. passenger car equivalents for heavy vehicles = 2.0 (Table 4.2 of AGTM03)
Thus C = 1800 x 0.9 x 0.8 = 1,317 veh/h

3.3 Intersections

The existing intersections most likely to be impacted by the development are the James Creek Road / Yamba Road intersection, and, to a lesser extent due to likely trip destinations, the James Creek Road / Gardiners Road intersection. Both have been assessed using Austroads guidelines in terms of the suitability of the type of intersection (i.e. turning treatments provided) for the predicted future traffic volumes.

	Dates	AADT	Heavy Vehicles
50 m south of Yamba Rd	24/06/2019 – 01/07/2019	362	14.1%
100 m north of Gardiners Rd		230	23.0%
At site frontage	22/03/2022 – 5/04/2022	311	13.2%

Most intersections in regional urban and rural environments are unsignalised. Different turning treatments are recommended for left and right turning movements at unsignalised intersections depending on the speed environment and relative traffic volumes performing each movement during the peak hour. If volumes for a specific movement or overall volumes are high, then the intersection may need to be upgraded to a roundabout or traffic signals to maintain efficiency and safety.

For unsignalised intersections, the warrants for different turning treatments for the major road of an unsignalised intersections are provided in the Austroads *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings* (2020). Figure 3.25(b) from AGTM06 is reproduced below, for a design speed between 70 and 100 km/h.

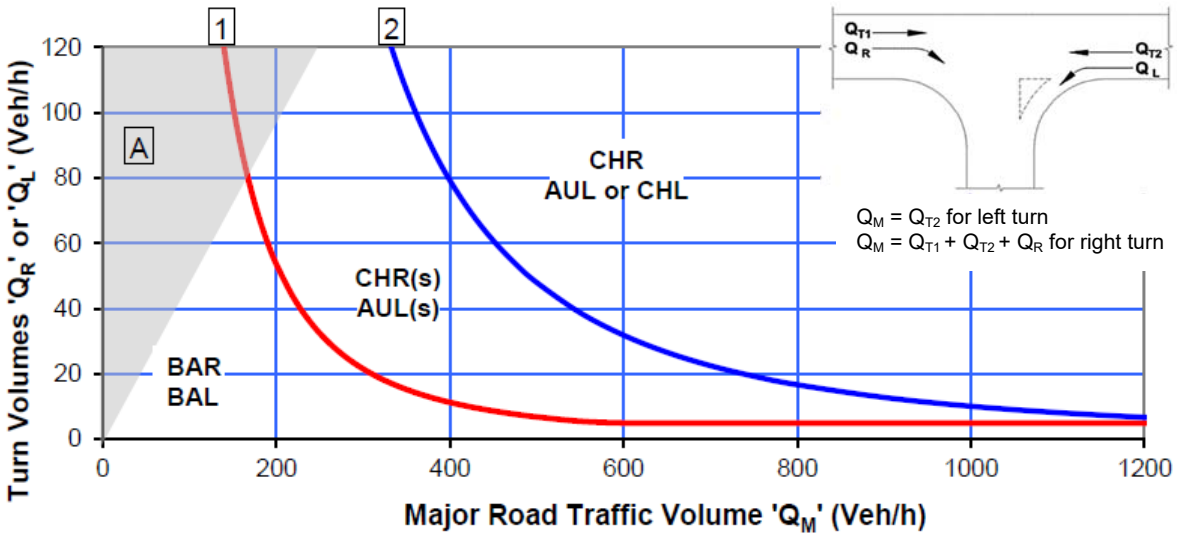

Figure 3.1 Warrants for major road turn treatments at unsignalised intersections (70-100km/h)

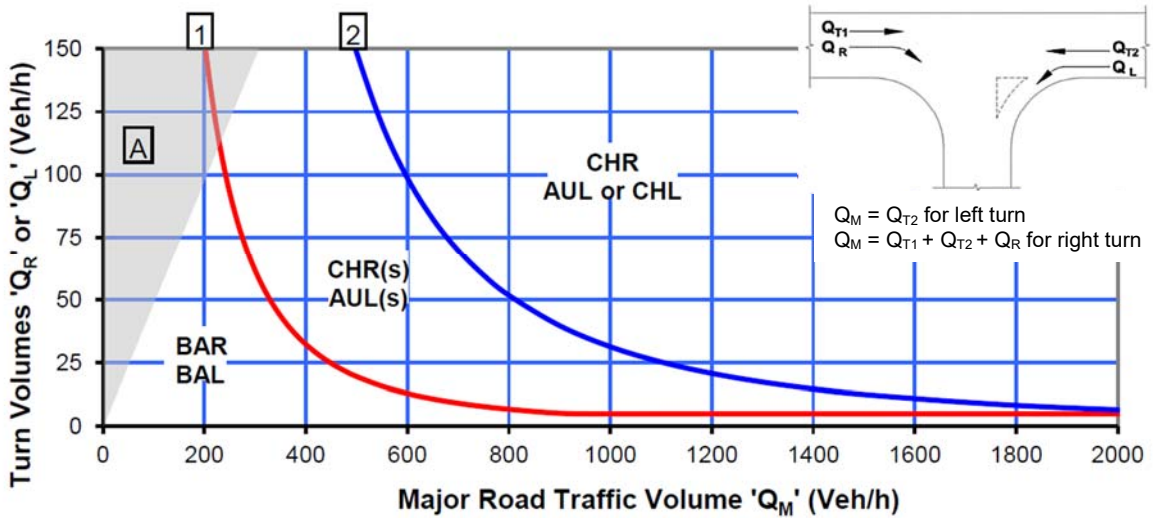

Figure 3.2 Warrants for major road turn treatments at unsignalised intersections (<70km/h)

The figures above were used to produce the table below, indicating which turn treatment is appropriate at each intersection. Note that the proposed intersection on James Creek Road providing access to the site will be located within a 60 km/h zone.

Note also that it is expected the worst-case peak hour would occur in the evening, with an assumption of 70% of the calculated peak hour traffic entering the site, and 30% exiting. Further, it was assumed that 70% of traffic associated with the site would enter (or exit) the site from (or to) the north. Turning volumes were all considered as worst cases.

Table 3.1 Intersection turn treatments

Intersection	Q_M (veh/hr)	Q_R (veh/hr)	Q_L (veh/hr)	Min. turn treatment
James Creek Road / The Site	For left turn: 12	147	63	Left turn: BAL
	For right turn: 93			Right turn: BAR
Yamba Road / James Creek Road	For left turn: 530	105	105	Left turn: AUL(s)
	For right turn: 1,065			Right turn: CHR
Gardiners Road / James Creek Road	For left turn: 88	20	80	Left turn: BAL
	For right turn: 195			Right turn: BAR

BAL = Basic left turn, CHL/CHR = Channelised left/right turn, CHR(s) = Short CHR, AUL = Auxiliary left turn

Although a BAR is potentially a satisfactory solution for the right turn off James Creek Road into the development, it is recommended that a CHR(s) be provided for added safety and efficiency. Similarly, it is recommended that an AUL be provided for traffic entering the development from the south.

Under current conditions, the minimum recommended turn treatment for the Yamba Road intersection is a CHR(s) and AUL(s). Currently the intersection comprises a BAR and a full length AUL. Analysis indicates that a full length CHR should be provided at the Yamba / James Creek Road intersection at approximately the 6-year mark, although this depends quite heavily on how quickly the land is developed and lots released. However, given that the intersection is already in need of an upgrade, it is recommended that a full length CHR be constructed by the local Council as soon as practicable.

For the Gardiners Road intersection, current conditions indicate that the existing BAR and BAL are suitable for the current traffic volumes and will continue to be suitable once the James Creek Road subdivision is fully developed.

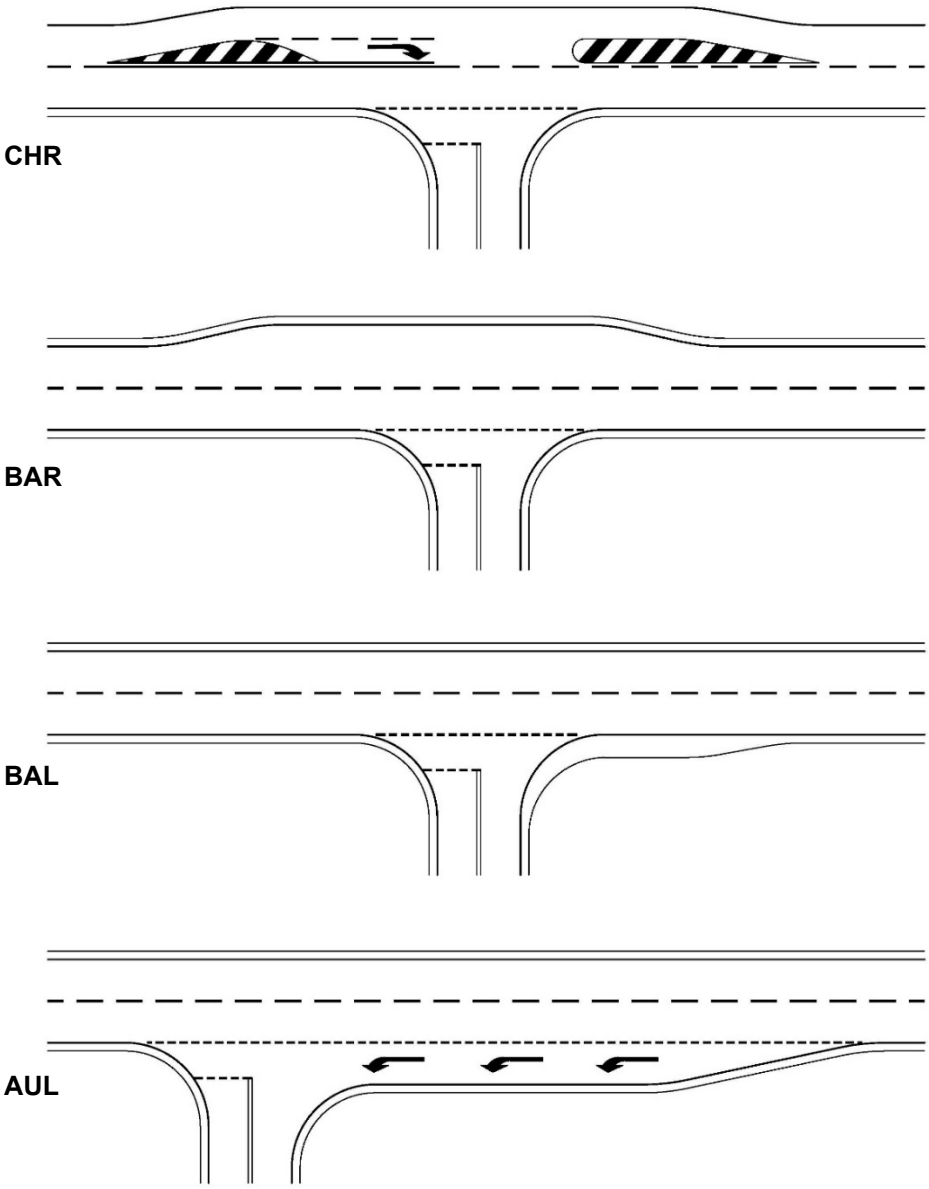

Figure 3.3 Typical intersection turning treatments

3.4 Intersection Sight Distance

The proposed development includes one new intersection on James Creek Road. The location for the proposed intersection is on a straight, flat section of James Creek Road, with approximately 330 m of sight distance available to the north and in excess of 500 m to the south. Note that 'sight distance' is the distance over which a road user needs to have unobstructed sight to respond to visual cues or safely avoid a conflict. Safe intersection sight distance (SISD) is the minimum standard which should be provided on the major road at any intersection. Values for SISD are defined by the Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* (2017). In accordance with this guide, for a design speed of 80 km/h and a reaction time of 2.0 seconds, the minimum SISD required is 181 m.

Note that even for a slower reaction time of 2.5 seconds and a design speed of 110 km/h, the recommended minimum SISD is 300 m.

In accordance with AGRD04A, SISD for trucks is calculated using the following formula:

$SISD_{TRUCK} = [(D_T \times V) / 3.6] + [V^2 / (254 \times (d + 0.01a))]$

Where: D_T = Decision time = 3s observation time + 2s reaction time = 5 seconds (AGRD03)
V = operating speed = 80 km/h
d = coefficient of deceleration (Table 5.3 of AGRD03) = 0.29 for trucks
a = longitudinal grade in % = -3% (assumed worst case)
Thus $SISD_{TRUCK} = [(5 \times 80) / 3.6] + [80^2 / (254 \times (0.29 - 0.03))] = 208$ m

Therefore, the available sight distance at the proposed intersection in both directions is ample for design speeds greater than those anticipated.

3.5 Subdivision Design

The proposed lot layout includes a main ring road and several smaller loop roads. The short entry road and the main ring road have proposed road reserves widths between 20 m and 25 m. Other roads have proposed road reserves of 18 m and 16 m, the latter only for roads servicing no more than 20 lots each.

There are no one-way, cul de sac, or other unusual road types proposed, and the layout is reasonably permeable (i.e. each lot can be accessed by at least two different paths, and the most direct travel path required to access is lot is unconvoluted). All lots have adequate road frontage, with no battle-axe lots proposed.

Corner lots have truncated corner boundaries to facilitate kerb returns and services around 90-degree bends.

Most intersections within the proposed layout are tee-intersections, with only one cross-intersections and one roundabout proposed. All intersections are at 90-degree angles.

The Northern Rivers Local Government *Development Design Specification D1: Geometric Road Design* (NRLG D1) provides design standards for subdivisional roads within the Clarence Valley Council Local Government Area.

The design of the proposed layout and road network, including proposed typical cross-sections, longitudinal sections and kerbing has been assessed and determined that a detailed design compliant with the relevant standards is possible. In accordance with Austroads Guidelines and NRLG D1, the final design would include:

- ‘Local streets’, servicing no more than 2,000 veh/day (approximately 256 lots), to have a minimum carriageway width of 7-9 m, constructed within a minimum 15-17 m road reserve. Note the majority of the roads within the proposed subdivision fall into the ‘local street’ category.
- Streets servicing between 2,000 and 3,000 veh/day (256 to 385 lots), to have a minimum carriageway width of 11 m, constructed within a minimum 18 m road reserve.
- Streets servicing over 3,000 veh/d (more than 385 lots) to have a minimum carriageway width of 13 m, constructed within a minimum 20 m road reserve.
- Mountable kerb and guttering.
- Footpath or shared path on one side of the road (where deemed appropriate).
- Minimum 3.5 m verges on each side of the carriageway.
- Provision for parking within the carriageway.
- Design speed of 50 km/h or less.
- Cross fall generally no greater than 3%.
- Longitudinal grades no less than 0.5% and no greater than 12% (note existing topography on site longitudinally along the proposed road alignments is generally no greater than 5%, with a maximum gradient of 6.3%).
- Horizontal curves no less than 20 m and vertical curves no less than 25 m (20 m at intersections).
- Crest vertical curves located such that they do not adversely impact on sight distance at intersections.
- The loop road comprising Road 2 and Road 9 is designed to accommodate buses, given the subdivision size and the recommended maximum walking distance to a bus stop for all residence being 400 m.
- Clear definition of the priority or ‘major’ road at each of the cross intersections, including signage and linemarking in accordance with AS 1742.
- Traffic calming along straight stretches of road greater than 150 m (e.g. narrowed roadway with planted kerb blisters etc.).

3.6 Speed Zones

3.6.1 James Creek Road

As previously noted, the existing 80 km/h speed zone applicable to the northern portion of James Creek Road changes to a 60 km/h speed zone for the southern portion of James Creek Road between the two proposed intersections providing access into the development.
This is not considered to be an appropriate location for a change in speed zone, given that drivers may be preoccupied with negotiating the intersections and disregard the speed zone signage.

TfNSW has the responsibility for reviewing and setting speed limits in NSW. All requests for an assessment or a review of a speed limit must be directed to TfNSW regional office for the area with that road section, usually via the relevant local Council.

In accordance with the TfNSW document, *NSW Speed Zoning Guidelines V4.0* (SZG, 2011), a review of the speed limit seeks to enhance road safety by applying speed management policies and practices to evaluate the appropriateness of current speed limits and determine the need for a change in the current speed limit – in this case to ensure that speed limits reflect changes in road use and the level of roadside activity.

Following discussions with TfNSW Northern Region representatives, Matt Adams, (Manager Land Use Assessment) Greg Aitken (Manager Network & Safety Services) and Cheryl Sisson (Development Assessment Officer), the TfNSW team responsible for speed zone referrals has recommended that the proposed subdivision design specifies a proposed relocation of the speed zone signage to be approximately 195 m north of the existing speed change point, as shown in **Figure 3.4**.

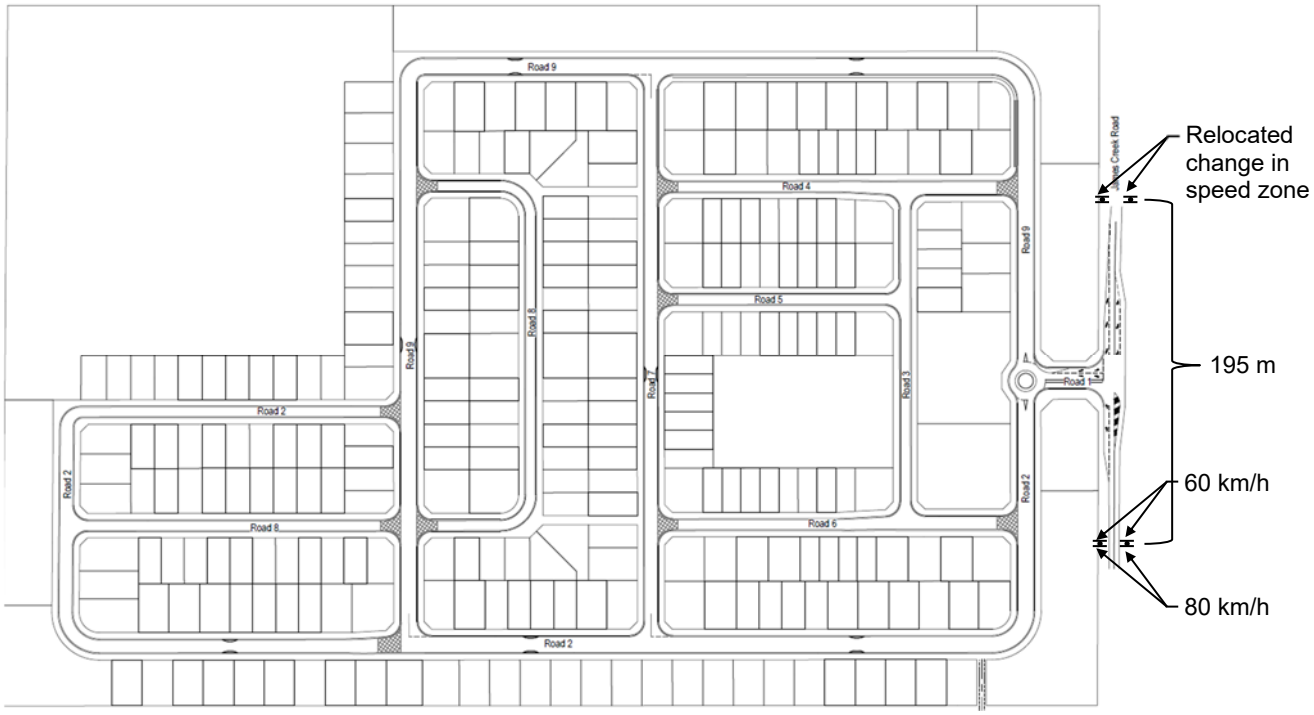

Figure 3.4 Proposed relocated change in speed zone

The minor change will result in < 5 seconds increase in travel time and will provided a greater benefit in terms of safety for all road users along the property frontage.

TfNSW has recommended that Council's Local Traffic Committee bringing this request forward to TfNSW once the intersection construction work is underway to ensure the speed zone and associated signage is adjusted prior to the intersection opening to traffic.

3.6.2 Internal Road Network

Internal roads within the proposed development are proposed to become part of a new default urban speed polygon. The SZG specifies the following with respect to setting speed limits:

- The speed limit for a particular length of road must reflect the road safety risk to the road users while maintaining mobility and amenity.
- The default 50 km/h general urban speed limit and practice in speed zoning of other speed limits in the urban environment should be the initial consideration for speed limits in urban areas.
- A default urban speed limit of 50 km/h applies in all built-up areas, in the absence of other speed limit signs. In the context of speed limits, a built-up area, in relation to a length of road, means an area in which either of the following is present for a distance of at least 500 metres or, if the length of road is shorter than 500 m, for the whole road: buildings not over 100 m apart, on land next to the road; and street lights not over 100 m apart.

As such, it is expected that the proposed development will meet the criteria for a 50 km/h speed zone, as the lot frontages are well under 100 m and street lighting will likely be at less that 100 m centres.

TfNSW's Matt Adams (Manager Land Use Assessment, Northern Region) has provided the following comment:

"*Following consultation with our Network and Safety Services team, I have been advised that based on the internal subdivision layout and number of lots proposed, the internal roads within the subdivision should be signposted 50 km/h and internal roads should be designed accordingly*."

4. Traffic Impacts of Proposal

The biggest impacts of the development on the traffic network will be experienced close to the site. Further from the site, impacts will be experienced less and less, as directional splits associated with different trip destinations taken by the generated traffic reduce the volume of traffic.

For the purpose of this TIA, the impacts of the proposed development have been assessed for:

- James Creek Road (whole length, particularly northwards from the site);
- James Creek Road / Yamba Road intersection;
- James Creek Road / Gardiners Road intersection;
- Yamba Road, in the vicinity of the James Creek Road intersection

Gardiners Road beyond the intersection with James Creek Road has not been assessed as it is considered that most of the traffic associated with the development will travel north from the site. This would almost certainly be the case for trips to and/or from Palmers Island, Yamba, Maclean, and destinations north of the Clarence River (e.g. Harwood, Iluka, Woody Head, Ballina, Lismore etc.) It is also likely for traffic leaving the site and travelling to destinations south along the Pacific Highway to use the Yamba Road interchange, as this is the route suggested by Google Maps.

However, it is understood that the developer proposes to upgrade a low lying 900 m section of Gardiners Road that is currently impassible during times of flood. The upgrades will include roadworks required to raise the road to at least the 20 year ARI flood level, and potentially as high as the 100 year ARI flood level. This will provide safe, flood-free vehicular access from the James Creek Road site to Townsend.

Accessing the site from the south, traffic may take either the Maclean or Yamba interchanges, as there is negligible difference in distance or travel time. If drivers choose to take the latter, Gardiners Road will again be bypassed. The 50 km/h zone through Townsend would also be bypassed. Some drivers may prefer this option, although some may have reason to stop in Townsend on the way home.

Traffic travelling to or from the site via Townsend, Gulmarrad or Brooms Head would more than likely travel along Gardiners Road. However, given there are fewer services and less possible destinations in these small towns, it is estimated that only a small percentage of the overall traffic will travel along Gardiners Road.

4.1 During Construction

Construction of the subdivision is expected to be carried out in stages. Assuming each stage follows the previous stage in relatively quick succession, then construction of the whole subdivision would take approximately two years. Beyond the subdivisional works, each new lot will also have a dwelling construction. However, it is anticipated that the dwellings of each completed stage will be constructed during the subdivisional works of the next stage, thus only marginally extending the overall length of construction works at the site.

If construction stages do not follow on relatively consecutively, then construction at the site could continue intermittently for several years, although it is not expected that construction will continue for more than five years.

Construction traffic will introduce heavy vehicles to the area for the duration of the construction – mainly associated with earthworks, but also to bring in road construction materials, drainage and utility pipes, and water tankers for dust suppression.

It is recommended that a Construction Management Plan (CMP) including a Traffic Management Plan (TMP) be prepared and implemented prior to, and for the duration of the construction on site. This will assist to reduce risks and impacts associated with construction traffic accessing the site.

Other mitigating methods could be employed, such as to undertake all bulk earthworks during the first stage, thereby reducing the length of time that multiple heavy vehicles are accessing the site.

Given that James Creek Road is currently a very low volume road, the intersections at either end of James Creek Road are geometrically suitable for heavy vehicle turning movements, and construction activities will be relatively short term (five years maximum), then the impact of construction on the traffic network is considered to be minor and acceptable.

4.2 Traffic Efficiency

4.2.1 James Creek Road

Traffic data from 2022 indicates that the existing peak hour traffic on James Creek Road is 32 veh/h. The predicted peak hour traffic generated by the development is around 300 veh/h.

As calculated previously, the capacity of each lane of James Creek Road is 1,317 veh/h. Thus, James Creek Road has ample capacity to accept the expected increase in traffic.

The RMS Guide provides indicative expected LOS for two-lane rural roads with level terrain as follows.

Table 4.1 Two-way peak hour flows on two lane rural roads

Terrain	Level of Service	Peak Hour Flow			
		10% Heavy Vehicles		15% Heavy Vehicles	
		(veh/h) 100 km/h	(veh/h) 80 km/h*	(veh/h) 100 km/h	(veh/h) 80 km/h*
Level	B	560	504	530	477
	C	920	828	870	666
	D	1,480	1,332	1,410	1,269
	E	2,390	2,151	2,290	2,061

** Note that capacities for 80km/h design speed are assumed to be 90% of the equivalent for 100 km/h*

The RMS Guide suggests that acceptable peak hour LOS on major and minor rural roads is C. As per the table above, it is expected that James Creek Road will function with a LOS B or better, after the site is fully developed.

It is noted that the *James Creek Urban Growth Area Road Infrastructure Developer Contributions Plan* (the Contribution Plan) prepared by GHD and adopted by Council in February 2020 includes widening of the southernmost 900 m of James Creek Road to better cope with the expected traffic generated by the proposed development.

4.2.2 Yamba Road

Yamba Road already carries a relatively high volume of traffic, and traffic flows are expected to increase over time due to new development in the area. Future traffic on Yamba Road has been estimated based on a 3.5% annual growth rate. It should be noted that this 3.5% would include some, if not all of the traffic generated by the proposed development on James Creek Road. However, for the purpose of this report, it is conservatively assumed that the traffic generated by the subdivision development at the site is in addition to the predicted further traffic on Yamba Road. Based on the 2022 traffic count data, Yamba Road carries no more than 10% heavy vehicles.

Based on an assumed future AADT of 13,000 veh/day on Yamba Road, as per **Section 2.2**, and assuming a directional split of 60/40 and taking the peak hour traffic as 10% of the AADT, this given a peak hour single lane traffic flow of 780 veh/h.

It is assumed that the majority of traffic generated by the development will head north on James Creek Road, thus using Yamba Road (e.g. 70%). Assuming a 60/40 directional split at the Yamba Road / James Creek Road intersection, this adds up to 125 veh/h to the worst-case lane already on Yamba Road. Thus, the peak hour single lane traffic flow in Yamba Road becomes approximately 905 veh/h.

According to **Table 4.1** reproduced from the RMS Guide, Yamba Road is expected to operate with a level of service C.

Although the traffic volumes put the LOS close to the threshold for D, it is reiterated that the predicted future traffic on Yamba Road as stated above, 780 veh/h, was calculated using a growth rate that would already include the James Creek Road development. As such, the peak hour single lane traffic flow for a ten-year design horizon would actually sit more comfortably in LOS C.

As previously mentioned, the RMS Guide suggests that acceptable peak hour LOS on major and minor rural roads is C. It should be noted that outside of peak hour, Yamba Road, and indeed James Creek Road would likely operate at LOS A.

4.2.3 James Creek Road / Yamba Road Intersection

Analysis of the existing intersections and the recommended minimum turning treatments required for the projected increase in traffic found that the existing intersection of James Creek Road and Yamba Road will likely require upgrading to maintain traffic efficiency and minimise delays.

The intersection of Yamba Road and James Creek Road currently includes a basic right treatment and a full length auxiliary left turn lane. However, the existing traffic volumes indicate that a short channelised right lane is already warranted.

Modelling of the intersection using SIDRA Intersection for the existing (2022) and future (2032) conditions indicates that all movements will operate at a LOS A, with the exception of the right turns into and out of James Creek Road. Currently, the model shows the right turn into James Creek Road is at LOS A, but is expected to slip to LOS B after 5 years for the PM case and after 8 years for the AM case. The right turn out of James Creek Road onto Yamba Road is currently at LOS C, but expected to slip to LOS D after 6 years (AM and PM models), and to LOS E after 9 years for the AM peak and 10 years for the PM peak.

LOS C and D are considered to be acceptable with estimated delays under 25 section and 40 seconds respectively. However, the LOS E for the right turn out of James Creek Road predicted to occur in approximately ten years (depending on the timing of development construction and lot release) is not considered to be acceptable.

Given the much higher volumes of traffic travelling on the main road compared to traffic turning into and out of James Creek Road, a roundabout would not be a beneficial solution for a future upgrade. A safer solution could be to prohibit right turns at this intersection, either entirely or only during the AM and PM peaks. As this is not expected to be a major concern until 9 years post construction of the subdivision, it is recommended that the local roads authority monitors the traffic movements at this intersection over time. Regardless of the upgrades to improve efficiency for traffic turning right out of James Creek Road, it is recommended that the BAR be upgraded to a full length CHR as soon as practicable, but certainly within the first six years, in order to efficiently accommodate traffic turning right onto James Creek Road as well as the through traffic. It appears that there is sufficient space available to construct the necessary upgrade.

The Contributions Plan also indicates that this intersection, including approximately 200 m of Yamba Road to the west and 100 m to the east, will require upgrading within the next ten years. This report agrees with our recommendation that a right-hand turn lane from Yamba Road will be required to accommodate traffic loads.

4.2.4 James Creek Road / Gardiners Road Intersection

The existing intersection at the southern end of James Creek Road with Gardiners Road currently provides only BAL and BAR turning treatments. The modelling suggests that both treatments will be adequate to provide efficiency for traffic considering a ten-year design horizon. However, a short channelised right turn lane may be deemed appropriate to improve safety at the intersection.

It is noted that the Contributions Plan specifies this intersection will require sheltered turn lanes into and out of James Creek Road in addition to widening and likely raising of the intersection to provide 1 in 20-year flood immunity.

4.2.5 New Intersections on James Creek Road

The intersection proposed to provide entry to the new subdivision will require widening of James Creek Road to facilitate an auxiliary left turn lane and a channelised right turn lane. This configuration, together with the proposed single-lane roundabout at the intersection of Roads 1 and 2 has been modelling using SIDRA Intersection traffic modelling software, with conservative estimates of existing and future traffic volumes. The results showed that, for a ten-year design horizon, all movements at the new intersection are expected to offer the highest level of service (LOS A). Refer to **Appendix A.**

A previous iteration of the design included two accesses into the development. However, the modelling clearly demonstrates that only one is required for traffic efficiency, and fewer intersections on the main road (James Creek Road) results in a safer road network overall. The entry to the development has been designed with separated ingress and egress lanes, which will offer a higher level of safety in case of an emergency such as a bushfire, allowing emergency service vehicles to enter the site in the event one of the lanes becomes blocked.

The presence of this intersection is not expected to affect the efficiency of through traffic, which will maintain priority. However, it is proposed that Council considers a submission to TfNSW to relocate the existing change in speed zone by < 200 m to the north, such that the new intersection will fall within the 60 km/h speed zone. The lower speed over 200 m will result in a very minor delay, being 3 seconds. This proposal has been discussed and agreed with TfNSW.

4.3 Amenity

The amenity on James Creek Road will be affected by the significant increase in traffic. However, as discussed, the existing roadway is suitable for such volumes of traffic. Furthermore, the existing dwellings are generally set back 50 m or more from the carriageway, and most have vegetation providing a visual and pseudo-sound buffer to the traffic. All proposed dwellings will also be at least 50 m back from James Creek Road.

Most of the existing residents on James Creek Road live south of the site and given most of the traffic associated with the proposed development is expected to travel north on James Creek Road to reach their destination, the amenity on James Creek Road south of the site will only be nominally affected.

The additional traffic volumes will not cause any unreasonable delays for existing residents wishing to exit their property onto James Creek Road.

4.4 Safety

As discussed, James Creek Road is suitable to safely convey the anticipated traffic volumes. Traffic flow on James Creek Road will not be such that residents exiting their properties along the road will need to regularly judge gaps to safely enter the roadway.

It is assumed that the new subdivision will be designed in accordance with the relevant standards and guidelines to ensure no road safety issues are introduced as part of the proposed works. It is recommended that this includes provision of traffic calming on the long, straight sections of road and visual thresholds at cross intersections and some tee-intersections to clearly indicate the priority road.

The proposed single intersection on James Creek Road is located such that ample sight distance is provided. It is recommended that is comprises an AUL and a CHR (short, as appropriate).

It is proposed that Council considers a submission to TfNSW to relocate the existing change in speed zone by < 200 m to the north, such that both new intersections will fall within the 60 km/h speed zone. This proposal has been discussed and agreed with TfNSW.

Additional turning movements at the Yamba Road and Gardiners Road intersections will introduce greater opportunity for conflict between vehicles. As previously discussed, the Yamba Road intersection will require upgrades to provide a channelised right turn lane to accommodate the additional traffic utilising James Creek Road. Although not explicitly warranted in accordance with the Austroads Guidelines, it may be considered prudent to provide a short channelised right turn treatment for the Gardiners Road intersection to reduce the risk of rear-end collisions.

Consideration should also be given to the provision of lighting at the Yamba Road, Gardiners Road and the site entrance to improve safety.

The additional traffic is not expected to impact on the safety of the existing roads, and construction of the recommended upgrades will offer a significant increase in safety for turning and through vehicles at the James Creek Road intersections.

4.5 Road Pavement

The theoretical impact on the road pavement is measured by the equivalent standard axle (ESA) load applied by the additional traffic to the life cycle ESA of the existing road pavement. The development is expected to add up to 3,000 veh/day, comprising no more than 2% heavy vehicles.

The following calculations have been carried out to determine the resultant number of ESA from the development (DESA):

$DESA = ESA/HVAG \times N_{DT}$

Where: ESA/HVAG = average number of ESA per heavy vehicle axle group
N_{DT} = cumulative number of HVAG over design period.

For a design period of 20 years, total AADT of 3,000 consisting of 2% heavy vehicles, based on the Austroads *Guide to Pavement Technology Part 2: Pavement Structural Design* (2017), DESA is estimated to be 5.0×10^5.

Assuming James Creek Road has been constructed in general accordance with NRLG and Austroads guidelines, it can be conservatively expected that the existing road pavement consists of a minimum subgrade CBR of 10, and minimum base and sub-base material thicknesses of 150 mm each. Thus, using Figure 8.4 of the same guide, AGPT02, the design traffic for James Creek Road is expected to be at least 4×10^6.

Therefore, the projected traffic volumes generated by the development combined with existing traffic are not expected to shorten the design life of the existing road pavement.

4.6 Public Transport

The additional residential dwellings proposed at the site would likely increase the patronage for the existing public transport system servicing the area, particularly for school children and older persons. However, the nearest bus stop is 2.8 km from the site. This distance would pose a significant inconvenience for those who want or need to make use of the public transport system and it is unreasonable to expect all residents to be able to walk this distance comfortably, particularly as there is currently no pathway between the site and the bus stop.

Council's *Residential Zones DCP* (2011) specifies that public transport services shall be within 400 m of all dwellings. The increase in residents under the proposal warrants an adjustment to the existing regional bus service route to include James Creek Road in the vicinity of the site. A possible option would be for the existing service between Maclean and Yamba to detour from Yamba Road south along James Creek Road, looping through the proposed subdivision, continue south on James Creek Road, turn east on Gardiners Road, then re-join Yamba Road via Amos Road and Palmers Channel South Bank Road (or vice versa). This would add approximately 10 minutes to the total trip time between Maclean and Yamba, hence this deviation might only be offered on some of the daily services, rather than all. Another option would be to turn off Yamba Road onto James Creek Road, make the loop through the subdivision, then turn left on James Creek Road to return directly to Yamba Road. This option would add less time to the existing bus route.

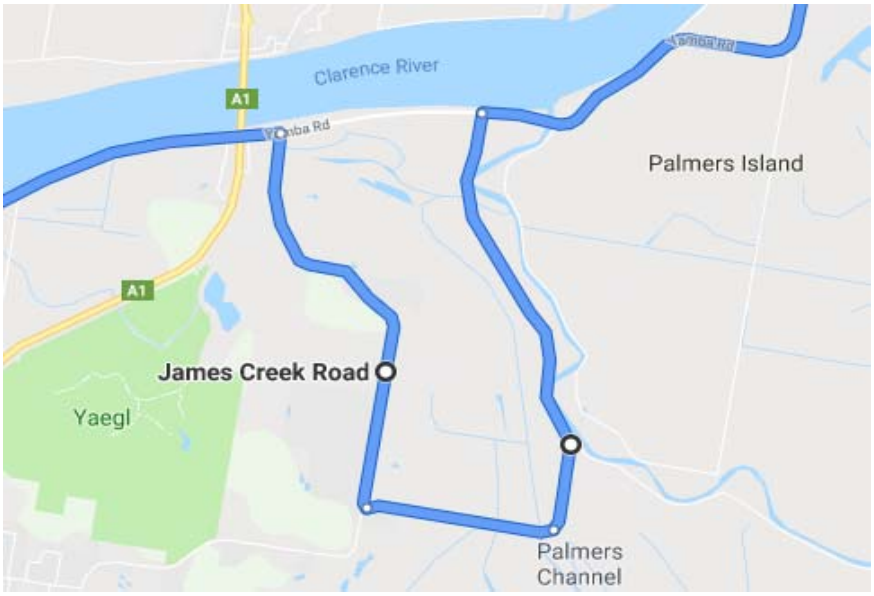

Figure 4.1 Possible future re-routing of Busways Route 380 ***[Source: Google Maps]***

4.7 Pedestrians and Cyclists

The proposal allows for a 2.0 m wide shared path along Roads 2 and 9 and 1.5 m footpaths on all other streets within the development, providing good connectivity between the residential dwellings and the proposed paths and open spaces.

Beyond the subdivision, the proposal will also provide a 2.0 m shared path extending from the development south along James Creek Road to the Gardiners Road intersection.

Although the desirable minimum width of a shared path is 2.5 m, 2.0 m is ample width to allow for two cyclists or two wheelchairs to pass one another safely and comfortably. Austroads Guide to Road Design Part 6A *Paths for Walking and Cycling* Table 5.3 allows for a minimum width of 2.0 m to be used for shared paths where cyclist volumes and operational speeds remain low. Given the location o of the proposed path, it is expected that this will certainly be the case, with < 50 cyclists per peak hour expected to be utilising the path between James Creek and Townsend.

Impact on existing pedestrians and cyclists is expected to be low, given that there are no dedicated facilities for these road users in the area and numbers of such, particularly pedestrians, are assumed to be low.

5. Summary and Recommendations

Having become familiar with the site, undertaken desktop review of relevant plans and documentation, calculated predicted traffic generation, assessed the internal road layout and the expected impacts of the proposed development, the following conclusions have been made:

- Construction of a subdivision of this size will likely take a number of years to complete, particularly if the development is staged. Construction traffic will have a negative impact on the amenity of the locality and may impact on traffic safety and efficiency on James Creek Road and at the intersections.
  Recommendation: *A Construction Management Plan (CMP) including a Traffic Management Plan (TMP) should be prepared and implemented prior to, and for the duration of the construction on site to reduce risks and impacts associated with construction traffic accessing the site.*
  Recommendation: *Consider undertaking all bulk earthworks during the first stage, thereby reducing the length of time that multiple heavy vehicles are accessing the site.*

- The development will significantly increase the volume of traffic on James Creek Road. However, the road is in suitable condition and geometry to accept the additional traffic and has the capacity to do so. The additional traffic volumes are not expected to shorten the design life of the road pavement.

- The increase in traffic volumes utilising the intersection at the northern end of James Creek Road warrants upgrades to ensure safety and efficiency is maintained for through and turning traffic.
  Recommendation: *The Yamba Road intersection requires the existing basic right turn treatment (BAR) be upgraded to a channelised right turn lane (CHR) as soon as practicable, as this is already required based on existing traffic conditions. The existing AUL is sufficient for the predicted traffic growth over the next 10 years.*
  Recommendation: *Traffic at this intersection is to be monitored in the first few years once lots begin to be released, paying close attention to the level of service offered for traffic turning right out of James Creek Road onto Yamba Road.*
  Recommendation: *Lighting at both the Yamba and Gardiners Road intersections should be considered.*

- The proposed layout for the development is in accordance with the relevant design standards and a compliant road design within the subdivision is achievable. The location of the proposed intersections on James Creek Road provides ample sight distance.
  Recommendation: *Priority at the proposed cross-intersections should be clearly defined by signage and linemarking, with consideration given to the use of painted or raised pavement thresholds.*
  Recommendation: *Use traffic calming techniques on straight stretches of road in excess of 150 m long (e.g. planted kerb blisters to narrow the roadway, chicanes, raised humps etc.)*
  Recommendation: *The intersection at the entrance of the subdivision will require an AUL and a CHR (short) to ensure safety and efficiency for through and turning traffic.*

- The existing 80 km/h speed zone applicable to the northern portion of James Creek Road changes to a 60 km/h speed zone for the southern portion of James Creek Road. The signage indicating the change in speed zone falls within the proposed intersection providing access to the development. This is not considered to be an appropriate location for a change in speed zone, given that drivers may be preoccupied with negotiating the intersection and disregard the speed zone signage.
  Recommendation: *Following liaison with TfNSW representatives, it is recommended that Council's Local Traffic Committee apply for a slight change to the current speed zones by relocating the existing change in speed zone and associated signage approximately 195 m to the north such that the proposed intersection will be within the 60 km/h speed zone. This is to be undertaken while intersection works are underway, to ensure the changes have been made prior to the new intersection opening to traffic.*

- A proportion of the additional residents will either want or need to make use of public transport, and this should be encouraged. However, the site is 2.8 km from the nearest bus stop.
  Recommendation: *Given the distance to the nearest bus stop and the unsuitability of James Creek Road as a pedestrian or cyclist route, it is recommended that some or all of the Route 380 bus trips detour along James Creek Road and loop through the proposed development.*
  Recommendation: *The development should be designed to accommodate a bus route and bus stop(s), appropriately located.*

- Parking provisions within the development are sufficient and there will be no impact on parking requirements in the vicinity of the site. However, the additional residential lots are likely to increase the demand for parking in the nearby townships of Maclean and Yamba. Although connection to these towns by bus and cycleways is likely to improve, it is expected that most trips into these towns will likely be my car.
  Recommendation: *Continue to improve the public transport system and pathway connectivity within and between the nearby local towns to encourage modes of transport other than cars.*

- There are currently no provisions for pedestrians and cyclists on James Creek Road. The proposal will improve the link from the development to Gardiners Road via a 2.0 m shared path.
  Recommendation: *Provide paths within the development to connect residents to the proposed reserves and neighbourhood centre.*
  Recommendation: *Construct the shared path between the development and the James Creek / Gardiners Road intersection during Stage 3 of construction (i.e. after approximately 150-200 lots have been released)*

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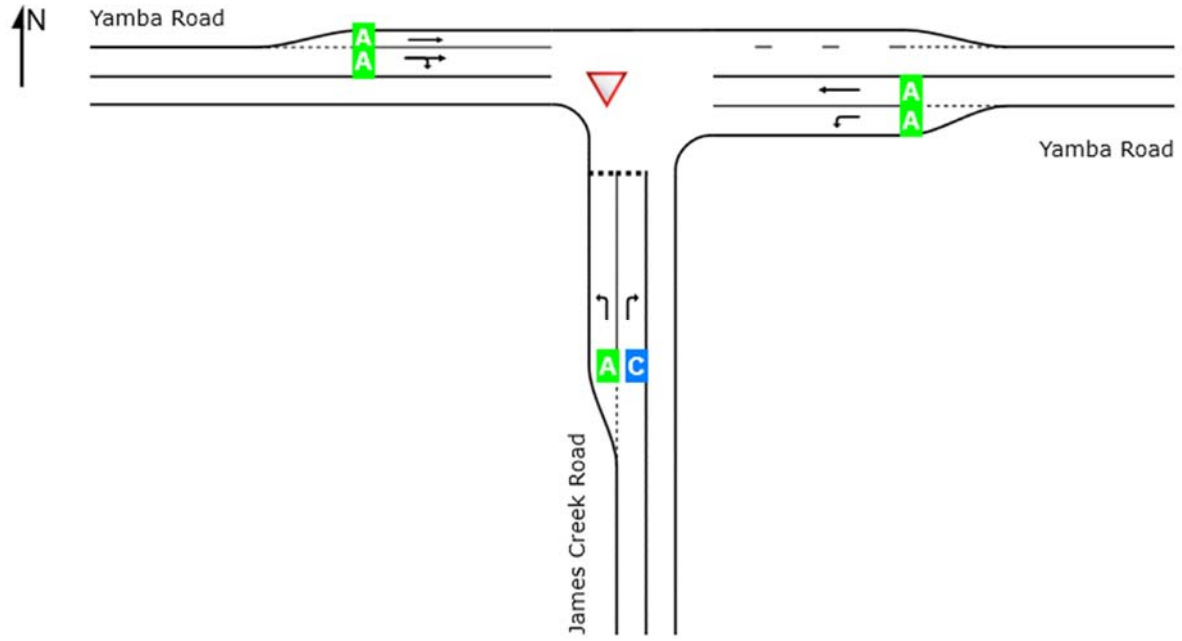
The dimensions, number, size and shape of lots shown on drawings are subject to detailed engineering design, final survey and Council conditions of consent.

Appendix A

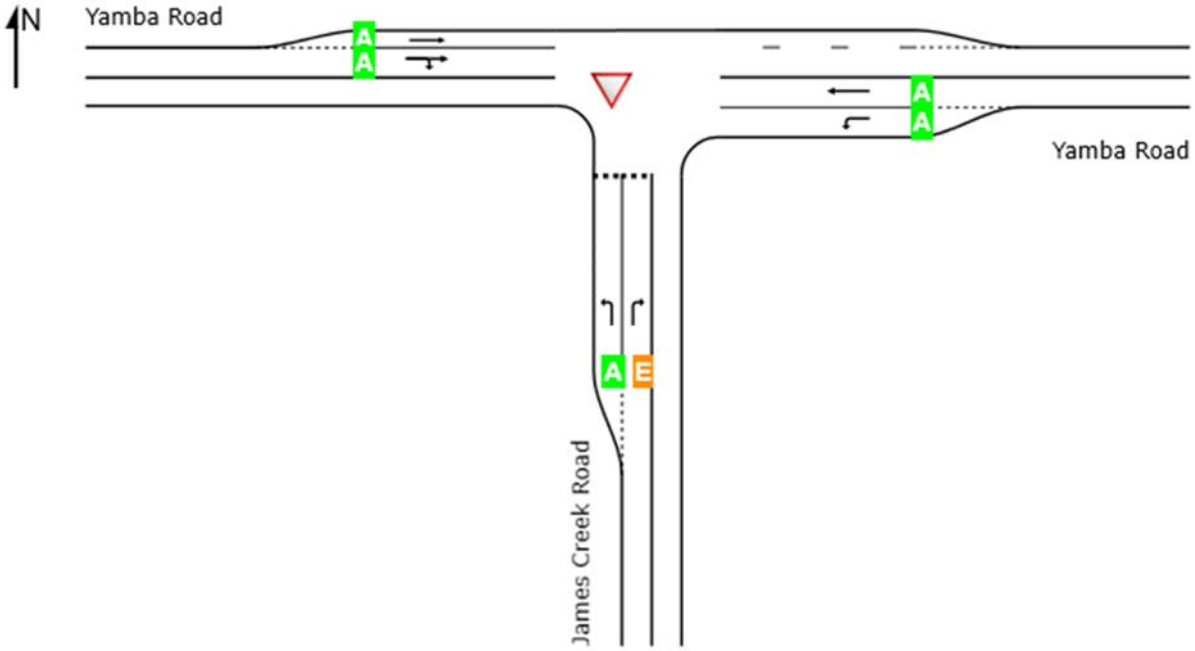
Sidra Intersection Analysis

Yamba Road / James Creek Road Intersection

Lane Level of Service (LOS): 2023 – AM and PM Peak Hour

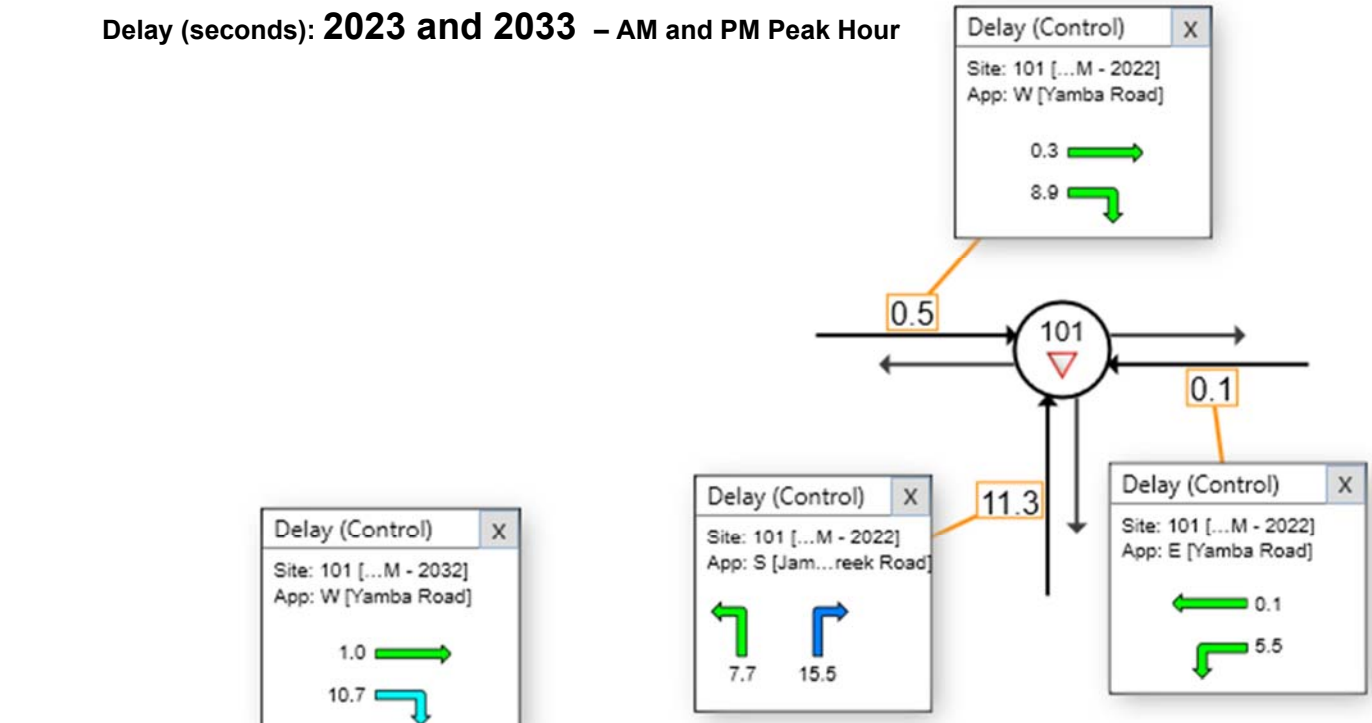


Lane Level of Service (LOS): 2033 – AM and PM Peak Hour

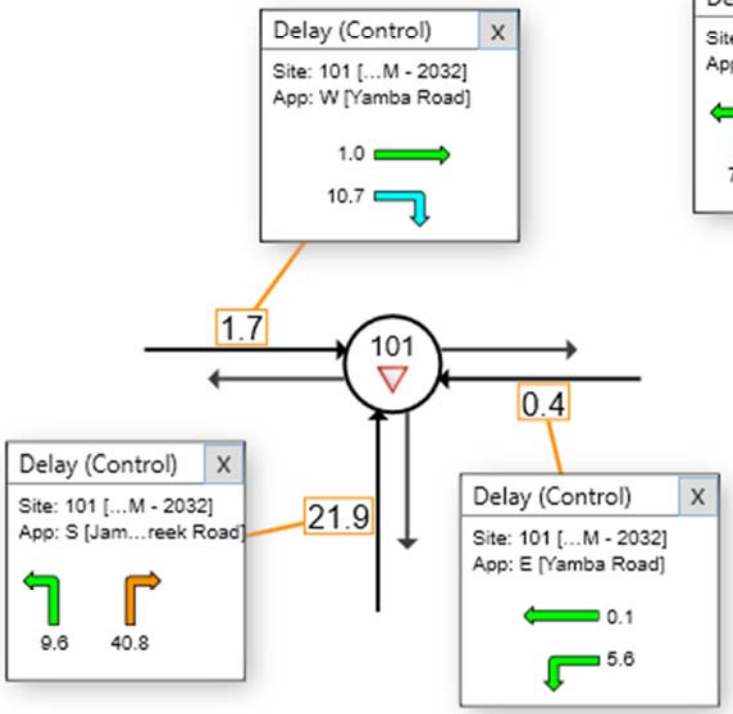


Yamba Road / James Creek Road Intersection

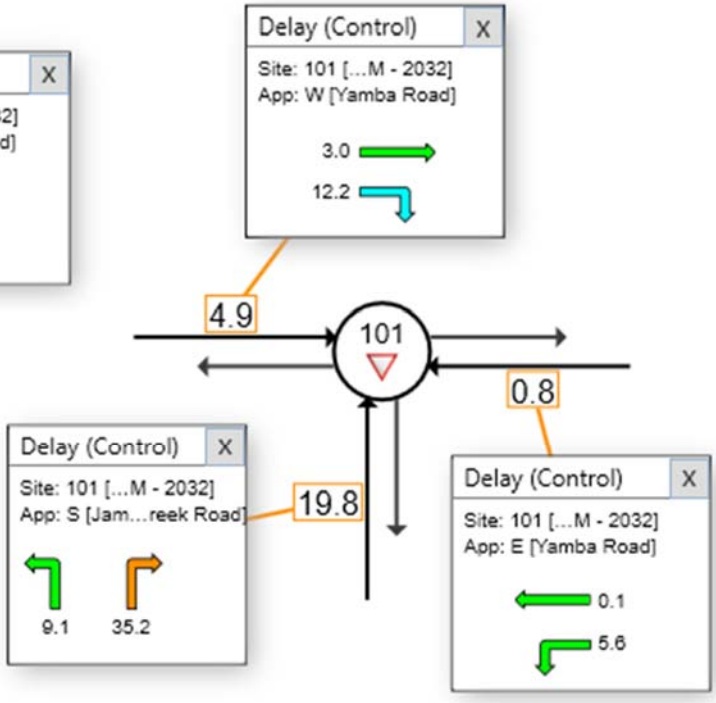
Delay (seconds): 2023 and 2033 – AM and PM Peak Hour



2023 AM



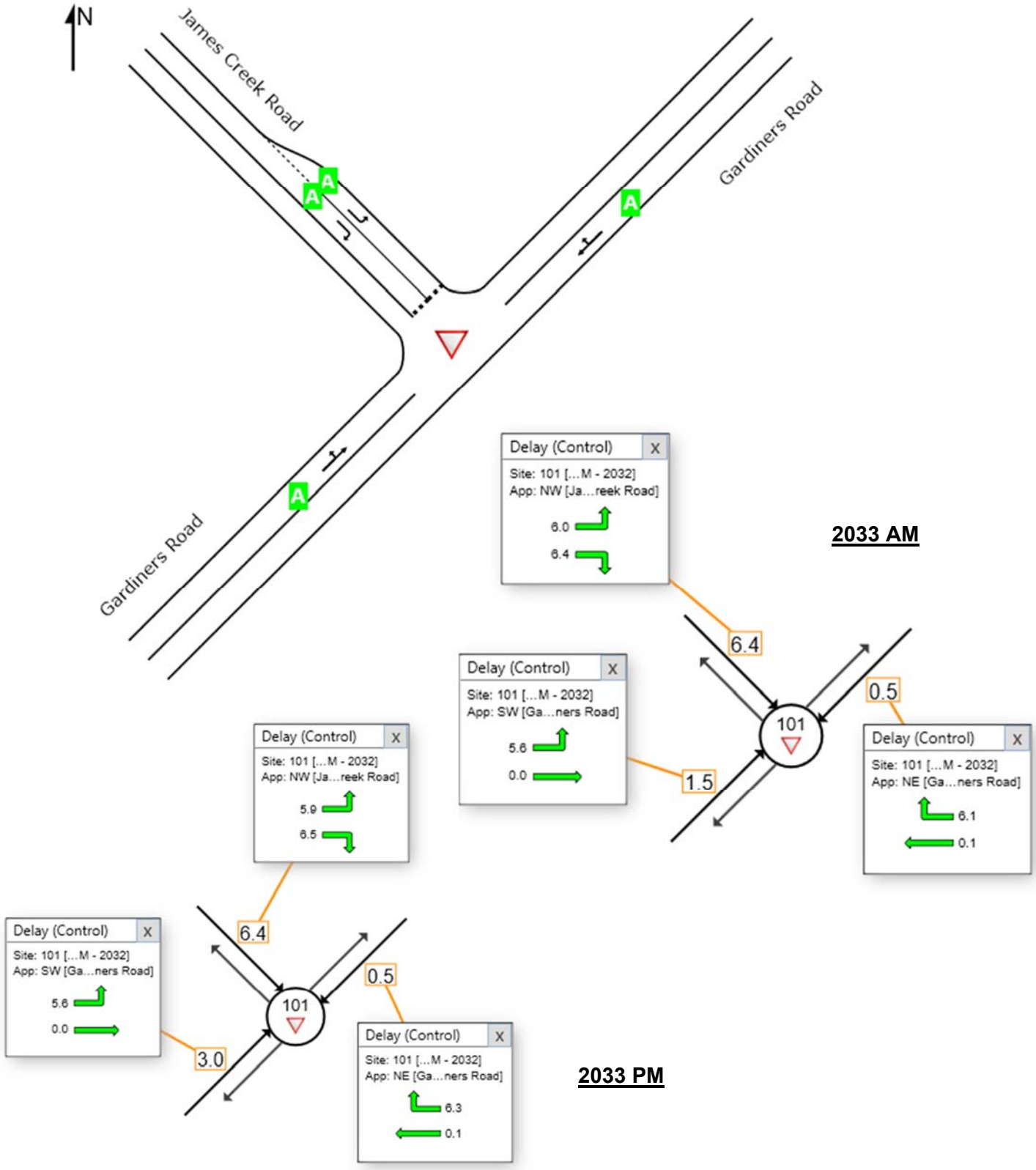
2033 AM



2033 PM

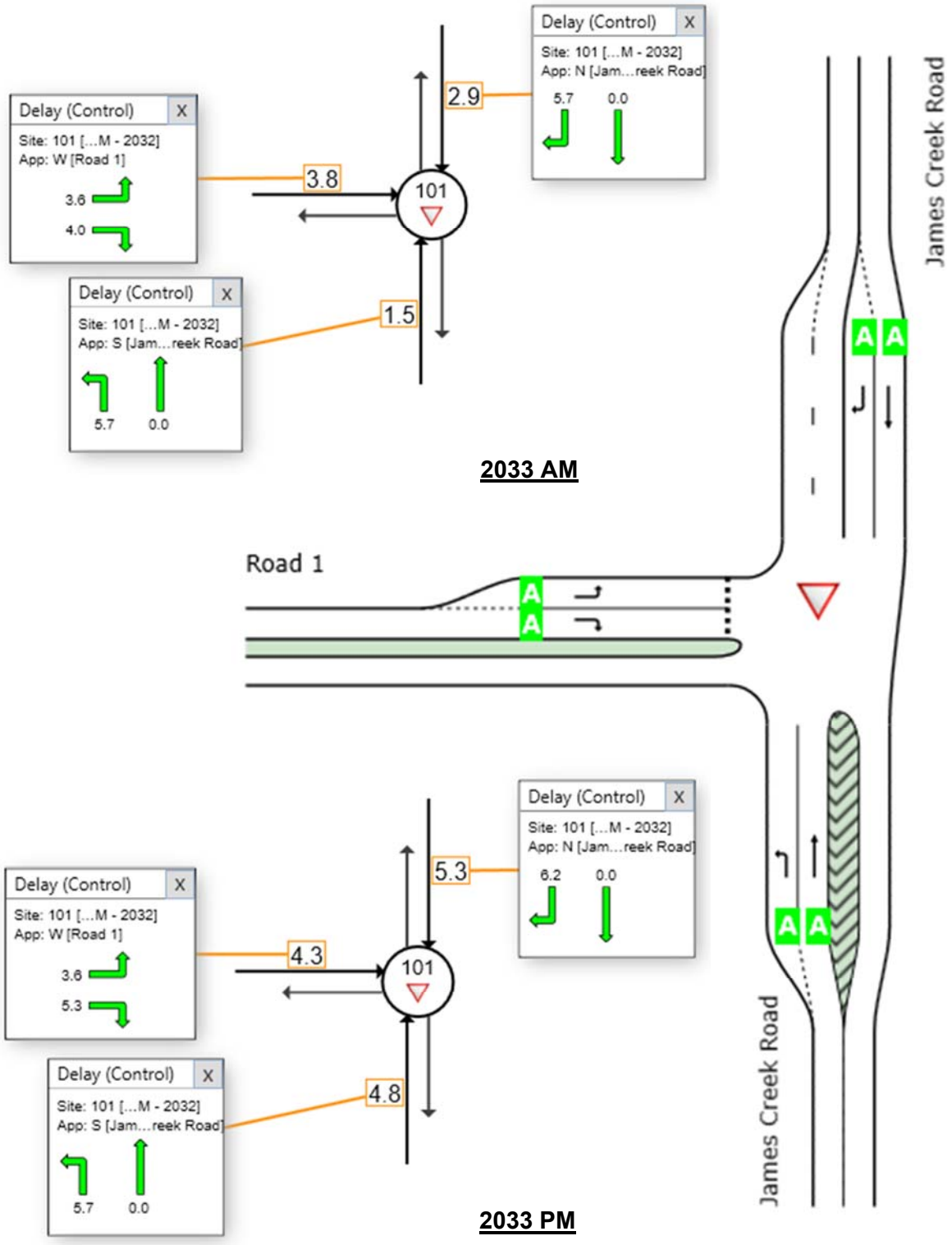
Gardiners Road / James Creek Road Intersection

Lane Level of Service (LOS) and Delay (seconds): 2033 – AM and PM Peak Hour



Road 1 / James Creek Road Intersection

Lane Level of Service (LOS) and Delay (seconds): 2033 – AM and PM Peak Hour

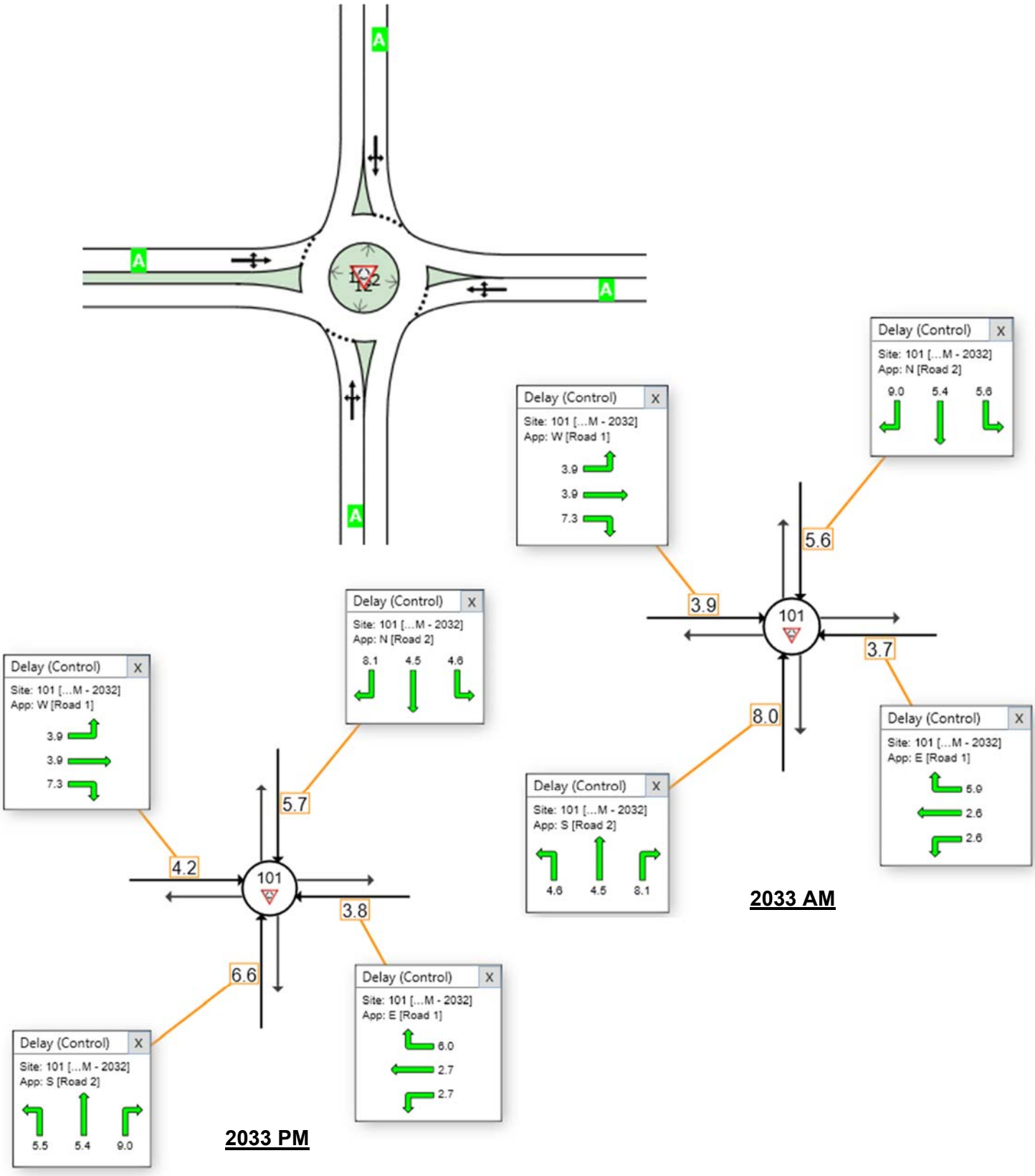


2033 AM

2033 PM

Road 1 / Road 2 Intersection

Lane Level of Service (LOS) and Delay (seconds): 2033 – AM and PM Peak Hour



Enclosure 6

Gardiners Road Upgrades letter prepared by GeoLINK dated 22 November 2023

22 November 2023
Ref No: 3204-1144

MPD Investments Unit Trust
C/o Mike Willoughby
mike@wmdev.com.au

Attention: Mike Willoughby

Dear Mike

Gardiners Road Upgrades - Error! No text of specified style in document.

James Creek, including the proposed subdivision development site, relies on arterial and collector roads to provide connection with the nearby population centres of Maclean and Yamba, and the wider regional transport networks services by the Pacific Motorway.

Gardiners Road provides an important link for rural residents between the James Creek and Palmers Channel localities, and the larger townships of Townsend, Gulmarrad and Maclean. However, portions of Gardiners Road are known to be inundated during times of flood. At present, there is a section of Gardiners Road approximately 900 m in length close to Townsend that is typically overtopped during storm events of Q20 (5% average exceedance probability) and above. This prevents the safe passage of vehicles, isolating a number of existing lots from external services.

The *James Creek Urban Growth Area Road Infrastructure Developer Contribution Plan* (25 February 2020) prepared by GHD on behalf of Clarence Valley Council is the adopted contributions plan for this area. It identifies that traffic generated by development in James Creek will require upgrades to the existing road infrastructure, in part to ensure that residents have flood free access to the services offered in Townsend and Gulmarrad. Specifically, the plan discusses the need for Gardiners Road to be upgraded to provide a flood immunity up to and including the modelled Q20 level. The plan estimated this cost would be $702,000 and stipulates that 50% of the cost for these upgrade works be borne by the developer, provided by contributions made as part of the development approvals process.

The developer proposes to provide contributions to allow for the low section of Gardiners Road, being approximately 900 m in length, to be raised to offer flood immunity up to and including the Q100 flood level, including provision for climate change related sea level rise. This will provide an uninterrupted vehicular route between the proposed subdivision site on James Creek Road and Townsend with immunity to the Q100 flood level.

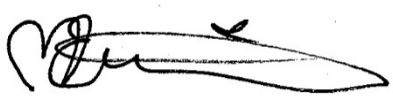
Survey completed along the proposed sewer rising main alignment from the site to Townsend has been used to demonstrate how the section of low road will be raise – refer to attached plan, SK101-1. The scope of extra-over civil works will comprise earthworks and drainage works required to raise the formation to a sufficient level to receive pavement such that the finished surface will be at or above the Q100 (climate change) flood level.

We understand that the developer has offered to contribute the extra-over costs associated with raising the road as described above.

Please refer to the attached plan providing some details of the proposed upgrades to Gardiners Road.

Yours sincerely

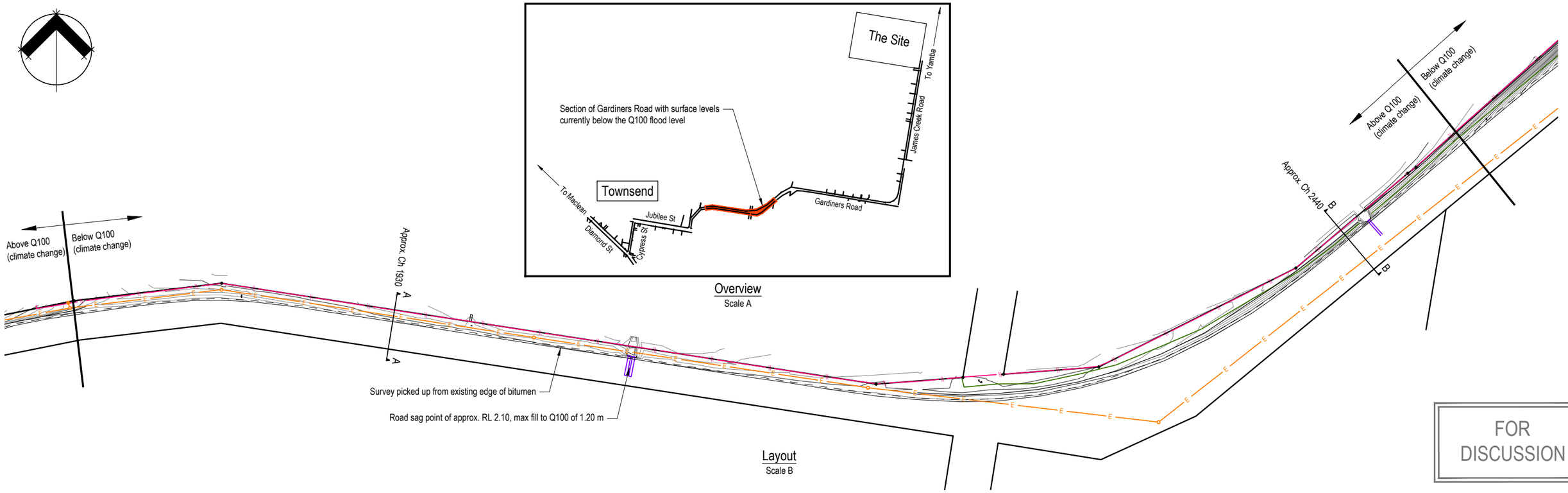
GeoLINK



Michelle Erwin
Senior Civil Engineer

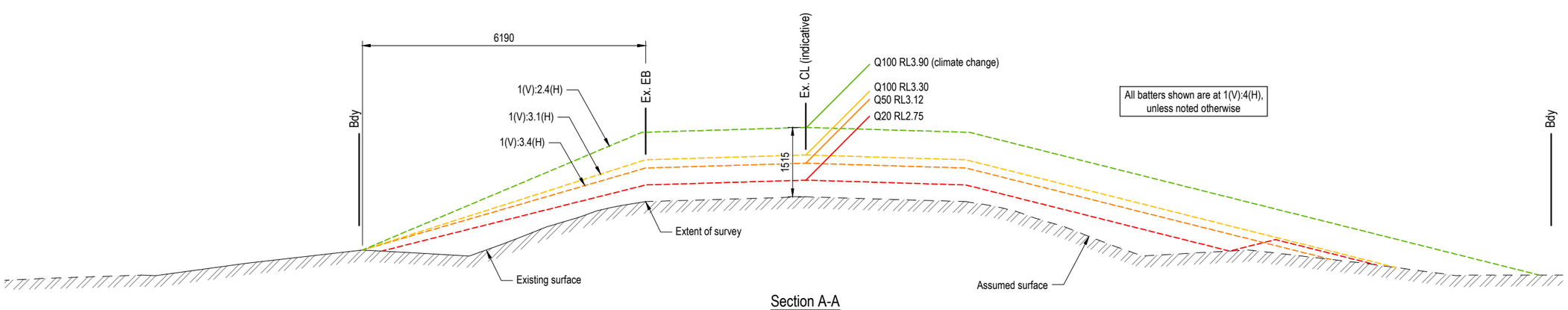
Copy to: Peter Bell, Place Design Group

Attach: Gardiners Road Flood Concept Upgrade for Flood Immunity SK101-1, Nov 2023



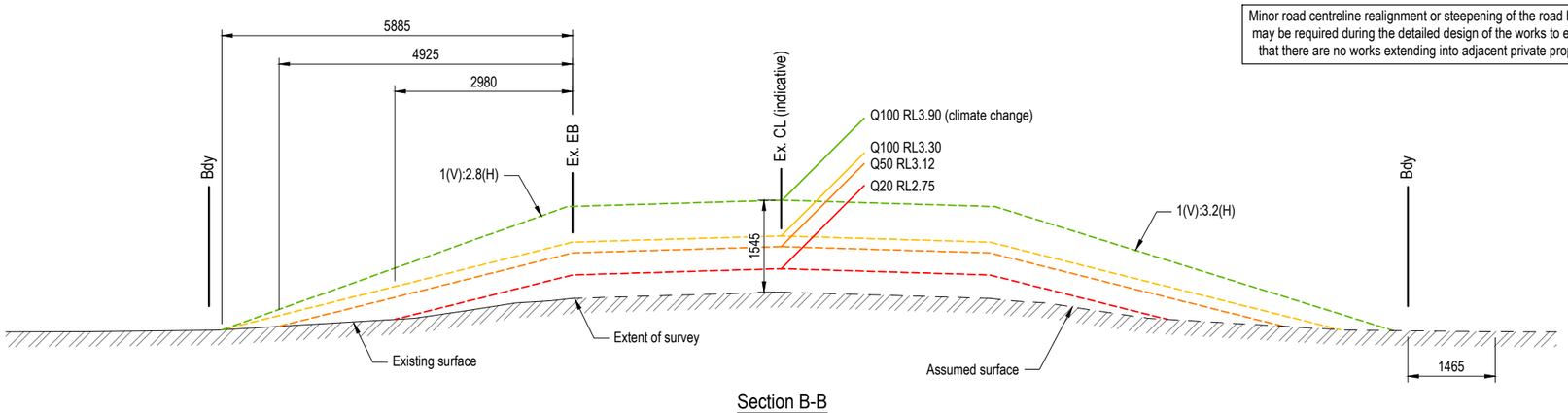
Overview
Scale A

Layout
Scale B



All batters shown are at 1(V):4(H), unless noted otherwise

Section A-A
Scale C



Minor road centreline realignment or steepening of the road batters may be required during the detailed design of the works to ensure that there are no works extending into adjacent private property

Section B-B
Scale C

FOR DISCUSSION

Rev.	Description	Date	Des.	Dwn.	App.

Amendments

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Project Title

James Creek Road Subdivision

Client

MPD Investments Pty Ltd

Designed	JLC	Drawn	JLC	Checked	MVE
Approved	MVE	Date	21/11/2023		

Scale

A	metres	0	200	400	600	800	1000
B		0	10	20	30	40	50
C		0	0.5	1.0	1.5	2.0	2.5

Drawing Title

Gardiners Road / Concept Upgrade for Flood Immunity

3204-1142

Drawing Number *Revision*

3204/SK101-1

Enclosure 7

Stormwater Management Report prepared by GeoLINK dated 24 November 2023

Stormwater Management Report

Lot 104 DP 751388, James Creek Road

Quality solutions. Sustainable future.

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UPR	Description	Issued By	Date Issued
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3204-1102	5th issue – updated post-DA lodgement in response to Council info request	20/05/2022	Duncan Thomson
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1. Introduction

1.1 Background

GeoLINK has been engaged by MPD Investments to prepare a stormwater management strategy for a proposed residential subdivision at Lot 104 DP 751388 James Creek Road, James Creek. This report summarises the stormwater management strategy for the proposed development and should be read in conjunction with the Statement of Environmental Effects and the associated design drawings.

1.2 Site Description

From a stormwater management perspective, the key features of the site are:

- The site is rectangular and has an area of approximately 33.5 ha.
- The site has been historically cleared and modified for agriculture, sugar cane production and cattle grazing.
- Vegetation at the site comprises improved pasture dominated by Kikuyu.
- The crest of a small hill is located slightly to the north-west of the centre of the site. From this crest, the land falls away in all directions.
- The slopes on the site are typically in the range of 3% to 10%.
- The highest level on the site is approximately 21 mAHD and the lowest level is approximately 4 mAHD.
- There are no permanent water bodies or watercourses located on the site.

1.3 Proposed Development

The design drawings provide details of the proposed development. The proposal is for subdivision of the site resulting in approximately 290 residential lots and associated infrastructure (e.g., roads, services). At the time of writing, the subdivision is proposed to occur in five stages, however it is noted that the number of stages, the number of lots in each stage and the sequence of staging will be influenced by the market at the time of development and possibly by the provision of services.

2. Design Criteria

Design criteria for stormwater management are specified in the *Clarence Valley Council Residential Zones Development Control Plan 2011 – Part H – Sustainable Water Controls* (Amendment No 7, in force 29 July 2022).

2.1 Stormwater Peak Flow Attenuation

Table H1 of the DCP states that post-development peak flows are not to exceed pre-development peak flows specified within Council policy and design standards. It is understood that the relevant standard is the *Handbook of Stormwater Drainage Design*, which forms part of the *Northern Rivers Local Government Development Design Manual*. Accordingly, the stormwater peak flow attenuation target is to ensure that the peak flow from the proposed development does not exceed the existing peak flow from the site for the 5, 10-, 20-, 50- and 100-year average recurrence interval (ARI) events, for storm durations from five minutes to three hours.

2.2 Stormwater Treatment

Table H2 of the DCP lists the requirements for stormwater treatment, which are reproduced below as **Table 2.1**.

Table 2.1 DCP Stormwater Treatment Targets

Water Quality Parameter	Default Target
Gross Pollutants	90% of average annual load retained
Total Phosphorus (TP)	60% of average annual load retained
Total Nitrogen (TN)	45% of average annual load retained
Total Suspended Solids (TSS)	85% of average annual load retained

2.3 Stormwater Runoff Volumes and Frequency of Runoff

Table H1 of the DCP states the following requirement regarding stormwater runoff volumes and the frequency of stormwater runoff:

Stormwater runoff volumes and frequency reduced or maintained to the pre development through application of Harvesting, Retention, Infiltration and Detention as appropriate.

It is understood that the above requirement is rarely, if ever, enforced because it is almost impossible to implement a residential development on a previously undeveloped (i.e., 100% pervious) site without increasing the volume and altering the frequency of stormwater runoff discharging from the site. This is discussed further in **Section 3.2.3**.

3. Stormwater Management Strategy

3.1 Overview

3.1.1 Catchments and Discharge Locations

The existing topography of the site results in four stormwater catchments in the pre-development situation. The logical design response to the grading of the site is to continue managing stormwater in four catchments.

An objective of the proposed development is to ensure no change to the stormwater runoff from the north-west Catchment 1. As such, the proposal is to retain this catchment as 100% pervious and ensure the post-development catchment area is the same as the pre-development catchment area. The Catchment 1 boundaries will be slightly realigned, but the catchment area will be unchanged.

The post-development discharge locations for the other three catchments will be at the same locations as the pre-development situation.

The stormwater catchment areas are presented in **Table 3.1**. Some of the post-development catchments will be different to the pre-development catchments because the post-development catchment boundaries will be dictated by the road and lot layouts. Refer to drawings 3204/C160 and 3204/C161 for the stormwater layout and catchment boundaries.

Table 3.1 Stormwater Catchment Areas

Catchment	Pre-development area (ha)	Post-development area (ha)
1 (north-west)	4.98	4.98
2 (north-east)	11.37	10.84
3 (south-east)	13.64	13.63
4 (south-west)	3.48	4.02
Total	**33.47**	**33.47**

3.1.2 Stormwater Management

Stormwater management will be provided using the following infrastructure:

- Rainwater tanks on each residential allotment.
- Standard underground pit and pipe drainage system to collect and convey stormwater.
- Three bioretention basins (one for each of the developed catchments).

Each dwelling will require a rainwater tank to meet the requirements of the NSW Building Sustainability Index (BASIX). It has been assumed that the average rainwater tank size will be 4.5 kL and the tank will be connected to appropriate indoor uses and outdoor taps. The rainwater tanks contribute to achieving stormwater management targets through the capture and reuse of roofwater runoff.

A bioretention basin will be located in a drainage reserve adjacent to the outlet of Catchments 2, 3 and 4. Each basin will perform the dual function of providing peak flow attenuation and treatment of stormwater to meet the design criteria. There will also be some infiltration of stormwater through the

base of the basins into the underlying soils, thereby reducing the volume and frequency of surface runoff from the site. A maintenance plan for the bioretention basins is provided in **Appendix D**.

During regular, smaller rainfall events (e.g., less than one year ARI storm events), the focus is on the treatment of stormwater to protect downstream aquatic ecosystems. Most of the stormwater will temporarily pond on the surface of the basin and infiltrate down through the filter media (sandy loam soil) to be collected in the slotted under-drainage pipes. Some of the stormwater that infiltrates down to the base of the basin will continue to infiltrate into the underlying soils rather than being collected in the under-drainage pipes. More information regarding the stormwater treatment processes is provided in **Section 3.2.2**.

During infrequent, larger rainfall events (e.g., five-year ARI storm events and larger), the focus is on the reduction of peak outflows to prevent detrimental impacts on downstream drainage systems, infrastructure, properties, and waterways. The function of the basin is to temporarily fill with stormwater, thereby buffering the flow and slowing the release of water from the developed catchment. In these larger rainfall events, stormwater will fill the basin to a greater depth (maximum depth approximately 1.1 m) and there will be controlled/ throttled outflow via low flow pipe outlets and a high flow weir. Once the rainfall ceases, the depth of water in the basin will drop to 200 mm within minutes. Assuming there is no additional rainfall and subsequent inflow to the basin, the remaining 200 mm of water will drain via infiltration within several hours.

3.1.2.1 Consideration of Alternative Stormwater Management Options

Bioretention basins are an effective method of providing peak flow attenuation and treatment of stormwater and are widely utilised throughout Australia. Prior to the selection of end-of-line bioretention basins as the preferred approach, the following stormwater treatment options were considered:

Roadside Swales/ Bioretention Swales: The longitudinal grades of the roads will generally be too steep for swales to be suitable. There would also need to be individual driveway crossings over the swales (i.e., culverts) and this would increase the ongoing road reserve maintenance requirements.

- Distributed Bioretention Basins/ Pods: As for the swales, the significant longitudinal road grades mean that it would be challenging to incorporate a large number of smaller bioretention basins (or pods) throughout the road network. Also, it would typically be more onerous and costly for Council to maintain a large number of smaller basins, rather than a small number of larger basins.
- Constructed Stormwater Wetlands: The significant surface gradients, particularly along the western site boundary, are not well suited to stormwater wetlands. Wetlands also typically require a larger footprint than bioretention basins to achieve the same level of stormwater treatment.

In general, it is difficult and impractical to incorporate stormwater peak flow attenuation into the stormwater treatment options listed above. As such, there would typically need to be additional end-of-line stormwater infrastructure (i.e. stormwater detention basins) to provide peak flow attenuation. Once again, this would increase the number of assets that need to be maintained by Council.

3.1.3 Stormwater Discharge Characteristics

The north-east Basin 2 and the south-east Basin 3 will discharge into the James Creek Road reserve, while the south-west Basin 4 will discharge into the Austons Lane road reserve. There is considerable flexibility regarding the configuration of the discharge from these basins. For example, the outflow from the basin can be configured to discharge at a single point, or a level spreader can be incorporated so that the flow is dispersed across a greater width. The preferred discharge configuration for these three basins will be discussed and agreed with Council during the detailed design. In each case, appropriate scour protection will be provided at the outlet. At this stage of concept design, preliminary outlet

configurations have been presented on the design drawings 3204/C162 to 3204/C164. For Basins 2 and 4, swales will be constructed to connect the basin spillway to the ultimate discharge location.

The stormwater discharge from the north-west Catchment 1 will be unchanged because the catchment will remain as 100% pervious and the catchment area will be the same. The Catchment 1 boundaries will be slightly realigned, but the landform within the majority of the catchment will be unchanged.

3.2 Modelling

The development of the site will result in an increase in the impervious area in Catchments 2 to 4, which will lead to increases in the peak flow of stormwater emanating from these internal catchments. To ensure that the proposed stormwater system meets the peak flow attenuation targets for stormwater that discharges from the site, hydrologic and hydraulic calculations have been undertaken using a model developed with the DRAINS software.

The proposed land use changes and associated increase in impervious areas will also result in higher loads of water-borne contaminants being generated from the internal catchments. Compliance with the stormwater quality targets will, by default, require the vast majority of stormwater runoff from within the site to flow through treatment devices (such as bioretention basins) before discharging from the site. This will ensure the hydraulic 'disconnection' of runoff from impervious surfaces, thus significantly attenuating the impact of frequent flows on the ecological health of downstream waterways.
A conceptual stormwater treatment model was developed using the MUSIC software and this model was used to ensure that the stormwater system meets the stormwater quality targets. The MUSIC model incorporates rainwater tanks for each residential lot and the bioretention basins.

The MUSIC model was also used to simulate long-term water balances for the pre-development and post-development scenarios. These water balance simulations provide calculations of the average annual volumes of:

- Stormwater generated within the site.
- Rainwater reused by households.
- Evapotranspiration from the bioretention basins.
- Infiltration into the underlying soils from the bioretention basins.
- Stormwater runoff discharged from the site (for both pre-development and post-development).

The DRAINS and MUSIC models include appropriate input parameters (i.e. roof area, car parking area) to represent the proposed childcare centre, commercial centre and medium density lots. As such, Bioretention Basins 2 and 3 have been designed to provide stormwater peak flow attenuation and treatment for the fully developed Catchments 2 and 3.

3.2.1 Stormwater Peak Flow Attenuation

The DRAINS model was used to design the basins from a stormwater peak flow attenuation perspective. The function of the basins is to temporarily fill with stormwater, thereby buffering the flow and slowing the release of water from the developed catchment. So, even though the peak flows into the basins will be higher than the pre-development peak flows, the peak flows out of the basins will be reduced to below the pre-development peak flows by this buffering effect.

The schematic and results from the DRAINS model are presented in Appendix A. The basin geometries used in the DRAINS model are presented in **Table 3.2** to **Table 3.4**. The actual basin geometries, as designed and constructed, do not need to exactly match the geometries listed in the tables. However, the surface area of the base of the basin (i.e., at depth = 0 m) and the storage volume at the maximum water depth must be at least as large as the numbers listed in the tables.

Table 3.2 Basin 2 (NE catchment) Geometry

Depth of Water (m)	Surface Area of Basin (m²)	Storage Volume of Basin (m³)
0	1,478	-
1.10	2,506	2,180

Table 3.3 Basin 3 (SE catchment) Geometry

Depth of Water (m)	Surface Area of Basin (m²)	Storage Volume of Basin (m³)
0	2,287	-
1.10	3,610	3,231

Table 3.4 Basin 4 (SW catchment) Geometry

Depth of Water (m)	Surface Area of Basin (m²)	Storage Volume of Basin (m³)
0	777	-
1.10	1,424	1,199

Outflow from the basins will be controlled via low flow pipe outlets and a high flow weir. The outlet configurations utilised in the DRAINS model are listed below. Any changes to these outlet configurations during the detailed design phase would need to be validated with further modelling.

The outlet configuration for Basin 2 (NE catchment) is as follows:

- 4 x 525 mm diameter pipes (length = 18 m; slope = 8%).
- Weir with a crest level 850 mm above the floor of the basin and a crest length of 12.0 m.

The outlet configuration for Basin 3 (SE catchment) is as follows:

- 6 x 450 mm diameter pipes (length = 15 m; slope = 3%).
- Weir with a crest level 800 mm above the floor of the basin and a crest length of 11.5 m.

The outlet configuration for Basin 4 (SW catchment) is as follows:

- 4 x 300 mm diameter pipes (length = 20 m; slope = 6%).
- Weir with a crest level 900 mm above the floor of the basin and a crest length of 5.2 m.

The upstream invert level of the basin outlet pipes will be set at a level that is 200 mm higher than the base of the basin (i.e., water ponds to a depth of 200 mm within the basin before flowing out of the pipes). This provides the extended detention depth for the basins and ensures that a substantial proportion of the stormwater captured in the basin infiltrates down through the basin's filter media soil layer. This is critical for the stormwater treatment function of the basin.

3.2.1.1 Results

The peak flows for the pre-development and post-development situations are presented in the following tables. It is evident from the results that the basins provide the required level of stormwater peak flow attenuation for all relevant design storm events. In fact, the peak flow attenuation significantly exceeds Council's requirements, with the post-development peak flows being at least 10% lower than the pre-development peak flows for all design storm events.

Table 3.5 Peak Flows and Water Depth – Basin 2 (NE)

Design Storm Event (ARI)	Peak Flows (m^3/s)		Post-Dev Peak Flow as % of Pre-Dev Peak Flow	Peak Water Depth in Basin (m)
	Pre-Development	Post-Development		
5 yr	1.56	1.38	88%	-
10 yr	2.43	1.89	78%	-
20 yr	2.94	2.47	84%	-
50 yr	3.89	3.41	88%	-
100 yr	4.39	3.94	90%	1.08

Table 3.6 Peak Flows and Water Depth – Basin 3 (SE)

Design Storm Event (ARI)	Peak Flows (m^3/s)		Post-Dev Peak Flow as % of Pre-Dev Peak Flow	Peak Water Depth in Basin (m)
	Pre-Development	Post-Development		
5 yr	1.79	1.56	87%	-
10 yr	2.81	2.27	81%	-
20 yr	3.42	2.94	86%	-
50 yr	4.59	3.96	86%	-
100 yr	5.19	4.61	89%	1.07

Table 3.7 Peak Flows and Water Depth – Basin 4 (SW)

Design Storm Event (ARI)	Peak Flows (m^3/s)		Post-Dev Peak Flow as % of Pre-Dev Peak Flow	Peak Water Depth in Basin (m)
	Pre-Development	Post-Development		
5 yr	0.50	0.43	86%	-
10 yr	0.77	0.51	66%	-
20 yr	0.92	0.61	66%	-
50 yr	1.23	0.98	80%	-
100 yr	1.40	1.23	88%	1.08

3.2.1.2 Capacity of Downstream Infrastructure

The DRAINS model has been extended downstream of the property boundary to assess the capacity of existing downstream infrastructure. There are two locations along the James Creek Rd site frontage where existing cross-drainage culverts convey stormwater runoff underneath James Creek Rd. There is a small box culvert towards the north of the site and a single 750 mm diameter pipe just north of the intersection with Austons Ln. The proposed design conveys stormwater flows from the bioretention basins to these existing outlet locations.

To comply with the *Handbook of Stormwater Drainage Design*, these culverts should be sized to have capacity for the 20yr ARI flow in the existing situation (i.e. pre-development). The DRAINS model analysis indicates that the culverts do not have this capacity.

To convey the 20yr ARI flow, the culverts need to be upsized to:

- Northern culvert: 1800 mm (w) x 600 mm (h) box culvert, or equivalent (e.g. 3 x 600 mm x 600 mm or 2 x 900 mm x 600 mm). This culvert needs to be a box culvert because there is limited cover.
- Southern culvert: 3 x 750 mm diameter pipes.

These culverts are under-sized and should be upgraded as per the above. This upgrade should occur regardless of whether the proposed development proceeds because the culverts are under-sized for the existing situation. As per **Section** Error! Reference source not found., the post-development peak flows are significantly lower than the pre-development peak flows, so the proposed development will not worsen the situation regarding these under-sized culverts.

The DRAINS modelling results presented in **Appendix A** incorporate the upgraded culvert sizes listed above.

3.2.2 Stormwater Treatment

In each bioretention basin, stormwater runoff will be retained within an extended detention depth (200 mm) and then infiltrate down through the filter layer (sandy loam soil). Most of the excess water that drains to the bottom of the filter layer will be collected in slotted under-drainage pipes and conveyed to the discharge location. Some infiltrated water will continue to infiltrate down into the underlying soils rather than being collected in the under-drainage pipes. The surface of the bioretention basin will be densely planted with locally occurring native ground cover species.

Treatment of the stormwater occurs both on the surface of the bioretention system and within the filter layer. When storm inflows cause temporary ponding on the surface of the system, pollutants are removed from the stormwater through sedimentation and particulate adhesion onto the stems and leaves of the vegetation. The agitation of the surface layer of the soil caused by movement of the vegetation and the root systems prevents the accreted sediments clogging the filter layer. As stormwater percolates through the filter layer, fine particulates and some soluble pollutants are removed through processes such as adhesion onto the surface of the soil particles, biological transformation of pollutants by biofilms growing on the surface of the soil particles, and biomass uptake of nutrients and metals through the root systems of the vegetation.

The MUSIC model was used to quantify the pollutant removal provided by the bioretention basins and rainwater tanks.

3.2.2.1 Model Inputs

The MUSIC model was developed based on the guidance provided in the *NSW MUSIC Modelling Guidelines* (BMT WBM, August 2015) and the *MUSIC Modelling Guidelines* (Consultation Draft) (Healthy Land and Water, 2018). The model simulates a five year period using historical rainfall data from 1972 to 1976. This is the time period specified by Council to be used in MUSIC model simulations. This five year period has rainfall characteristics representative of the long-term rainfall record and also includes the 1974 extreme rainfall and flood event.

Other key model inputs are listed below:

- Surface types:
  - Roof area assumed to be 300 m² per standard residential lot and 200 m² per small residential lot (<450 m² lot area).
  - Driveway area assumed to be 30 m² per residential lot.
  - Road, car parking and footpath areas measured and calculated from subdivision design.
- Rainwater tanks:
  - Daily indoor demand (0.173 kL/ day for 3 people per dwelling) from Table 6-1 of the *NSW MUSIC Modelling Guidelines.*
  - Annual outdoor demand (55 kL/ yr) from Table 6-1 of the *NSW MUSIC Modelling Guidelines.*
  - Roof area that flows to rainwater tank assumed to be 80% of total roof area.
- Soil characteristics:
  - Silty clay parameters from Table 5-5 of the *NSW MUSIC Modelling Guidelines*, based on the geotechnical assessment by Regional Geotechnical Solutions reporting silty clay, with some sandy clay.
  - Infiltration rate of soils beneath bioretention basins and infiltration trench assumed to be 10 mm/ hr, based on silty clay and sandy clay at the relevant depths.

3.2.2.2 Results

The MUSIC modelling results are summarised in **Table 3.8**, with the model schematic and results presented in **Appendix B**. The MUSIC-link report is presented in **Appendix C**. The results indicate that the predicted pollutant load reductions meet the targets by a comfortable margin, with the modelled load reductions being significantly higher than the target load reductions for all parameters.

Table 3.8 Stormwater Pollutant Load Reductions

Pollutant	Post-Development Load – without treatment (kg/ yr)	Post-Development Load – with treatment (kg/ yr)	Modelled Load Reduction (%)	Target Load Reduction (%)
Total suspended solids	34,000	3,950	88	85
Total phosphorus	66.7	24.2	64	60
Total nitrogen	481	202	58	45
Gross pollutants	4,410	0	100	90

To provide additional assurance regarding the adequacy of the proposed stormwater treatment, an additional check has been undertaken against the pre-development scenario. For the pre-development scenario, two different land uses were tested. The first is an 'agricultural' land use, which is representative of sugar cane production or intensive cattle grazing. The second is a 'rural' land use, which is representative of a rural residential area and is more conservative because it predicts lower pollutant loads for the pre-development situation.

The results of the comparison are presented in the table below and indicate that the post-development pollutant loads will be substantially less than the pre-development pollutant loads, regardless of the assumed pre-development land use.

Table 3.9 Stormwater Pollutant Load Comparison to Pre-Development

Pollutant	Pre-Development Load – agriculture (kg/ yr)	Pre-Development Load – rural (kg/ yr)	Post-Development Load – with treatment (kg/ yr)	Is Post-Development less than Pre-Development ?
Total suspended solids	21,700	13,700	3,950	Yes
Total phosphorus	91.1	30.1	24.2	Yes
Total nitrogen	425	263	202	Yes
Gross pollutants	0	0	0	Equal

Two input parameters are listed as 'failing parameters' in the MUSIC-link report in **Appendix C**. These input parameters are listed in the following table, along with the source of the adopted value. The values that have been used are considered to be appropriate because they are taken from the *NSW MUSIC Modelling Guidelines*. Also, the impervious area is stated as 100.3% in the Project Details section on the first page of the MUSIC-link report. It is unclear why this value has been generated by the MUSIC-link report, because this does not match the overall impervious percentage of the post-development scenario, which is 50% (for the developed Catchments 2, 3 and 4).

Table 3.10 Source of Parameters reported as 'Failing' in MUSIC Model

Parameter	Value	Source of Value
Road surface type – Impervious Area Rainfall Threshold (mm/ day)	1.5	*NSW MUSIC Modelling Guidelines, Table 5-4*
Roof surface type – Impervious Area Rainfall Threshold (mm/ day)	0.3	*NSW MUSIC Modelling Guidelines, Table 5-4*

3.2.3 Stormwater Runoff Volumes and Frequency of Runoff

As noted in **Section 2.3**, Table H1 of the DCP states the following requirement with regard to stormwater runoff volumes and the frequency of stormwater runoff:

Stormwater runoff volumes and frequency reduced or maintained to the pre development through application of Harvesting, Retention, Infiltration and Detention as appropriate.

The DCP does not provide guidance as to how compliance with the above clause should be demonstrated. For example, should the pre-development and post-development runoff volumes be compared for a range of individual design storm events (e.g., 5, 10, 20, 50 and 100 year ARI events), similar to the peak flow attenuation assessment, or should the runoff volumes be checked over longer time periods (e.g., months, years) that incorporate multiple, varied rain events? Similarly, should the frequency of runoff be assessed for every event that causes discharge from the site, or only events that are above, below, or in between certain thresholds?

If the intention of the DCP is that the post-development stormwater runoff volume cannot exceed the pre-development stormwater runoff volume in any individual design storm event, or for any multi-event time period assessed using representative historical climate data, then it is suggested that this cannot be practically achieved for a residential development that is proposed on the previously undeveloped James Creek site.

A residential development incorporates a range of impervious surfaces, including roofs, roads and footpaths. For a previously undeveloped site, this increases the percentage of impervious area on the site from 0% to approximately 50%. This results in more stormwater runoff being generated when it rains. If the intention is to reduce the volume of stormwater runoff down to pre-development levels, options include:

- Capture, storage and reuse of roof water using rainwater tanks.
- Capture, storage and infiltration of stormwater into the underlying soils.
- Capture, storage and reuse of stormwater at a subdivision scale.

The first two of these measures are included in the development proposal. But they are not sufficient to reduce stormwater runoff volumes to pre-development levels for all individual design storm events and all multi-event time periods.

Therefore, a subdivision-scale stormwater harvesting scheme would be required if full compliance with the DCP clause was required. Such a scheme would need to be designed and justified based on exhaustive water balance modelling of a comprehensive range of individual storms and multi-event periods. It is highly likely that the stormwater would need to be treated to potable water standard so that it could be used for purposes that aren't already supplied by rainwater tanks. Also, large storage reservoirs would be required to store the stormwater that is captured and treated during rainfall events, so that it can be used over the subsequent weeks or months. The capital and operating costs of such a stormwater harvesting scheme would be very high. As such, this is not considered to be a reasonable and feasible option for this residential subdivision.

Given the above, full compliance with the DCP clause is considered to be unreasonable. Instead, the adopted approach has been to identify the specific issues or potential impacts that could be caused by changes to stormwater runoff volumes or frequencies and address those specific issues. These specific issues are discussed in the following sections.

3.2.3.1 Impacts on Stormwater Conveyance Infrastructure

With regard to stormwater conveyance or 'drainage' infrastructure located downstream of the site (e.g., culverts, channels, drains), it is suggested that increases in runoff volumes or frequencies would have a negligible impact. The key constraint for this infrastructure is the flow rate (m^3/s), not the volume (m^3) or frequency. For example, it is the flow rate that determines whether channel banks are overtopped, and it is the flow rate, and associated velocity, that primarily influences channel erosion and scour processes. The purpose of the stormwater peak flow attenuation requirements and measures (refer to **Section 3.2.1**) is to manage potential impacts associated with flow rates.

3.2.3.2 Frequent Flow Impacts on Downstream Waterways

Increases in the frequency of stormwater runoff to natural waterways can have detrimental impacts on in-stream ecosystems. When comparing a pre-development 0% impervious catchment to a post-development catchment, a difference is that smaller rainfall events (e.g., 5 mm of rain) will not typically generate stormwater runoff in the pre-development situation because all of the rain will infiltrate into the ground, but similar rainfall events will generate stormwater runoff in the post-development situation due to impervious surfaces.

The general best-practice approach to managing the potential impact of increased frequency of runoff is to provide a stormwater management system that provides a method to capture the relatively small volume of stormwater generated from these smaller rainfall events and prevent it from being discharged as a pulse of surface water runoff to downstream waterways. The rainwater tanks and bioretention basins that are proposed as part of the development are best-practice methods of managing the potential impacts of frequent flows.

3.2.3.3 Long-term Water Balances

The long-term water balances extracted from the MUSIC model simulation are presented in the following tables. It is noted that the 'rainfall onto catchment' values differ between the post-development and pre-development scenarios because the post-development and pre-development catchment areas are different, as per **Table 3.1**.

The MUSIC model simulation indicates that the average annual surface water discharge across the site boundary will be higher in the post-development situation compared to the pre-development situation. This increase in the average annual stormwater volume is not expected to have a significant detrimental impact on downstream waterways or properties. These catchments discharge into designated watercourses or channels. As discussed in **Section** Error! Reference source not found. above, the key constraint for watercourses and channels is the flow rate (m^3/s), not the volume (m^3) or frequency of runoff. Stormwater peak flow attenuation measures are proposed (refer to **Section 3.2.1**) to manage potential impacts associated with flow rates.

Table 3.11 Catchment 2 Water Balance

Water Balance Item	Post-Development Scenario	Pre-Development Scenario
Rainfall onto catchment	**125.4 ML/ yr**	**131.6 ML/ yr**
Evapotranspiration from vegetated/ pervious surfaces within catchment	- 50.5 ML/ yr	- 83.7 ML/ yr
Water stored in soil	- 0.2 ML/ yr	- 0.5 ML/ yr
Stormwater generated within residential development	**= 74.7 ML/ yr**	
Collection and reuse of roofwater via rainwater tanks	- 7.5 ML/ yr	
Evapotranspiration losses from bioretention basin	- 3.3 ML/ yr	
Infiltration into underlying soils from base and sides of bioretention basin	- 8.5 ML/ yr	
Surface water discharge from site	**= 55.4 ML/ yr**	**= 47.4 ML/ yr**
% change from pre-development scenario	*+ 17%*	

Table 3.12 Catchment 3 Water Balance

Water Balance Item	Post-Development Scenario	Pre-Development Scenario
Rainfall onto catchment	**157.8 ML/ yr**	**158.0 ML/ yr**
Evapotranspiration from vegetated/ pervious surfaces within catchment	- 49.8 ML/ yr	- 100.5 ML/ yr
Water stored in soil	- 0.2 ML/ yr	- 0.6 ML/ yr
Stormwater generated within residential development	**= 107.8 ML/ yr**	
Collection and reuse of roofwater via rainwater tanks	- 11.7 ML/ yr	
Evapotranspiration losses from bioretention basin	- 5.2 ML/ yr	
Infiltration into underlying soils from base and sides of bioretention basin	- 13.9 ML/ yr	
Surface water discharge from site	**= 77.0 ML/ yr**	**= 56.9 ML/ yr**
% change from pre-development scenario	*+ 35%*	

Table 3.13 Catchment 4 Water Balance

Water Balance Item	Post-Development Scenario	Pre-Development Scenario
Rainfall onto catchment	**46.6 ML/ yr**	**40.3 ML/ yr**
Evapotranspiration from vegetated/ pervious surfaces within catchment	- 15.3 ML/ yr	- 25.6 ML/ yr
Water stored in soil	- 0.1 ML/ yr	- 0.2 ML/ yr
Stormwater generated within residential development	**= 31.2 ML/ yr**	
Collection and reuse of roofwater via rainwater tanks	- 3.6 ML/ yr	
Evapotranspiration losses from bioretention basin	- 1.7 ML/ yr	
Infiltration into underlying soils from base and sides of bioretention basin	- 4.3 ML/ yr	
Surface water discharge from site	**= 21.6 ML/ yr**	**= 14.5 ML/ yr**
% change from pre-development scenario	*+ 49%*	

References

BMT WBM, (2015). *NSW MUSIC Modelling Guidelines.* Prepared for Greater Sydney Local Land Services.

Clarence Valley Council, (2011). *Clarence Valley Council Residential Zones Development Control Plan 2011.*

Healthy Land and Water, (2018). *MUSIC Modelling Guidelines (Consultation Draft).* Healthy Land and Water Limited, Brisbane, Queensland.

Water by Design, (2010). *MUSIC Modelling Guidelines (Version 1.0).* SEQ Healthy Waterways Partnership.

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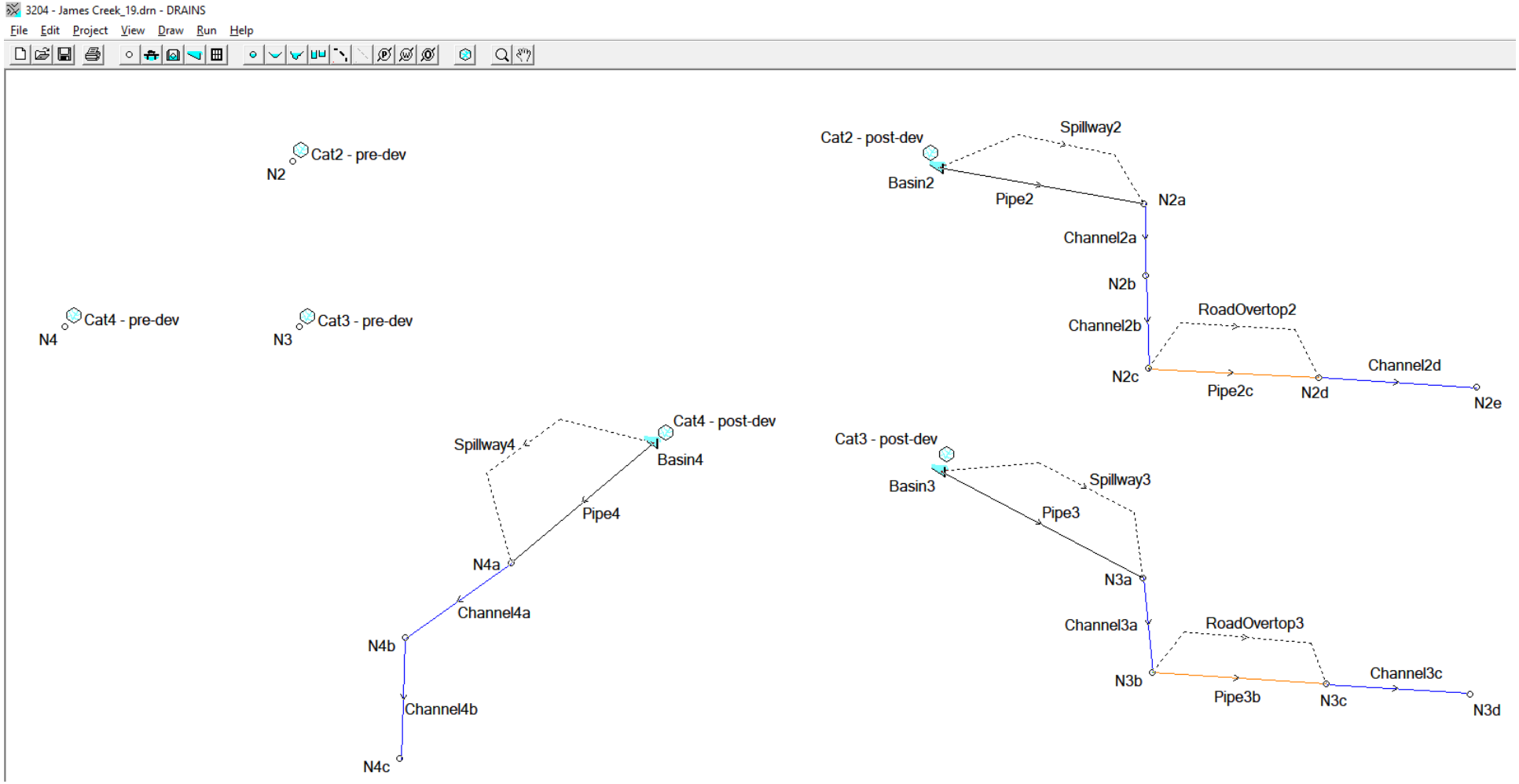
Appendix A

DRAINS Model Schematic and Results

Schematic of Model Layout

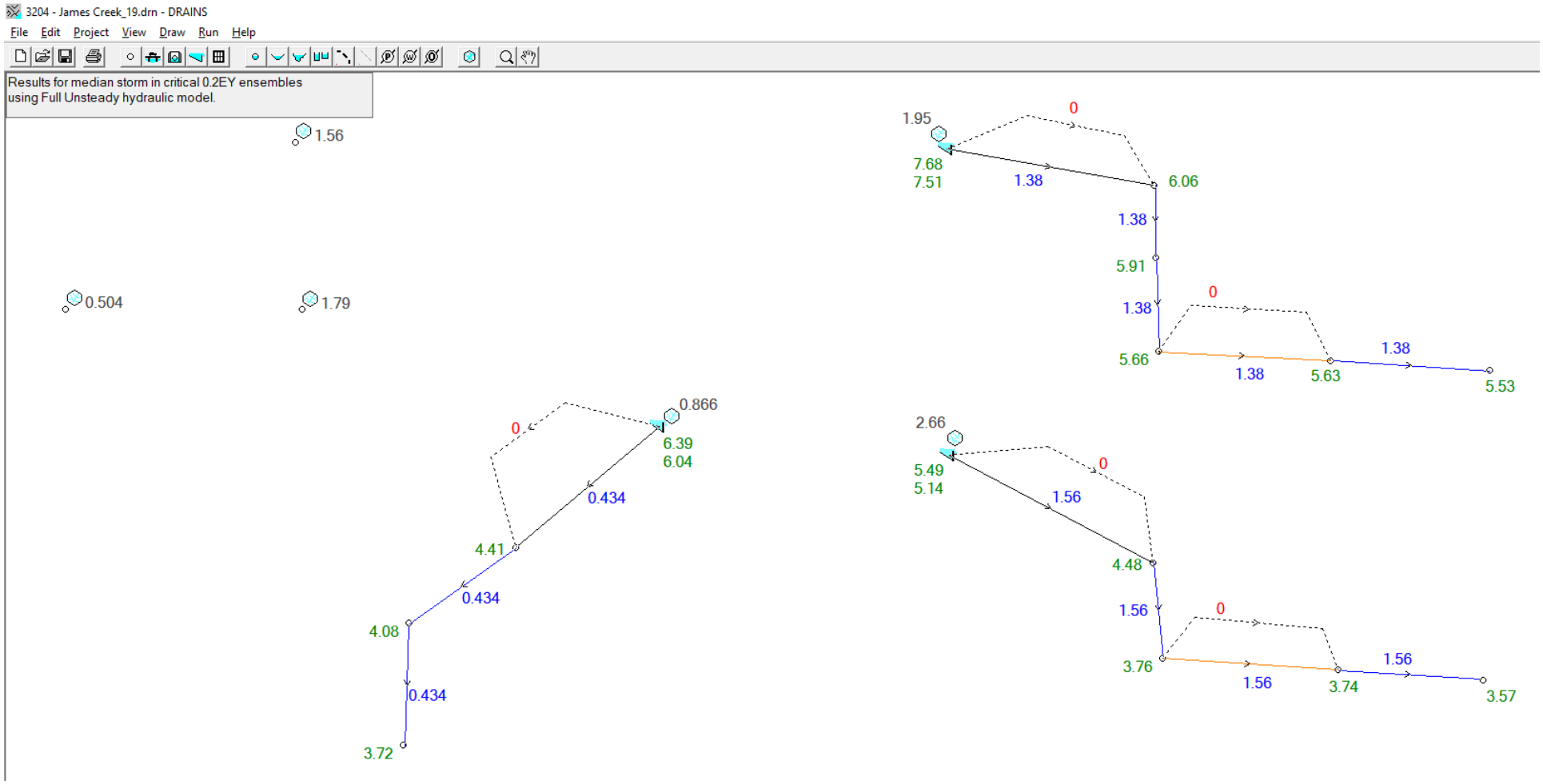
Notes: 1. Pre-development at top-left and post-development at right.



Results – 5yr ARI (0.2EY)

Notes: 1. Pre-development at top-left and post-development at right.

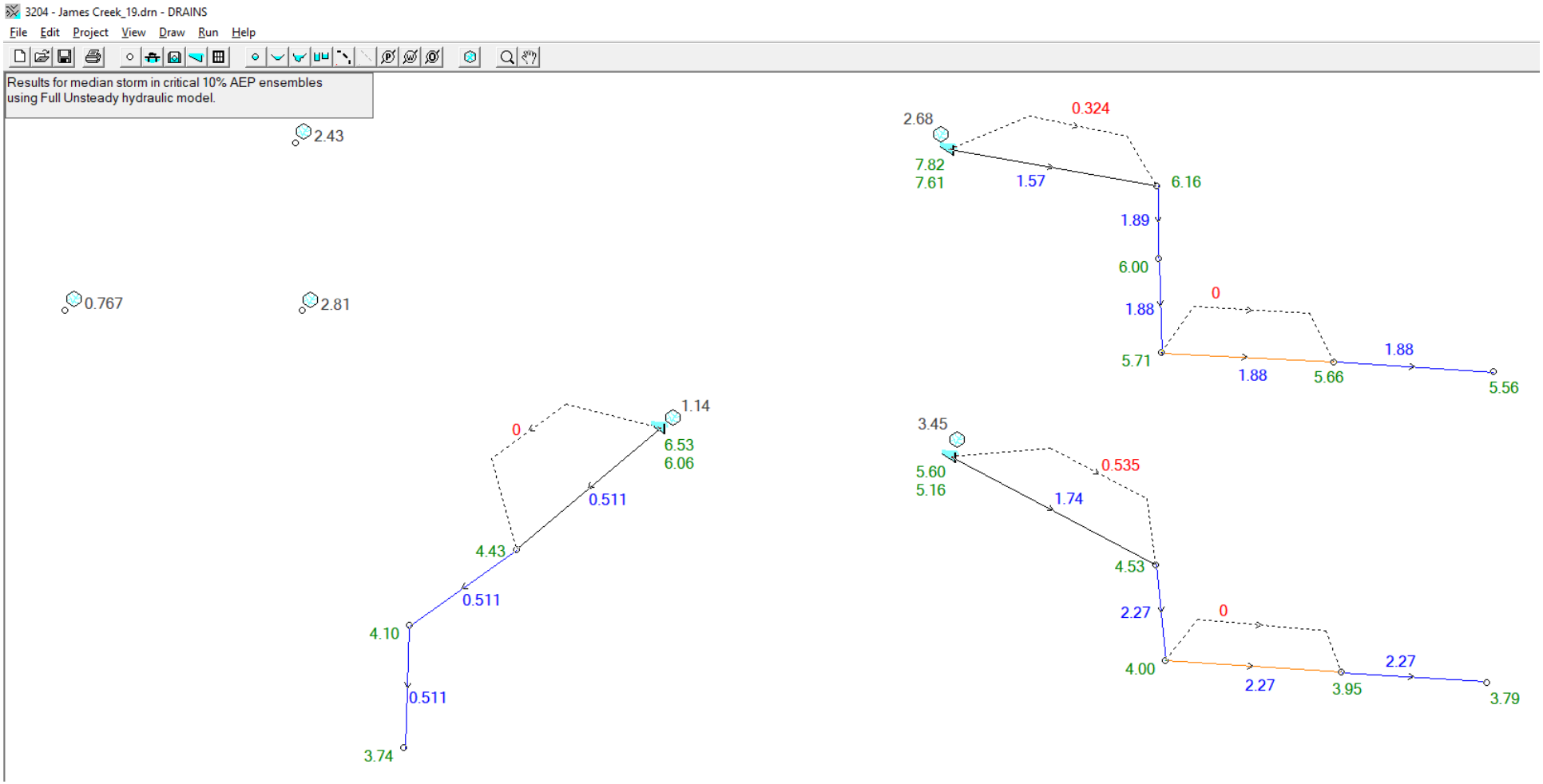
2. Black numbers are catchment inflows; blue numbers are peak flow rates in pipes/ channels; red numbers are peak flow rates in weirs; green numbers are peak water levels.



Results – 10yr ARI (10% AEP)

Notes: 1. Pre-development at top-left and post-development at right.

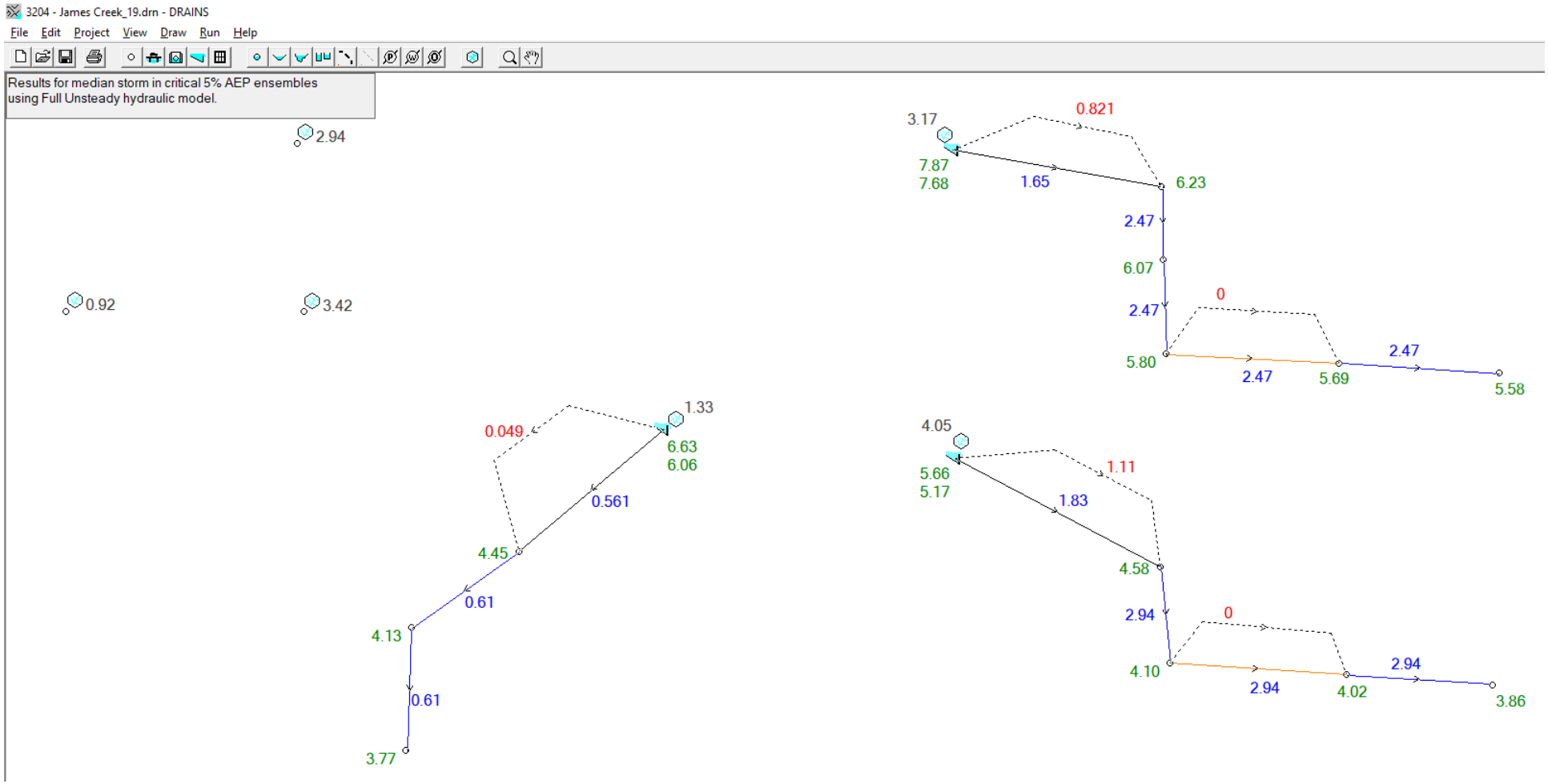
2. Black numbers are catchment inflows; blue numbers are peak flow rates in pipes/ channels; red numbers are peak flow rates in weirs; green numbers are peak water levels.



Results – 20yr ARI (5% AEP)

Notes: 1. Pre-development at top-left and post-development at right.

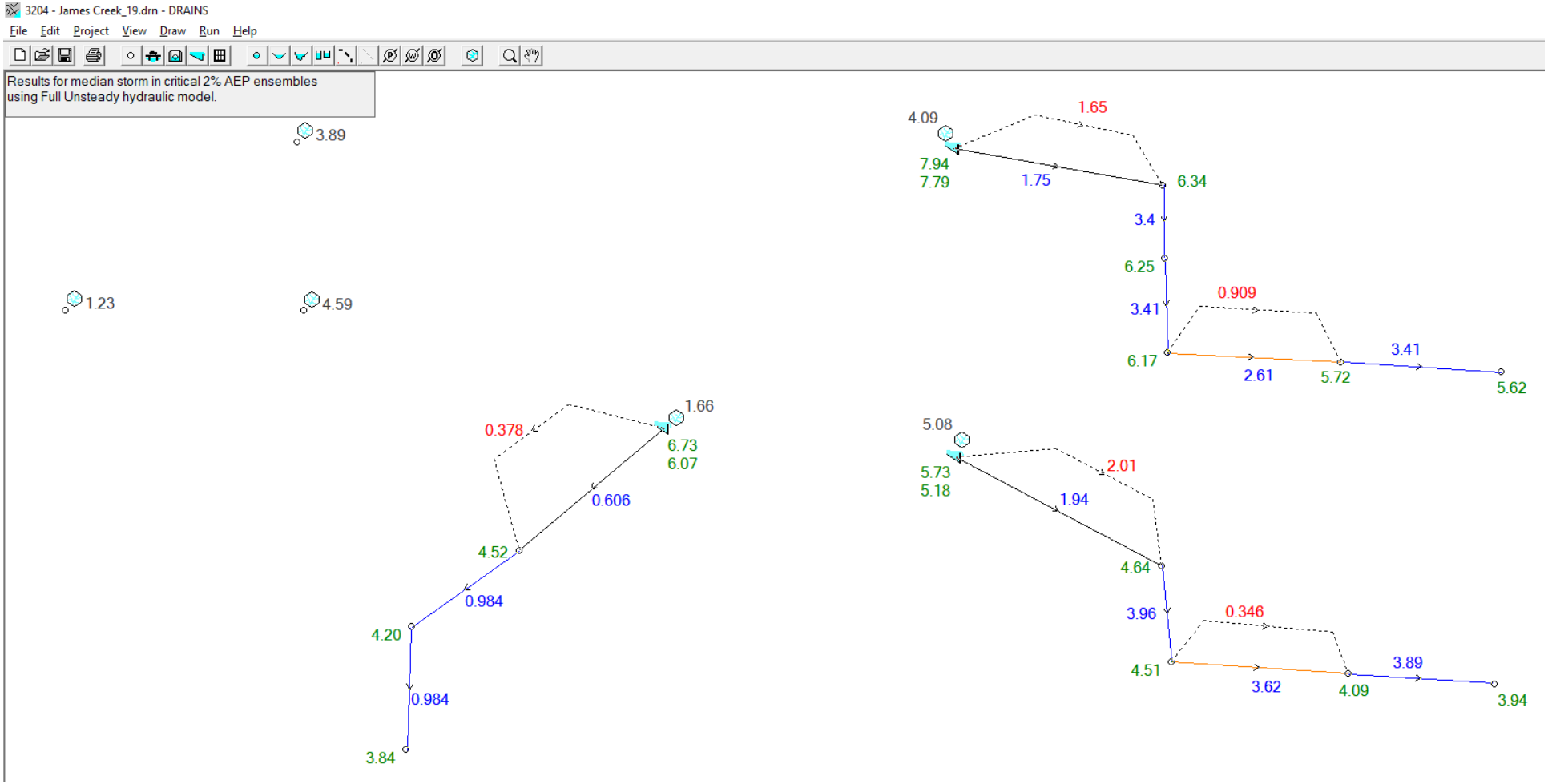
2. Black numbers are catchment inflows; blue numbers are peak flow rates in pipes/ channels; red numbers are peak flow rates in weirs; green numbers are peak water levels.



Results – 50yr ARI (2% AEP)

Notes: 1. Pre-development at top-left and post-development at right.

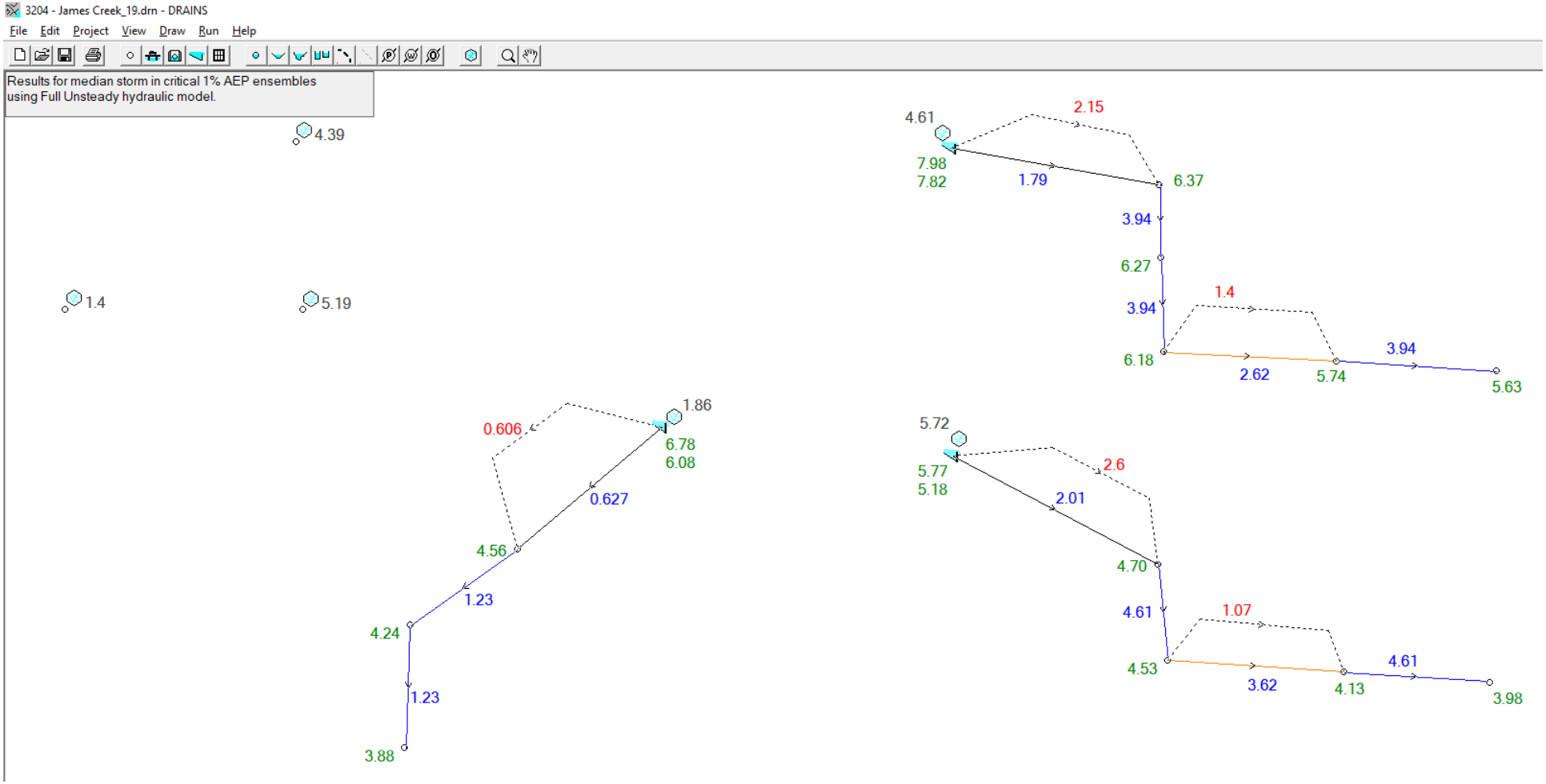
2. Black numbers are catchment inflows; blue numbers are peak flow rates in pipes/ channels; red numbers are peak flow rates in weirs; green numbers are peak water levels.



Results – 100yr ARI (1% AEP)

Notes: 1. Pre-development at top-left and post-development at right.

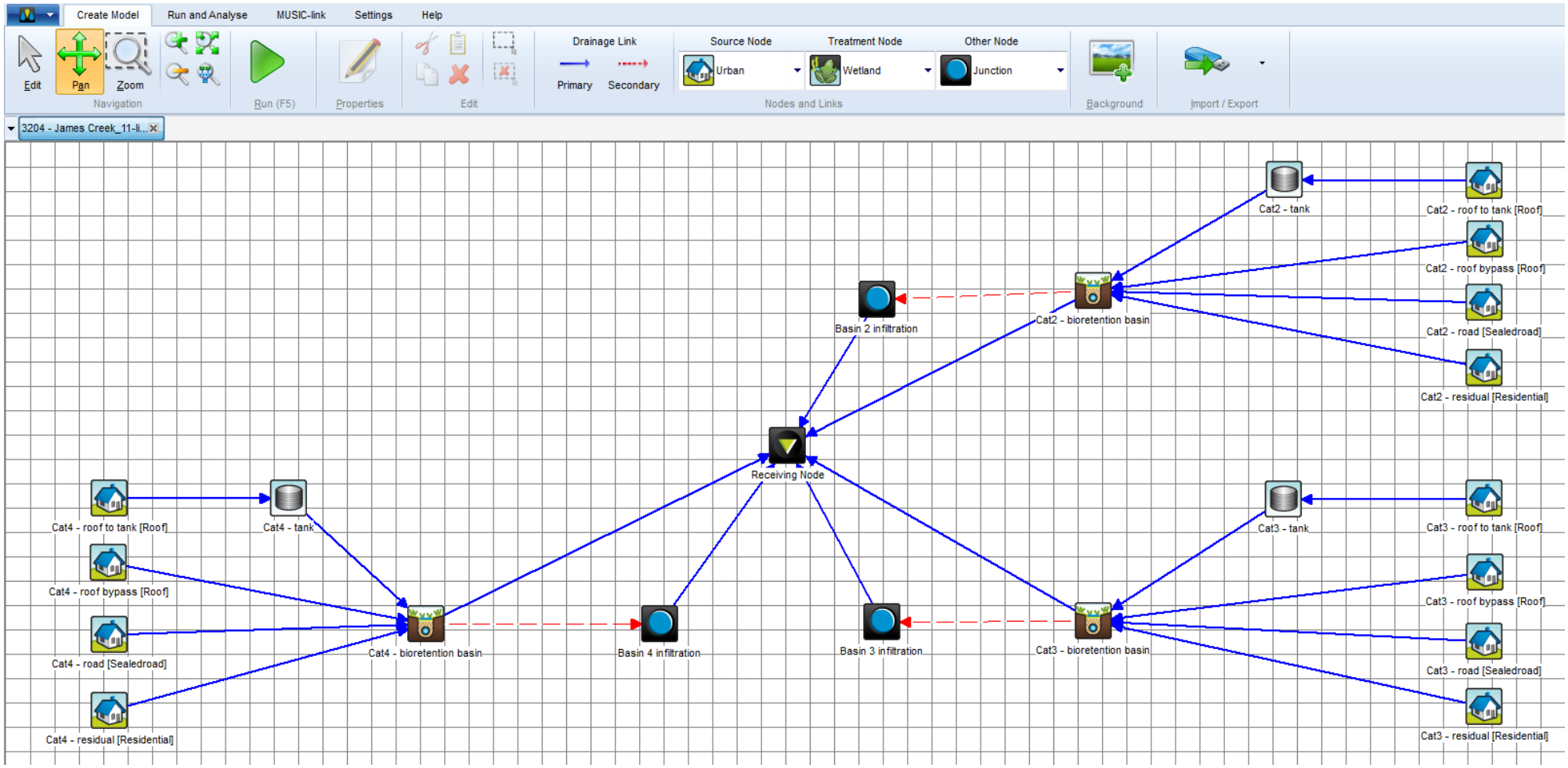
2. Black numbers are catchment inflows; blue numbers are peak flow rates in pipes/ channels; red numbers are peak flow rates in weirs; green numbers are peak water levels.



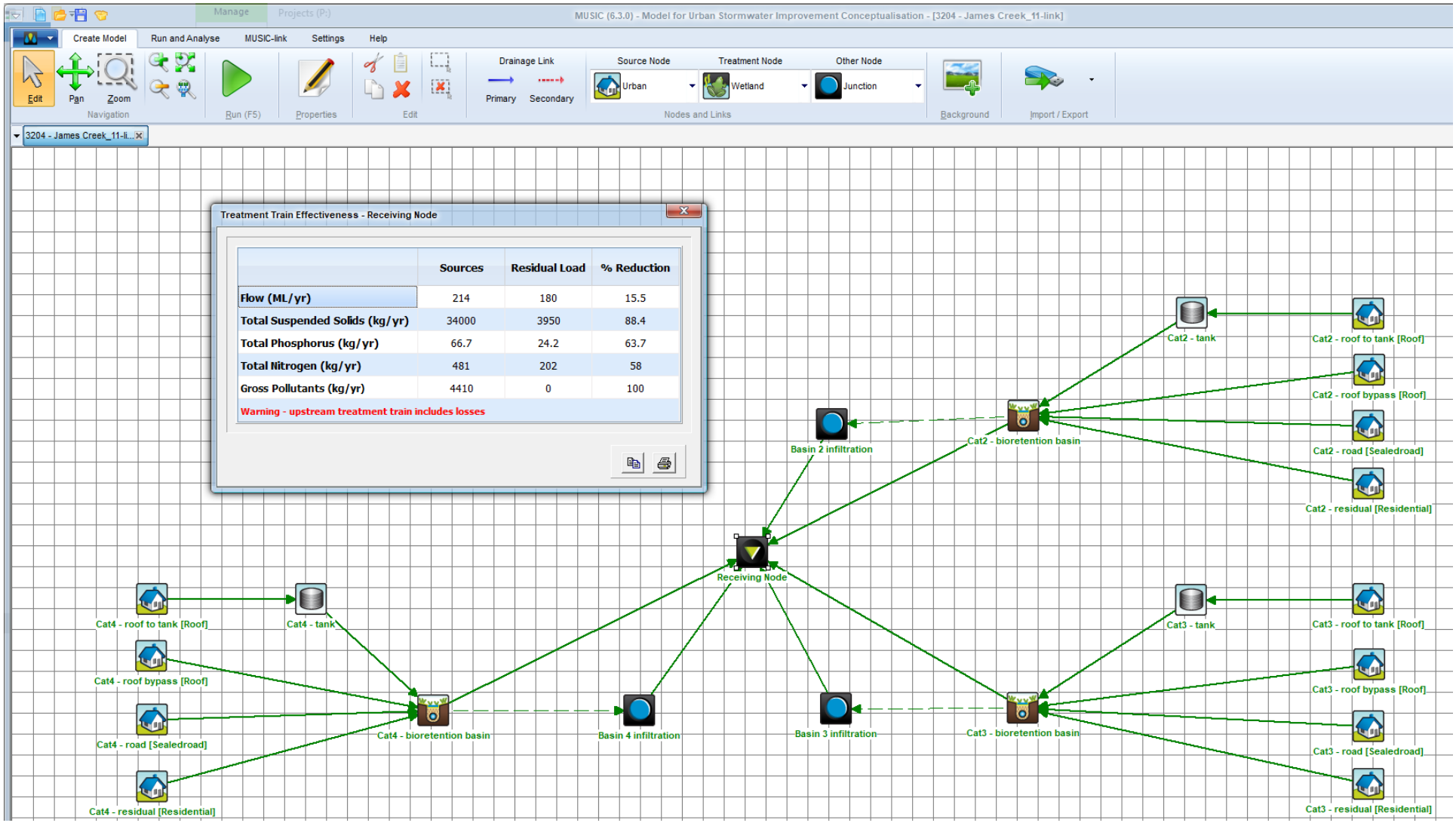
Appendix B

MUSIC Model Schematic and Results

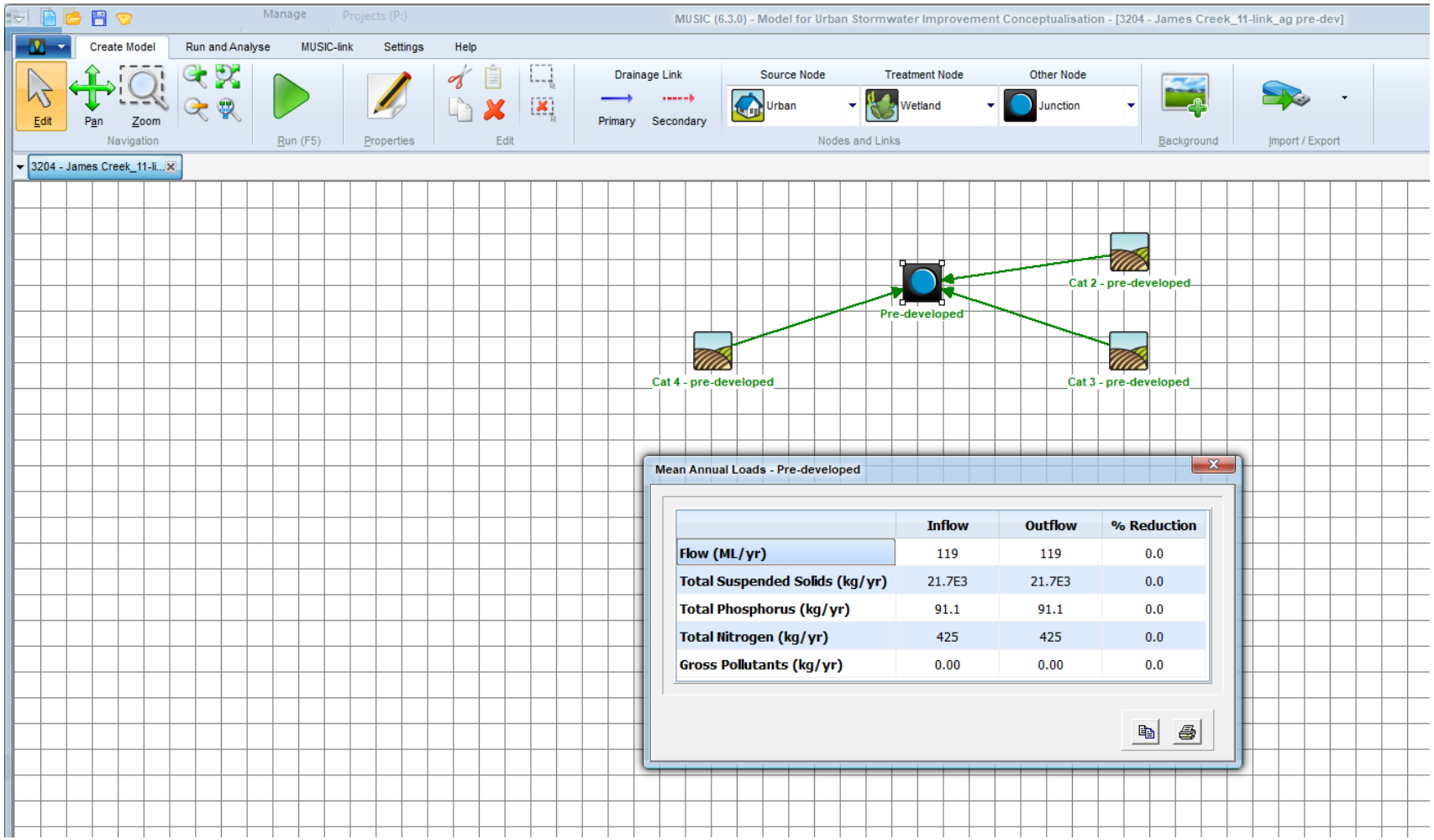
Schematic


Create Model
Run and Analyse
MUSIC-link
Settings
Help
Edit
Pan
Zoom
Navigation
Run (F5)
Properties
Edit
Drainage Link
Primary
Secondary
Source Node
Urban
Treatment Node
Wetland
Other Node
Junction
Nodes and Links
Background
Import / Export
3204 - James Creek_11-li...
Cat2 - tank
Cat2 - roof to tank [Roof]
Cat2 - roof bypass [Roof]
Cat2 - road [Sealedroad]
Cat2 - residual [Residential]
Basin 2 infiltration
Cat2 - bioretention basin
Receiving Node
Cat4 - roof to tank [Roof]
Cat4 - tank
Cat4 - roof bypass [Roof]
Cat4 - road [Sealedroad]
Cat4 - residual [Residential]
Cat4 - bioretention basin
Basin 4 infiltration
Basin 3 infiltration
Cat3 - bioretention basin
Cat3 - tank
Cat3 - roof to tank [Roof]
Cat3 - roof bypass [Roof]
Cat3 - road [Sealedroad]
Cat3 - residual [Residential]

Results – Post-Development

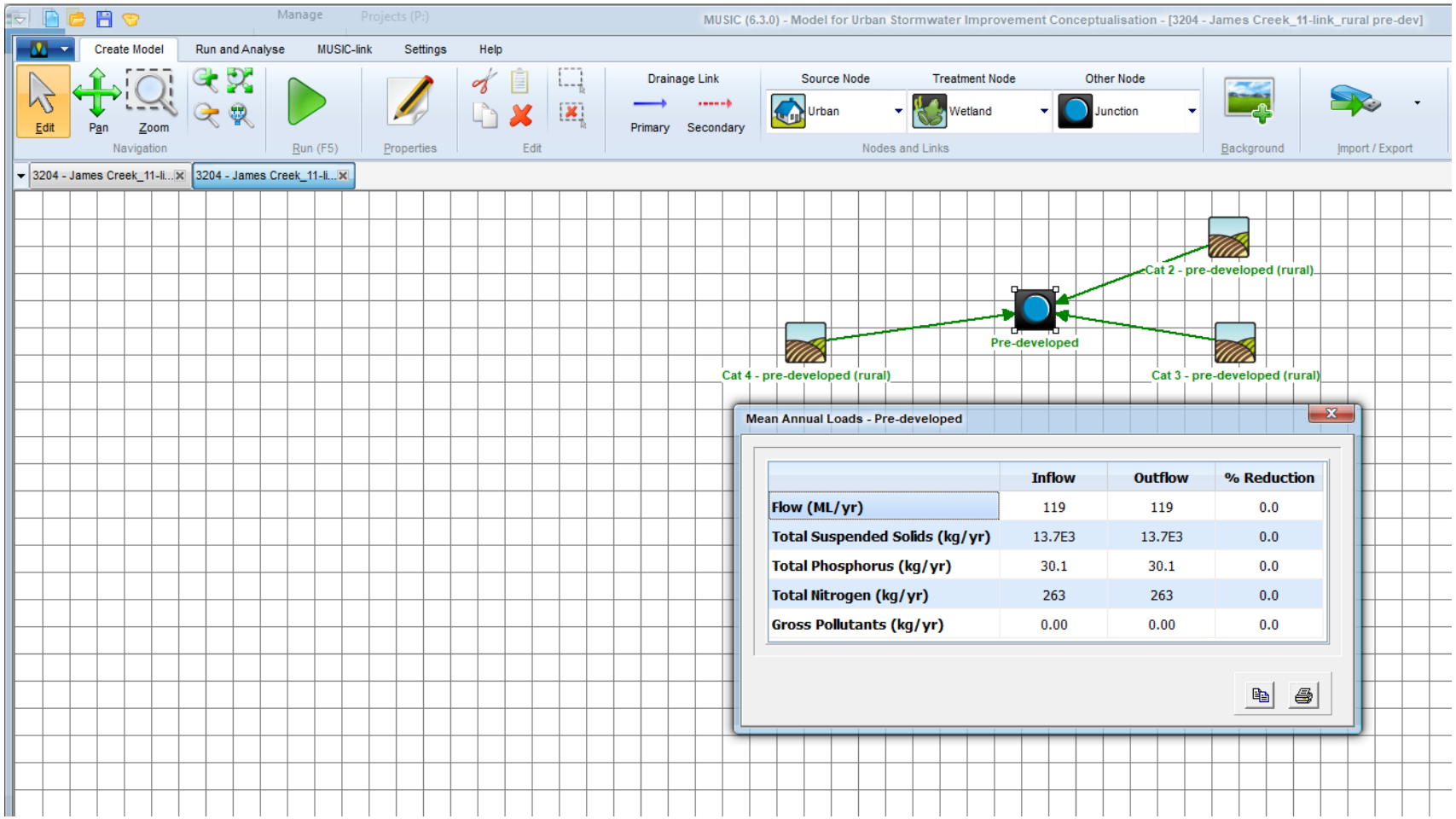


Results – Pre-Development (agricultural)



	Inflow	Outflow	% Reduction
Flow (ML/yr)	119	119	0.0
Total Suspended Solids (kg/yr)	21.7E3	21.7E3	0.0
Total Phosphorus (kg/yr)	91.1	91.1	0.0
Total Nitrogen (kg/yr)	425	425	0.0
Gross Pollutants (kg/yr)	0.00	0.00	0.0

Results – Pre-Development (rural)



	Inflow	Outflow	% Reduction
Flow (ML/yr)	119	119	0.0
Total Suspended Solids (kg/yr)	13.7E3	13.7E3	0.0
Total Phosphorus (kg/yr)	30.1	30.1	0.0
Total Nitrogen (kg/yr)	263	263	0.0
Gross Pollutants (kg/yr)	0.00	0.00	0.0

Appendix C

MUSIC-link Report

CLARENCE VALLEY COUNCIL

MUSIC-*link* Report

Project Details		Company Details	
Project:	Lot 104 DP 751388, James Ck Road	**Company:**	GeoLINK
Report Export Date:	15/11/2023	**Contact:**	Duncan Thomson
Catchment Name:	3204 - James Creek_11-link	**Address:**	Level 1, 64 Ballina St, Lennox Head
Catchment Area:	28.489ha	**Phone:**	02-6687-7666
Impervious Area*:	100.3%	**Email:**	duncan@geolink.net.au
Rainfall Station:	58076 GRAFTON		
Modelling Time-step:	6 Minutes		
Modelling Period:	1/01/1972 - 31/12/1976 11:54:00 PM		
Mean Annual Rainfall:	1160mm		
Evapotranspiration:	1327mm		
MUSIC Version:	6.3.0		
MUSIC-link data Version:	6.34		
Study Area:	North		
Scenario:	CVC Development		

* takes into account area from all source nodes that link to the chosen reporting node, excluding Import Data Nodes

Treatment Train Effectiveness		Treatment Nodes		Source Nodes	
Node: Receiving Node	**Reduction**	**Node Type**	**Number**	**Node Type**	**Number**
Flow	15.5%	Rain Water Tank Node	3	Urban Source Node	12
TSS	88.4%	Bio Retention Node	3		
TP	63.7%				
TN	58%				
GP	100%				

Comments

Refer to Stormwater Management Report for justification of failing parameters.

Passing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Bio	Cat2 - bioretention basin	Exfiltration Rate (mm/hr)	None	None	10
Bio	Cat2 - bioretention basin	Extended detention depth (m)	None	None	0.2
Bio	Cat2 - bioretention basin	Filter depth (m)	None	None	0.5
Bio	Cat2 - bioretention basin	Hi-flow bypass rate (cum/sec)	None	None	100
Bio	Cat2 - bioretention basin	Orthophosphate Content in Filter (mg/kg)	50	50	50
Bio	Cat2 - bioretention basin	PET Scaling Factor	2.1	2.1	2.1
Bio	Cat2 - bioretention basin	Saturated Hydraulic Conductivity (mm/hr)	100	100	100
Bio	Cat2 - bioretention basin	Total Nitrogen Content in Filter (mg/kg)	800	800	800
Bio	Cat3 - bioretention basin	Exfiltration Rate (mm/hr)	None	None	10
Bio	Cat3 - bioretention basin	Extended detention depth (m)	None	None	0.2
Bio	Cat3 - bioretention basin	Filter depth (m)	None	None	0.5
Bio	Cat3 - bioretention basin	Hi-flow bypass rate (cum/sec)	None	None	100
Bio	Cat3 - bioretention basin	Orthophosphate Content in Filter (mg/kg)	50	50	50
Bio	Cat3 - bioretention basin	PET Scaling Factor	2.1	2.1	2.1
Bio	Cat3 - bioretention basin	Saturated Hydraulic Conductivity (mm/hr)	100	100	100
Bio	Cat3 - bioretention basin	Total Nitrogen Content in Filter (mg/kg)	800	800	800
Bio	Cat4 - bioretention basin	Exfiltration Rate (mm/hr)	None	None	10
Bio	Cat4 - bioretention basin	Extended detention depth (m)	None	None	0.2
Bio	Cat4 - bioretention basin	Filter depth (m)	None	None	0.5
Bio	Cat4 - bioretention basin	Hi-flow bypass rate (cum/sec)	None	None	100
Bio	Cat4 - bioretention basin	Orthophosphate Content in Filter (mg/kg)	50	50	50
Bio	Cat4 - bioretention basin	PET Scaling Factor	2.1	2.1	2.1
Bio	Cat4 - bioretention basin	Saturated Hydraulic Conductivity (mm/hr)	100	100	100
Bio	Cat4 - bioretention basin	Total Nitrogen Content in Filter (mg/kg)	800	800	800
Rain	Cat2 - tank	% Reuse Demand Met	None	None	68.24
Rain	Cat3 - tank	% Reuse Demand Met	None	None	69.34
Rain	Cat4 - tank	% Reuse Demand Met	None	None	69.9808
Receiving	Receiving Node	% Load Reduction	None	None	15.5
Receiving	Receiving Node	GP % Load Reduction	90	None	100
Receiving	Receiving Node	TN % Load Reduction	45	None	58
Receiving	Receiving Node	TP % Load Reduction	60	None	63.7
Receiving	Receiving Node	TSS % Load Reduction	85	None	88.4
Urban	Cat2 - residual	Area Impervious (ha)	None	None	0.302
Urban	Cat2 - residual	Area Pervious (ha)	None	None	5.294
Urban	Cat2 - residual	Total Area (ha)	None	None	5.597
Urban	Cat2 - road	Area Impervious (ha)	None	None	1.717
Urban	Cat2 - road	Area Pervious (ha)	None	None	1.039
Urban	Cat2 - road	Total Area (ha)	None	None	2.757
Urban	Cat2 - roof bypass	Area Impervious (ha)	None	None	0.496
Urban	Cat2 - roof bypass	Area Pervious (ha)	None	None	0

Only certain parameters are reported when they pass validation

Node Type	Node Name	Parameter	Min	Max	Actual
Urban	Cat2 - roof bypass	Total Area (ha)	None	None	0.496
Urban	Cat2 - roof to tank	Area Impervious (ha)	None	None	1.984
Urban	Cat2 - roof to tank	Area Pervious (ha)	None	None	0
Urban	Cat2 - roof to tank	Total Area (ha)	None	None	1.984
Urban	Cat3 - residual	Area Impervious (ha)	None	None	0.895
Urban	Cat3 - residual	Area Pervious (ha)	None	None	4.716
Urban	Cat3 - residual	Total Area (ha)	None	None	5.612
Urban	Cat3 - road	Area Impervious (ha)	None	None	2.124
Urban	Cat3 - road	Area Pervious (ha)	None	None	1.285
Urban	Cat3 - road	Total Area (ha)	None	None	3.41
Urban	Cat3 - roof bypass	Area Impervious (ha)	None	None	1.323
Urban	Cat3 - roof bypass	Area Pervious (ha)	None	None	0
Urban	Cat3 - roof bypass	Total Area (ha)	None	None	1.323
Urban	Cat3 - roof to tank	Area Impervious (ha)	None	None	3.288
Urban	Cat3 - roof to tank	Area Pervious (ha)	None	None	0
Urban	Cat3 - roof to tank	Total Area (ha)	None	None	3.288
Urban	Cat4 - residual	Area Impervious (ha)	None	None	0.129
Urban	Cat4 - residual	Area Pervious (ha)	None	None	1.476
Urban	Cat4 - residual	Total Area (ha)	None	None	1.606
Urban	Cat4 - road	Area Impervious (ha)	None	None	0.707
Urban	Cat4 - road	Area Pervious (ha)	None	None	0.388
Urban	Cat4 - road	Total Area (ha)	None	None	1.096
Urban	Cat4 - roof bypass	Area Impervious (ha)	None	None	0.264
Urban	Cat4 - roof bypass	Area Pervious (ha)	None	None	0
Urban	Cat4 - roof bypass	Total Area (ha)	None	None	0.264
Urban	Cat4 - roof to tank	Area Impervious (ha)	None	None	1.056
Urban	Cat4 - roof to tank	Area Pervious (ha)	None	None	0
Urban	Cat4 - roof to tank	Total Area (ha)	None	None	1.056

Only certain parameters are reported when they pass validation

Failing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Urban	Cat2 - road	Impervious Area Rainfall Threshold (mm/day)	1	1	1.5
Urban	Cat2 - roof bypass	Impervious Area Rainfall Threshold (mm/day)	1	1	0.3
Urban	Cat2 - roof to tank	Impervious Area Rainfall Threshold (mm/day)	1	1	0.3
Urban	Cat3 - road	Impervious Area Rainfall Threshold (mm/day)	1	1	1.5
Urban	Cat3 - roof bypass	Impervious Area Rainfall Threshold (mm/day)	1	1	0.3
Urban	Cat3 - roof to tank	Impervious Area Rainfall Threshold (mm/day)	1	1	0.3
Urban	Cat4 - road	Impervious Area Rainfall Threshold (mm/day)	1	1	1.5
Urban	Cat4 - roof bypass	Impervious Area Rainfall Threshold (mm/day)	1	1	0.3
Urban	Cat4 - roof to tank	Impervious Area Rainfall Threshold (mm/day)	1	1	0.3

Only certain parameters are reported when they pass validation

Appendix D

Bioretention Basins Maintenance Plan

Bioretention Basins Maintenance Plan

Lot 104 DP 751388, James Creek Road

Quality solutions. Sustainable future.

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environment | engineering | planning | design

GeoLINK Consulting Pty Ltd

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Prepared for: MPD Investments

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UPR	Description	Issued By	Date Issued
3204-1104	1st issue	Duncan Thomson	25/05/2022

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2. Inspection and Maintenance Tasks 2
3. Inspection and Maintenance Schedule 3

3.1 Vegetation Establishment Period (first three months) 3
3.2 Ongoing Maintenance 3

Appendices

Appendix A Inspection and Maintenance Checklist

1. Overview

The bioretention basins have been designed to provide the dual function of both treating and detaining stormwater. During smaller rainfall events, stormwater will temporarily pond on the surface of the basin and infiltrate down through the filter media (sandy loam) to be collected in the slotted under-drainage pipes. In larger rainfall events, stormwater will fill the basin to a greater depth and there will be outflow via the low flow culverts and the high flow weir.

The bioretention basins require ongoing inspection and maintenance to ensure they establish and operate in accordance with the design intent. Potential problems that may arise because of inadequate maintenance include:

- Decreased aesthetic amenity;
- Reduced functional performance;
- Public health and safety risks; and
- Decreased habitat diversity (e.g. dominance of exotic weeds).

Importantly, the most intensive period of maintenance is during the plant establishment period (initial one to two years) when weed removal and some replanting may be required.

It is recommended that the personnel who are to undertake the operation and maintenance of the bioretention basin be briefed and trained on procedures and protocols prior to commencement. Maintaining records on the condition of the systems and all maintenance works required will be important to inform and schedule future maintenance works.

This Maintenance Plan is based on information contained in the Water by Design (2012) publication called *Maintaining Vegetated Stormwater Assets* (Version 1). The Water by Design document should be consulted for additional information and details.

2. Inspection and Maintenance Tasks

Inflow pipes, headwalls, outlets and weirs require regular inspection, as these can be prone to scour, and litter build up. Debris can block inlets or outlets and can be unsightly, particularly in high visibility areas. Inspection and removal of debris should be done regularly, and debris should be removed whenever it is observed on a site.

Typical maintenance of a bioretention basin involves:

- Routine inspection of the bioretention basin to identify any areas of obvious increased sediment deposition, scouring from storm flows, rill erosion of the batters from lateral inflows, damage to the profile from vehicles and clogging of the bioretention basin filter media (evident by a 'boggy' surface).
- Routine inspection of inlets, outlets and weirs to identify, clean and repair any areas of scour, litter build up and blockage.
- Removal of sediment where it is smothering vegetation.
- Repairing damage to the basin profile resulting from scour, rill erosion or vehicle damage by replacement of appropriate fill (to match original soils) and revegetating.
- Tilling of the bioretention basin surface, or removal and reinstatement of the surface layer, if there is evidence of clogging.
- Regular watering/irrigation of vegetation until plants are established and self-sustaining.
- Removal and management of invasive weeds.
- Removal of plants that have died and replacement with plants of equivalent size and species as detailed in the plant schedule.
- Pruning to remove dead or diseased vegetation and to stimulate growth.
- Vegetation pest monitoring and control.

Rectification (i.e. resetting, reconstruction) of the bioretention basin will be required if the system fails to drain adequately after tilling of the surface and/or replacement of the surface layer. Regular inspections are required, as well as inspections following large storm events to check for scour and other damage. Major maintenance involving machinery should only occur after a reasonably rain free period when the soil in the bioretention system is relatively dry.

3. Inspection and Maintenance Schedule

3.1 Vegetation Establishment Period (first three months)

During the vegetation establishment period, inspections should be undertaken on a weekly basis and after rainfall events with greater than 25 mm of rain in a 24-hour period. The inspection and maintenance checklist provided in **Appendix A** should be used as a guide and filled in as part of each inspection. Any necessary remedial maintenance activities should be undertaken as soon as possible. The weed control measures and watering schedules summarised below are recommended to ensure successful plant establishment.

Conventional surface mulching of bioretention basins with organic material (e.g. tanbark) should not be undertaken. Most organic mulch floats and runoff typically causes this material to be washed away with a risk of blocking outlets and drains. Adopting high planting densities and, if necessary, applying a suitable biodegradable erosion control matting to the basin batters only (i.e. not the surface of the bioretention basin) will help to combat weed invasion and reduce labour intensive maintenance requirements for weed removal.

Regular watering of bioretention basin vegetation is essential for successful establishment and healthy growth. The frequency of watering to achieve successful plant establishment is dependent upon rainfall, maturity of planting stock and the water holding capacity of the soil. The following watering program is generally adequate but should be adjusted to suit the site conditions:

Week 1 - 2: three visits per week

Week 3 - 6: two visits per week

Week 7 - 12: one visit per week

3.2 Ongoing Maintenance

After the vegetation establishment period, maintenance inspections should be undertaken every three months. Once again, the maintenance checklist provided in **Appendix A** should be used as a guide and filled in as part of each inspection. Any necessary remedial maintenance activities should be undertaken as soon as possible. Watering may still be required, particularly during the first winter (dry period). Watering requirements to sustain healthy vegetation should be determined during ongoing maintenance site visits.

References

Water by Design, (2012). *Maintaining Vegetated Stormwater Assets* (Version 1). Healthy Waterways Ltd, Brisbane

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Appendix A

Inspection and Maintenance Checklist

General Information	
Asset Type	
Asset ID	
Description / name of asset	
Location	
Date of inspection / maintenance	
Date & amount of last rainfall	
Current weather	
Personnel involved in inspection / maintenance	
General comments / sketches	

Issue (what to look for)	Performance Indicator (PI)	Condition Rating *	Maintenance undertaken **	Additional work needed
* Condition Ratings: 1 = PI is met; 2 = PI is met after maintenance completed; 3 = Additional maintenance required; 4 = Rectification may be needed; NI = not inspected; NA = not applicable ** Quantify where possible. e.g. amount of sediment or litter removed				
SURROUNDS				
Damaged or removed structures e.g. traffic bollards	No damage that poses a risk to public safety or structural integrity			
INLET				
Erosion	Inlet is structurally sound and there is no evidence of erosion or subsidence/ settlement			
Damaged or removed structures e.g. pit lids or grates	No damage that poses a risk to public safety or structural integrity			
Sediment, litter or debris	No blockage			
COARSE SEDIMENT FOREBAY (if present)				
Erosion	Minor erosion only that does not pose a risk to public safety or structural integrity and would not worsen if left unattended			
Sediment	Coarse sediment forebay <75% full and no litter			

Issue (what to look for)	Performance Indicator (PI)	Condition Rating *	Maintenance undertaken **	Additional work needed
* Condition Ratings: 1 = PI is met; 2 = PI is met after maintenance completed; 3 = Additional maintenance required; 4 = Rectification may be needed; NI = not inspected; NA = not applicable ** Quantify where possible. e.g. amount of sediment or litter removed				
BATTER SLOPES AND BASE OF BASIN				
Erosion	Minor erosion only that does not pose a risk to public safety or structural integrity and would not worsen if left unattended			
Crust of fine sediment	No surface crusting			
Depressions or mounds	No surface depressions or mounds >100 mm			
Hydraulic conductivity or permeability	Filter media is draining freely, whereby water is not ponded on the surface for more than 12 hours after rainfall and there is no obvious impermeable or clay-like surface on the filter media			
Underdrains / clean out points	Clean out points not damaged and end caps securely in place			
Litter	Maximum 1 piece of litter per 4 m²			
Unusual odours, colours, or substances e.g. oil and grease	None detected			

Issue (what to look for)	Performance Indicator (PI)	Condition Rating *	Maintenance undertaken **	Additional work needed
* Condition Ratings: 1 = PI is met; 2 = PI is met after maintenance completed; 3 = Additional maintenance required; 4 = Rectification may be needed; NI = not inspected; NA = not applicable ** Quantify where possible. e.g. amount of sediment or litter removed				
Vegetation	Minimum 95% vegetation cover (minimal bare patches)			
	Plants healthy and free from disease			
	Average plant height > 500 mm			
Algal or moss growth	Maximum 10% of surface covered in algae; No moss growth			
OUTLET (overflow weir, pipe and/or outfall)				
Erosion	Outlet is structurally sound and there is no evidence of erosion or subsidence/ settlement, including around edges of rock protection or toe of spillway for large systems			
Damaged or removed structures e.g. pit lids or grates	No damage that poses a risk to public safety or structural integrity			
Sediment, litter or debris	No blockage			

Issue (what to look for)	Performance Indicator (PI)	Condition Rating *	Maintenance undertaken **	Additional work needed
* Condition Ratings: 1 = PI is met; 2 = PI is met after maintenance completed; 3 = Additional maintenance required; 4 = Rectification may be needed; NI = not inspected; NA = not applicable ** Quantify where possible. e.g. amount of sediment or litter removed				
Outlet freely draining to receiving drainage or waterway	No downstream impediments to the release of water, no erosion or damage to the outfall structure, and no evidence of malfunction (e.g. excessive sediment accumulated)			

Enclosure 8

Flood Emergency Plan prepared by WEP dated 24 November 2023

Water Engineering Plus Pty Ltd

The Village at James Creek Flood Emergency Plan

Prepared for: MPD Investments Pty Ltd

Date: 24 November 2023

File Reference: R.30168.001 FEP

DOCUMENT CONTROL

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Principal Author:	Martin Giles
Client	MPD Investments Pty Ltd
Ref. no:	R.30168.001

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Issue	Description	Date
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4 Conclusion 8

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1 Introduction

The Village at James Creek is located at Lot 104 of DP751388 on James Creek Road. James Creek. The location of the development, is shown on Figure 1.1.

Figure 1.1 Locality Plan (Clarence Valley Council Interactive Mapping System)

Existing ground levels are shown on Figure 1.2 (from Geolink drawing 3204/C102 Rev C).

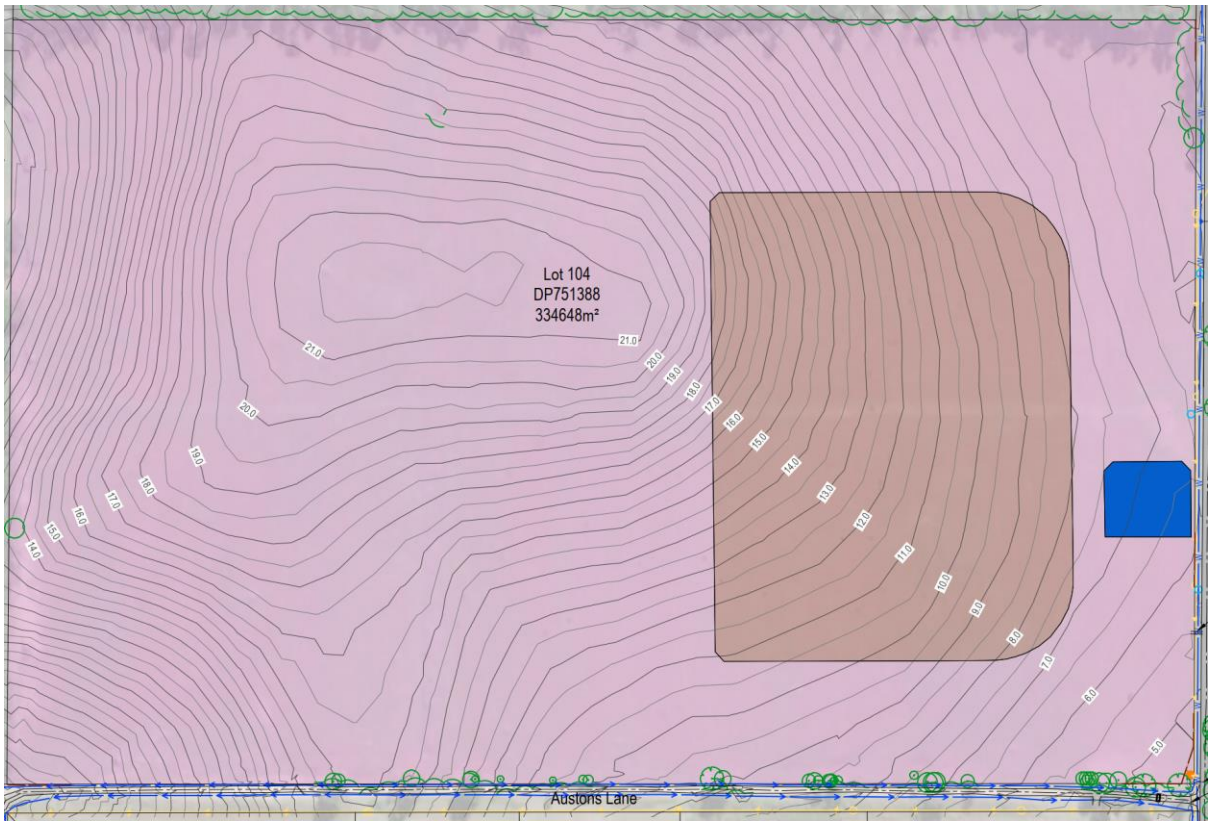


Figure 1.2 Existing Contours and Zoning

With reference to the figure, existing ground levels over the site range from a minimum of about 4.5 m AHD in the south-eastern corner of the site to a maximum of about 21.5 mAHD in the highest point within the site.

The development site has a total area of about 33.47 ha.

Relevant plans of development for the site are included in Appendix A. The lot layout (Geolink Drawing 3204/C111 Rev C) is shown on Figure 1.3.

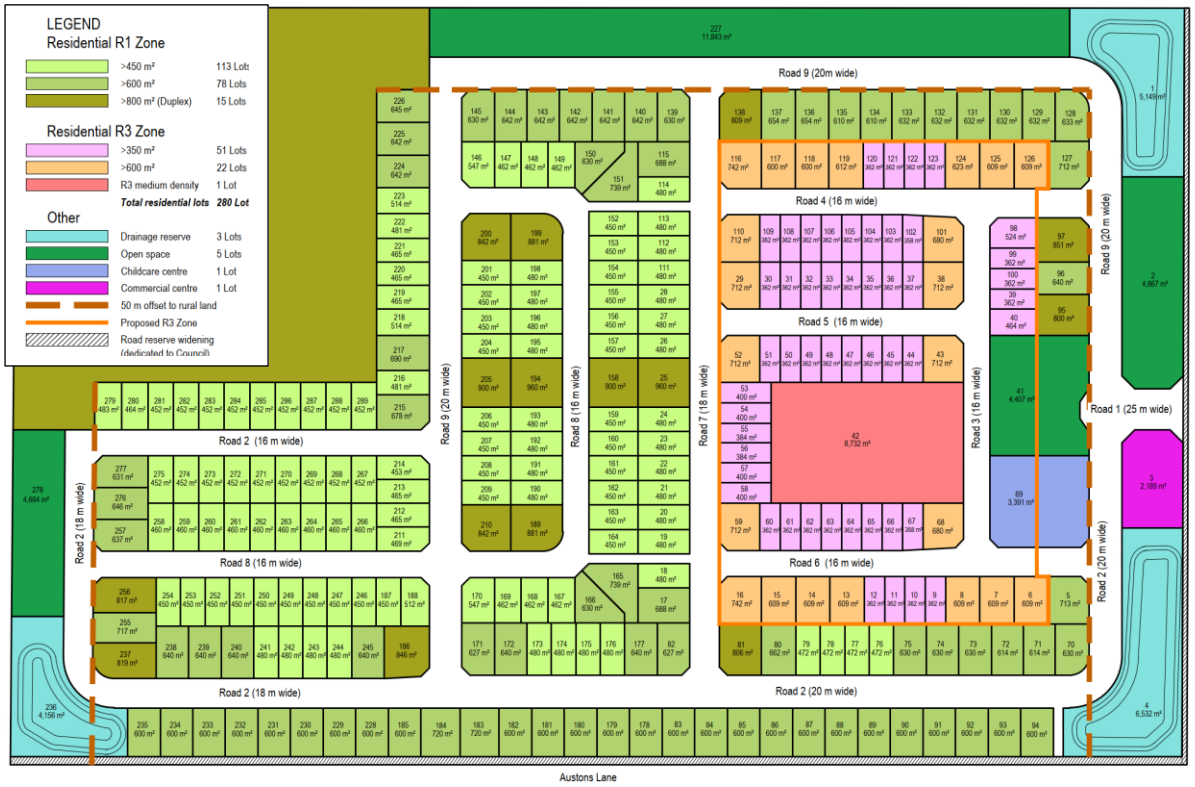


Figure 1.3 Lot Layout

As shown on the figure, the proposed development consists of a total of 280 residential lots and commercial areas:

- 206 Residential R1 Zone lots;
- 74 Residential R3 Zone lots;
- 1 Childcare Centre; and
- 1 Commercial Centre.

This report presents the Flood Emergency Plan for the development. Overall, given the fact that the majority of the site is above the level of the Probable Maximum Flood (or PMF, the largest flood event that could conceivably occur), the plan promotes people sheltering in place.

2 Description of Flooding

2.1 Flood Levels

The most recent regional flood modelling including the development site is presented in the BMT report *Lower Clarence Flood Model Update 2022* (Version 3, 31 August 2023) completed for Clarence Valley Council. The mapping derived from the flood modelling described in the report, as presented in the Clarence Valley Council interactive mapping system, is shown in the following figures:

- Figure 2.1 Flood Levels, 1 in 100 Year;
- Figure 2.2 Flood Levels, 1 in 100 Year including climate changes (CC1); and
- Figure 2.3 Flood Levels, Probable Maximum Flood.

It can be noted that the CC1 climate change scenario includes a 12% increase in rainfall intensity (Page 3 of the BMT Report).

The figures indicate that the entire site is above the flood level for the 1 in 100 Year event including climate change, with some inundation of the south-western corner, and eastern side of the site during the PMF event.

The flood level to the east of the site is typically lower than the flood level to the west of the site. The peak flood levels applicable to the site are listed in Table 2-1.

Table 2-1 Peak Flood Levels (mAHD)

Case	West	East
1 in 100 Year	3.3	2.7
1 in 100 Year including climate change	3.9	3.3
PMF	8.2	7.4

Figure 2.1 Flood Levels, 1 in 100 Year

Figure 2.2 Flood Levels, 1 in 100 Year Including Climate Change

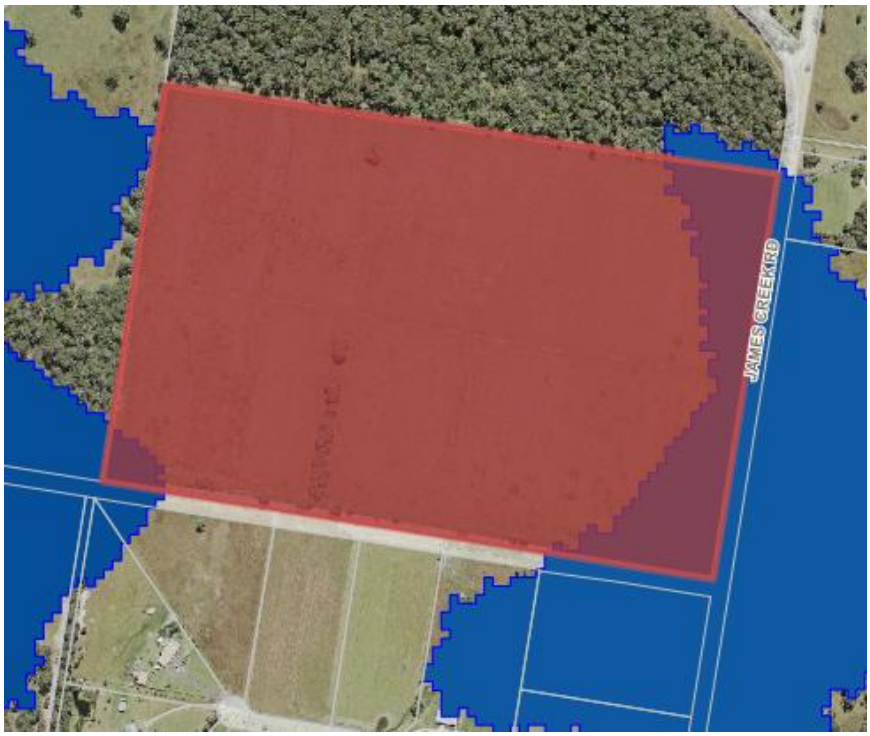


Figure 2.3 Flood Levels, Probable Maximum Flood

The extent of inundation of the developed site (prior to detailed design is shown on Figure 2.4 (based on Geolink Drawing 3204/C135 Rev C).

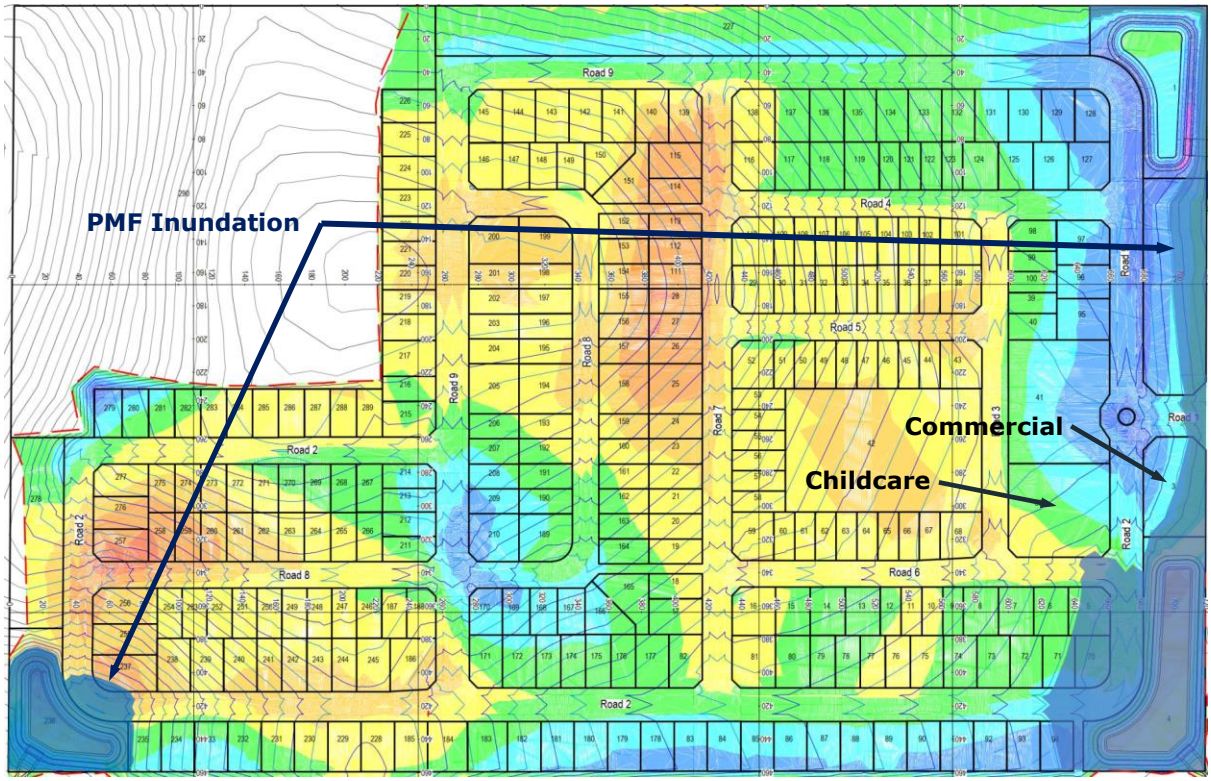


Figure 2.4 Site Inundation, PMF Event

Based on Figure 2.4, the preliminary design has some lots within the extent of the PMF.

It is noted that as part of final design, al residential and commercial lots will be set to achieve floor levels at or above the level of the PMF.

As a consequence:

- All residential floors will be above the level of the PMF;
- The Childcare Centre will be above the level of the PMF; and
- The Commercial Centre will be above the level of the PMF.

In relation to the Commercial Centre, it is envisaged that the centre will include a convenience store. By setting the level of the centre above the level of the PMF, residents of the development can access supplies if isolated by flood events greater than the 1 in 100 year event (refer Section 2.2).

2.2 Access

Access to the site is achieved via Gardners Road/ James Creek Road. Gardners Road to the south-west of the site is inundated by events in excess of the 1 in 5 flood event.

The location of the flood affected section of the road is shown on Figure 2.5.

Noting that Council is giving consideration to improving the immunity of the road to the 1 in 20 year flood event, as part of the development it is intended to further improve the immunity of the development and achieve immunity to the 1 in 100 year flood event and providing access to at least Townsend.

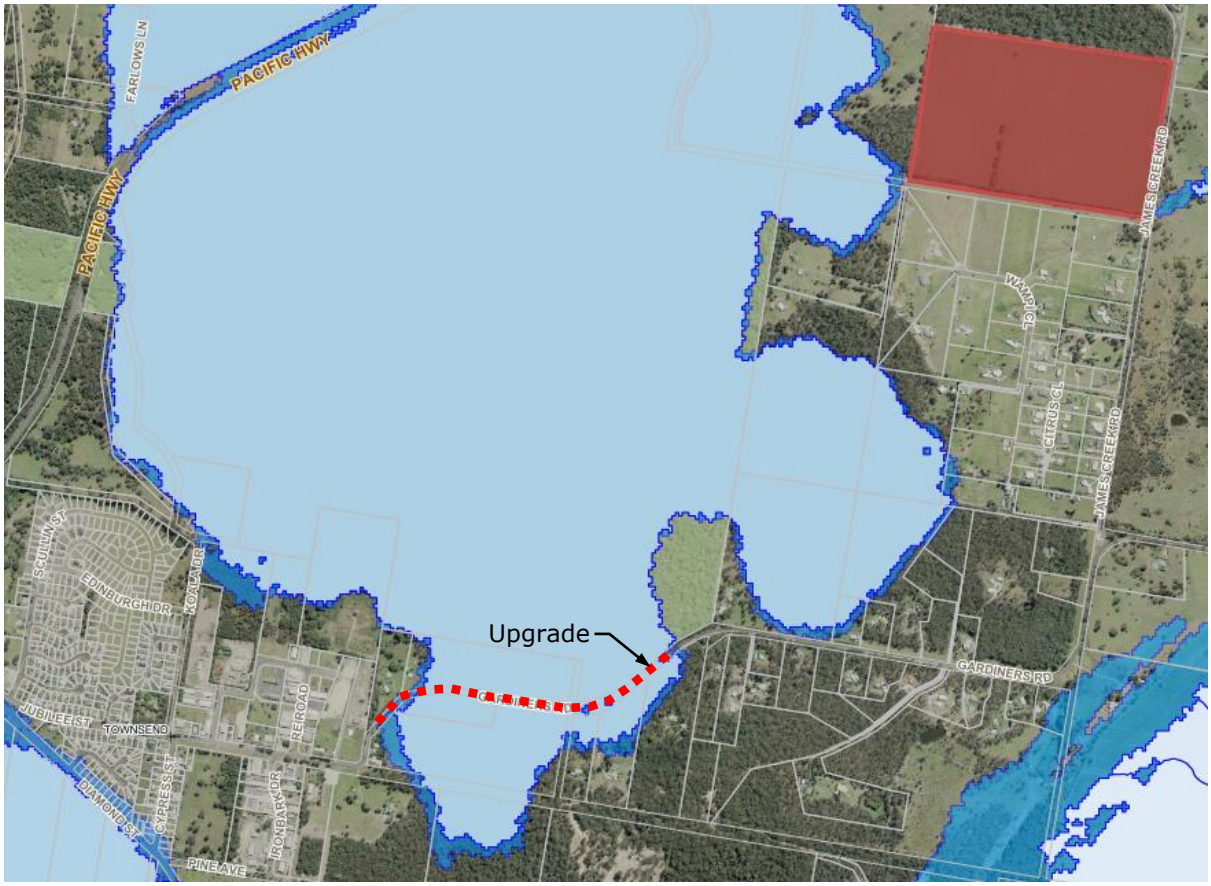


Figure 2.5 Access to Site

2.3 Summary

Based on a review of available flood level information, the final design for the development will include the following:

- All residential and commercial (Childcare Centre and Commercial Centre) floors above the level of the PMF;
- All lots will be able to access the Commercial Centre; and
- Isolation of the site will only occur for events in excess of the 1 in 100 year flood event.

3 Flood Emergency Plan

Given that the development will be above the level of the PMF and isolated only in the event of a flood greater than the 1 in 100 year event, it is considered that the flood risk associated with the development is low.

As floors will be above the level of the PMF, there will be no need to move furniture or sandbag buildings. Further, due to the immunity of the site it is expected that no clean-up operations will be required with respect to regional flooding.

As a consequence of the immunity of the development to flooding, it is considered that the most appropriate strategy will be for people to shelter in place unless it is desirable to evacuate and avoid isolation (for example people with medical conditions).

Given the largely residential nature of the development, its immunity and low potential for isolation, it is considered that the flood management of the site can be incorporated into the procedures already in place under the NSW SES *Clarence Valley Local Flood Plan* (June 2017).

The plan includes:

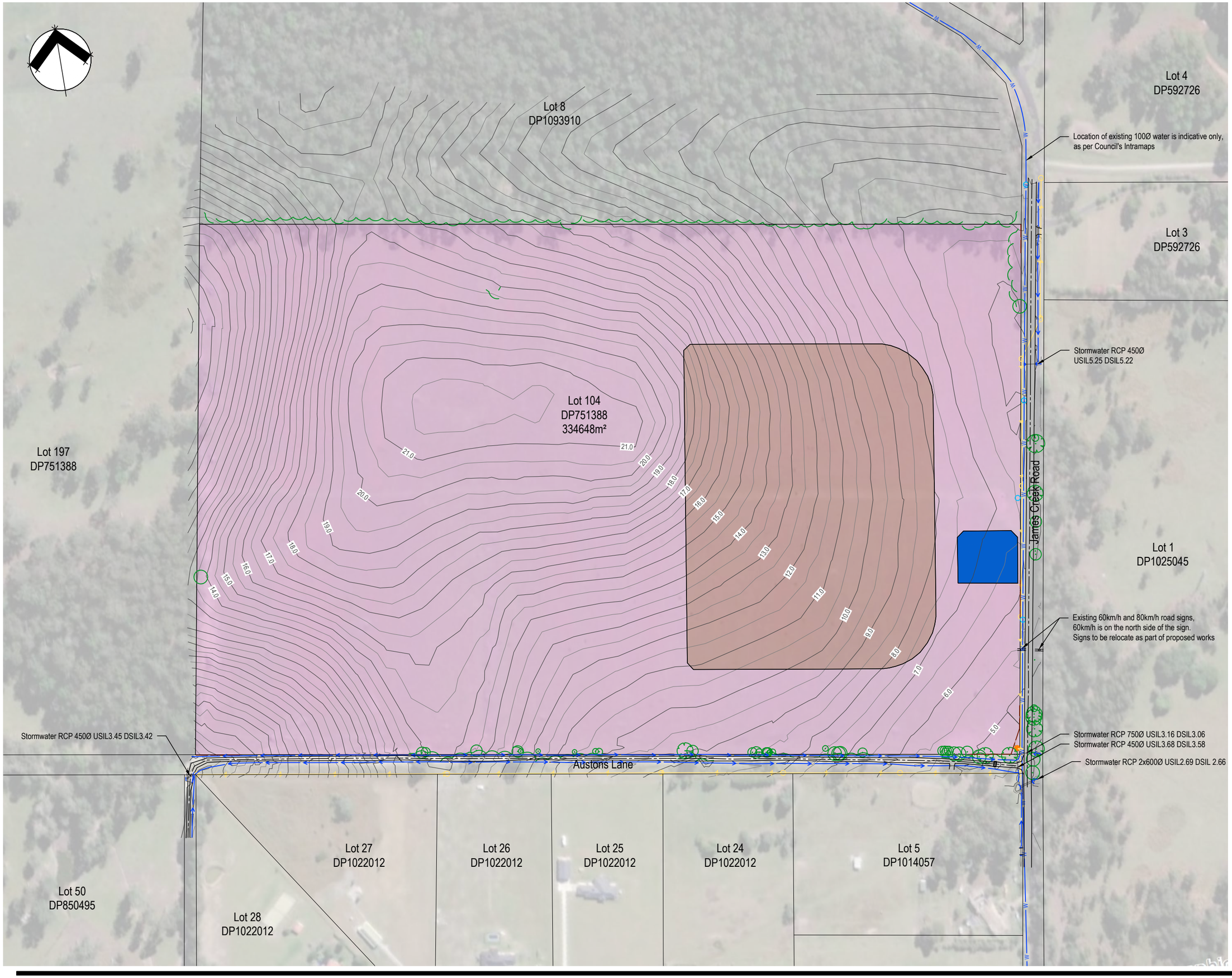
- Notification of childcare centres in the event of isolation and consider early release for children living away from the development in areas that could become isolated.
- Issuing of flood warnings (preliminary flood warnings, flood warnings and Flood Watches based on the Maclean gauge) and evacuation notices by NSW SES and Clarence Valley Council including the Clarence Valley Council website).
- Control of evacuation by NSW SES.
- Provision of advice in relation to Emergency Evacuation Centres (noting the Maclean Showground is the closest centre to the site.

4 Conclusion

The Village at James Creek will involve the creation of residential and commercial lots with floors above the level of the PMF. Roadworks associated with the development will result in the site only being isolated in flood events larger than the 1 in 100 year event.

Given this level of immunity and low potential for isolation, it is considered that flood emergencies can be dealt with using the existing procedures adopted by the NSW SES and Clarence Valley Council.

Appendix A Plans of Development



LEGEND

- Electricity and power pole
- Tree line
- Fire hydrant
- Communication line and pit
- Watermain (approximate)
- Swale
- R1 - General residential
- R3 - Medium denity residential
- B1 - Neighbourhood centre

Existing contours shown at 0.5m intervals

DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	App.	Chk.
C	Revised submission	10/11/2023	JLC	MVE	MVE
B	Drawing Schedule updated	13/04/2023	JLC	MVE	MVE
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James Creek Road Subdivision

Client

MPD Investments Pty Ltd

Designed	JLC	Drawn	JLC	Checked	MVE
Approved	MVE	Date	8/10/2021		

XREFs

Scale

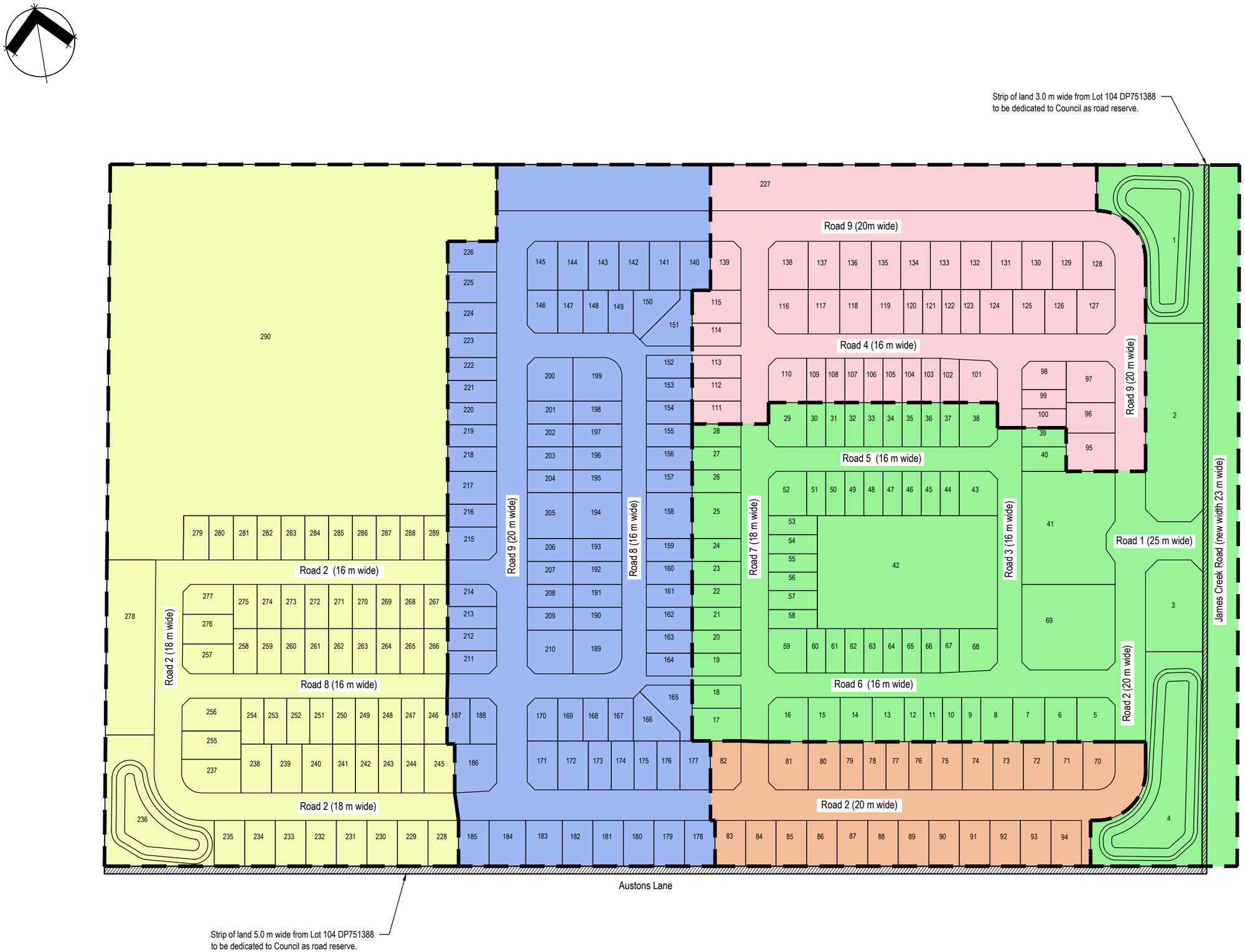
metres 0 15 30 45 60 75

Drawing Title

Existing Layout

3204-1129

Drawing Number 3204/C102 *Revision* C



LEGEND

- Stage 1A - 69 lots
- Stage 1B - 25 lots
- Stage 2 - 46 lots
- Stage 3 - 87 lots
- Stage 4 - 63 lots
- Road reserve widening (dedicated to Council)

Note: Lot 227 buffer is included with Stage 2 count.
Residue lot included with Stage 4 lot count.

Note:
1. Stages shown are indicatively only, and construction / release will be undertaken in sub-stages to be determined during detailed design.

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Approved	MVE	Date 8/10/2021	
XREFs			

Scale

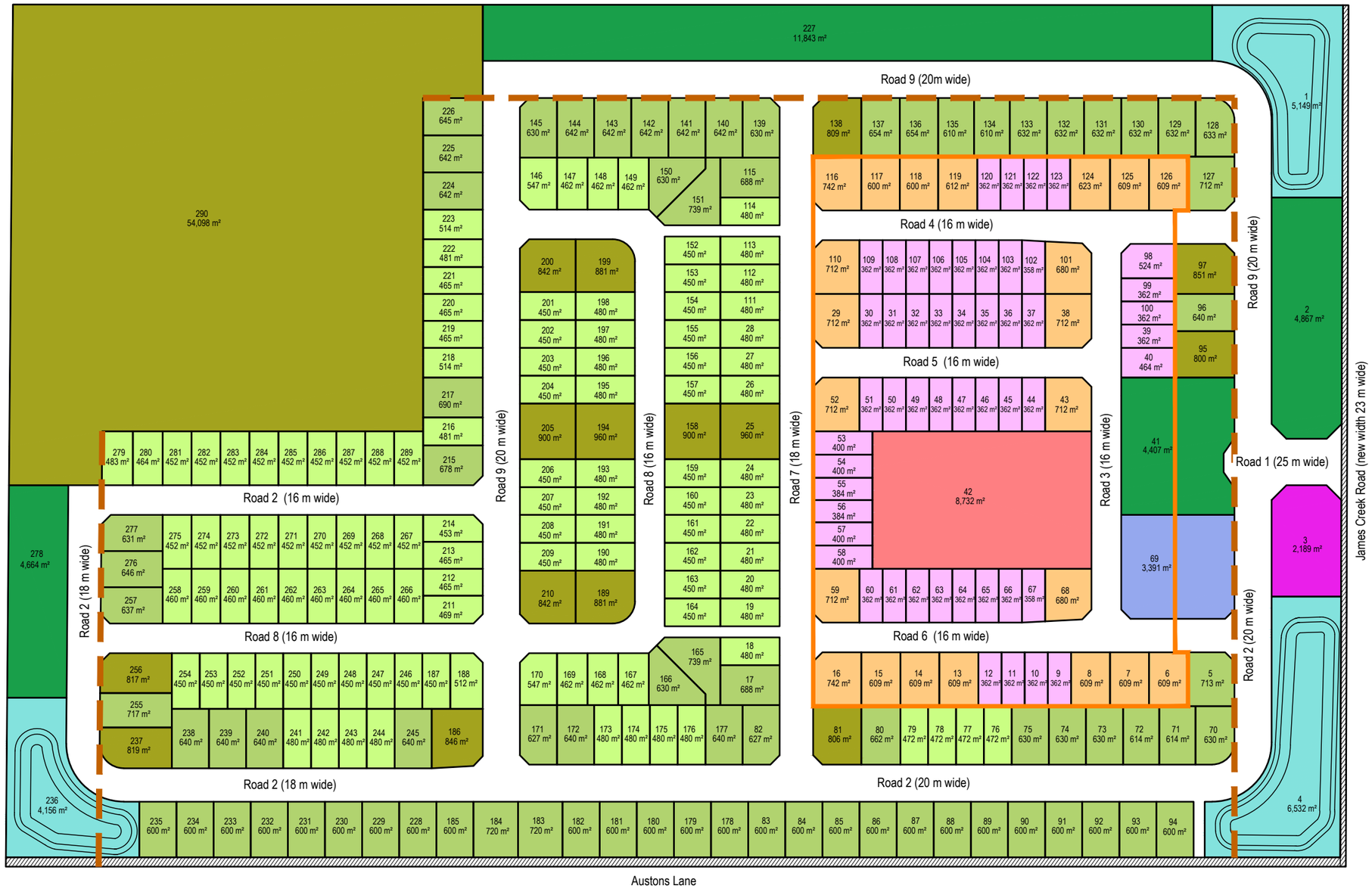
metres 0 12.5 25 37.5 50 62.5

Drawing Title

Staging Plan

3204-1130

Drawing Number 3204/C110 *Revision* C



LEGEND

Residential R1 Zone

	>450 m²	113 Lots
	>600 m²	78 Lots
	>800 m² (Duplex)	15 Lots

Residential R3 Zone

	>350 m²	51 Lots
	>600 m²	22 Lots
	R3 medium density	1 Lot
	Total residential lots	***280 Lots***

Other

	Drainage reserve	3 Lots
	Open space	5 Lots
	Childcare centre	1 Lot
	Commercial centre	1 Lot
	50 m offset to rural land	
	Proposed R3 Zone	
	Road reserve widening (dedicated to Council)	

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Approved	MVE	Date 8/10/2021	

XREFs

Scale

metres 0 12.5 25 37.5 50 62.5

Drawing Title

Lot Layout and Lot Areas

3204-1130

Drawing Number 3204/C111 *Revision* C

Note:
1. Duplicate dimensions are removed for clarity.
2. Dimensions shown are indicative only, subject to final setout by registered surveyor.

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Scale					

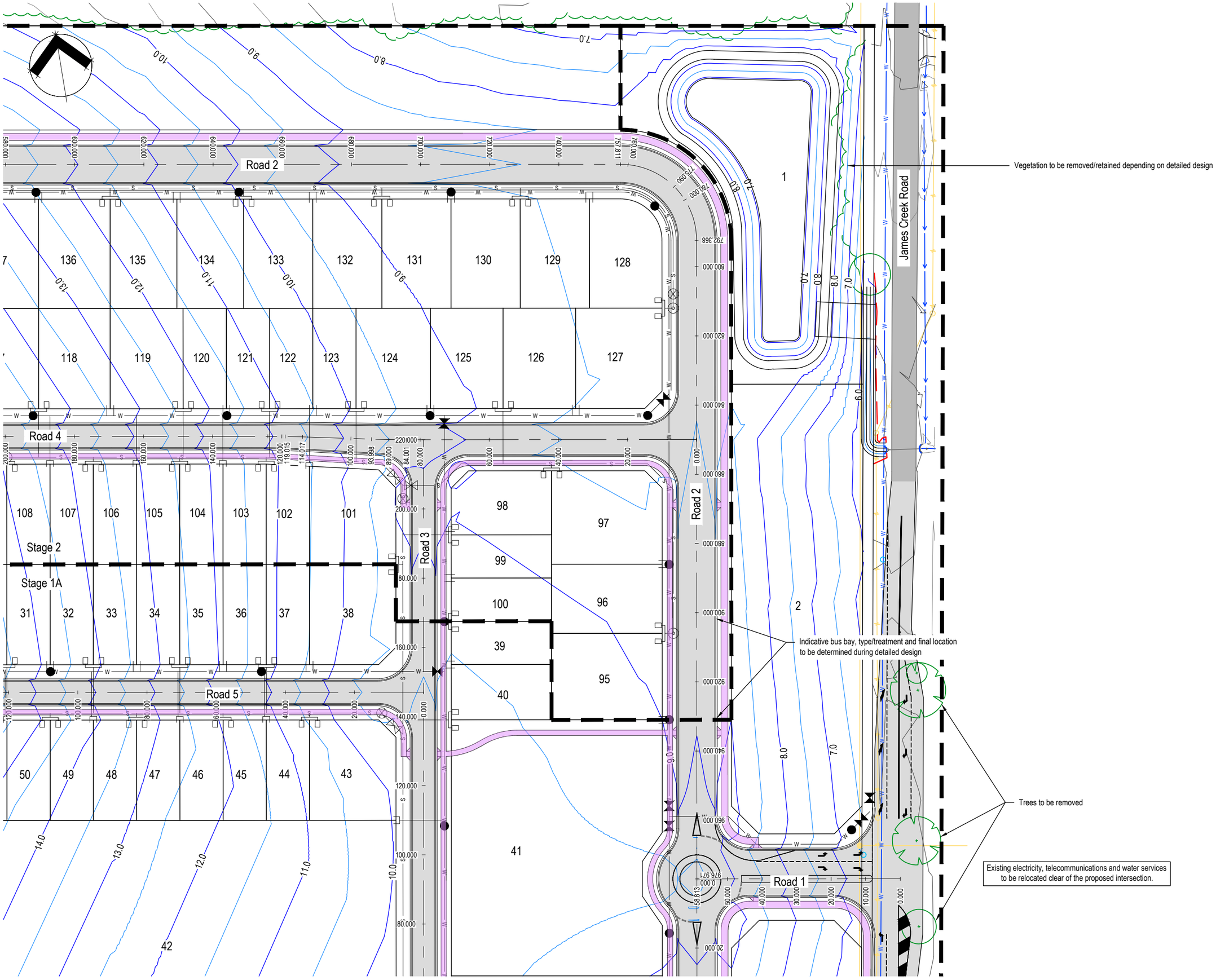
metres 0 12.5 25 37.5 50 62.5

Drawing Title

Lot Layout and Lot Dimensions

3204-1130

Drawing Number 3204/C112 *Revision* C



LEGEND (Existing)

- Electricity and power pole
- Tree line
- Fire hydrant
- Communication line and pit
- Watermain (approximate)
- Swale
- Road

LEGEND (Design)

- Road
- Footpath
- Water reticulation pipe
- Low pressure sewer main
- Sewer rising main
- Stage boundary
- Extent of works

Existing and design contours shown at 0.5 m intervals

Note:

1. Fencing to be installed as per landscaping design, refer to plan set by others.
2. Stormwater pits and pipes not shown as locations will be determined as part of detailed design.
3. Stage boundaries are extent of works unless shown otherwise (refer to Legend).

DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	App.	Chk.
C	Review submission	10/11/2023	JLC	MVE	MVE
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Scale

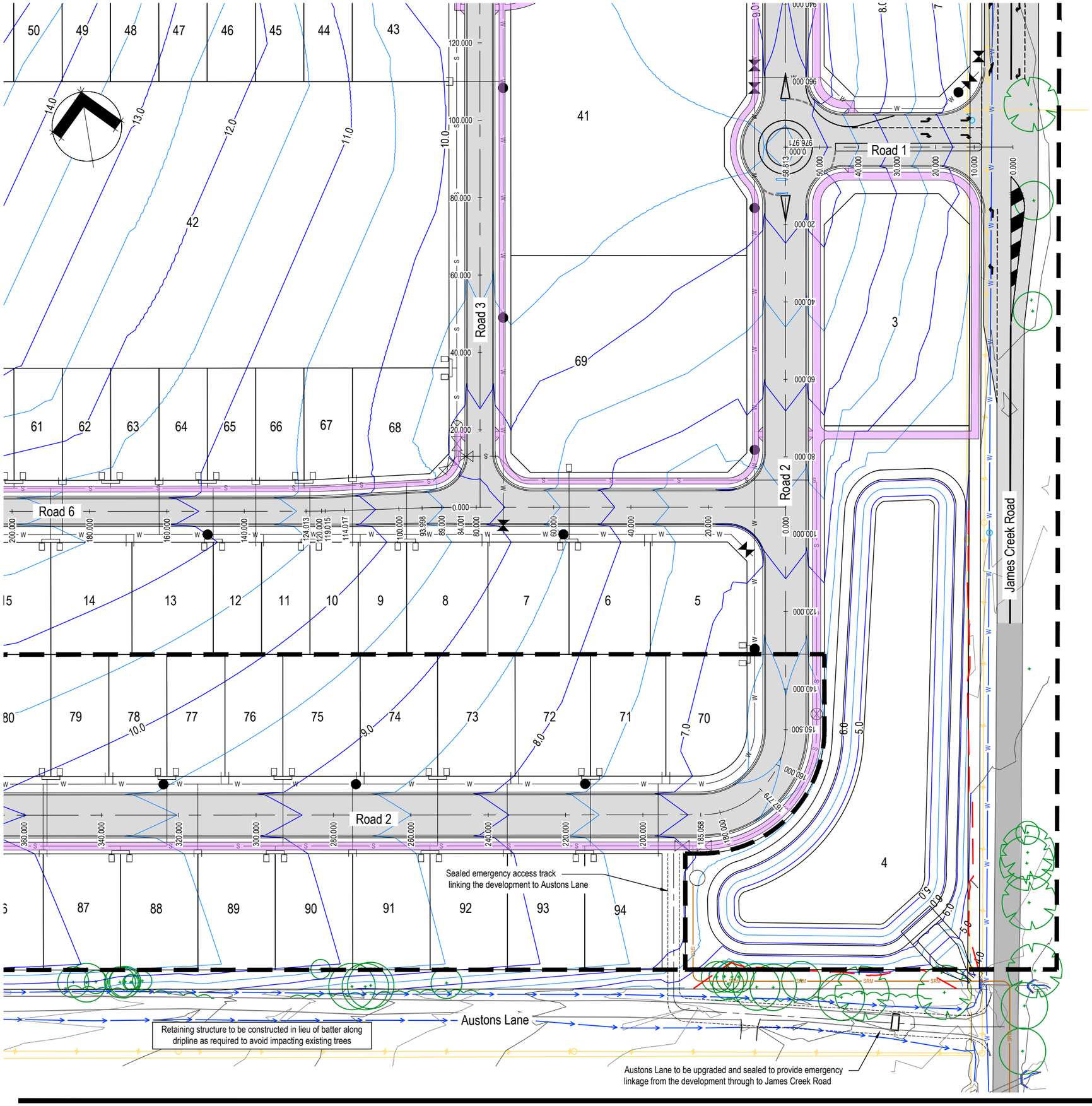
metres 0 5 10 15 20 25

Drawing Title

Design Layout
Sheet 1 of 5

3204-1131

Drawing Number 3204/C122 *Revision* C



LEGEND (Existing)

- Electricity and power pole
- Tree line
- Fire hydrant
- Communication line and pit
- Watermain (approximate)
- Swale
- Road

LEGEND (Design)

- Road
- Footpath
- Water reticulation pipe
- Low pressure sewer main
- Sewer rising main
- Stage boundary
- Extent of works

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Note:

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XREFs					

Scale

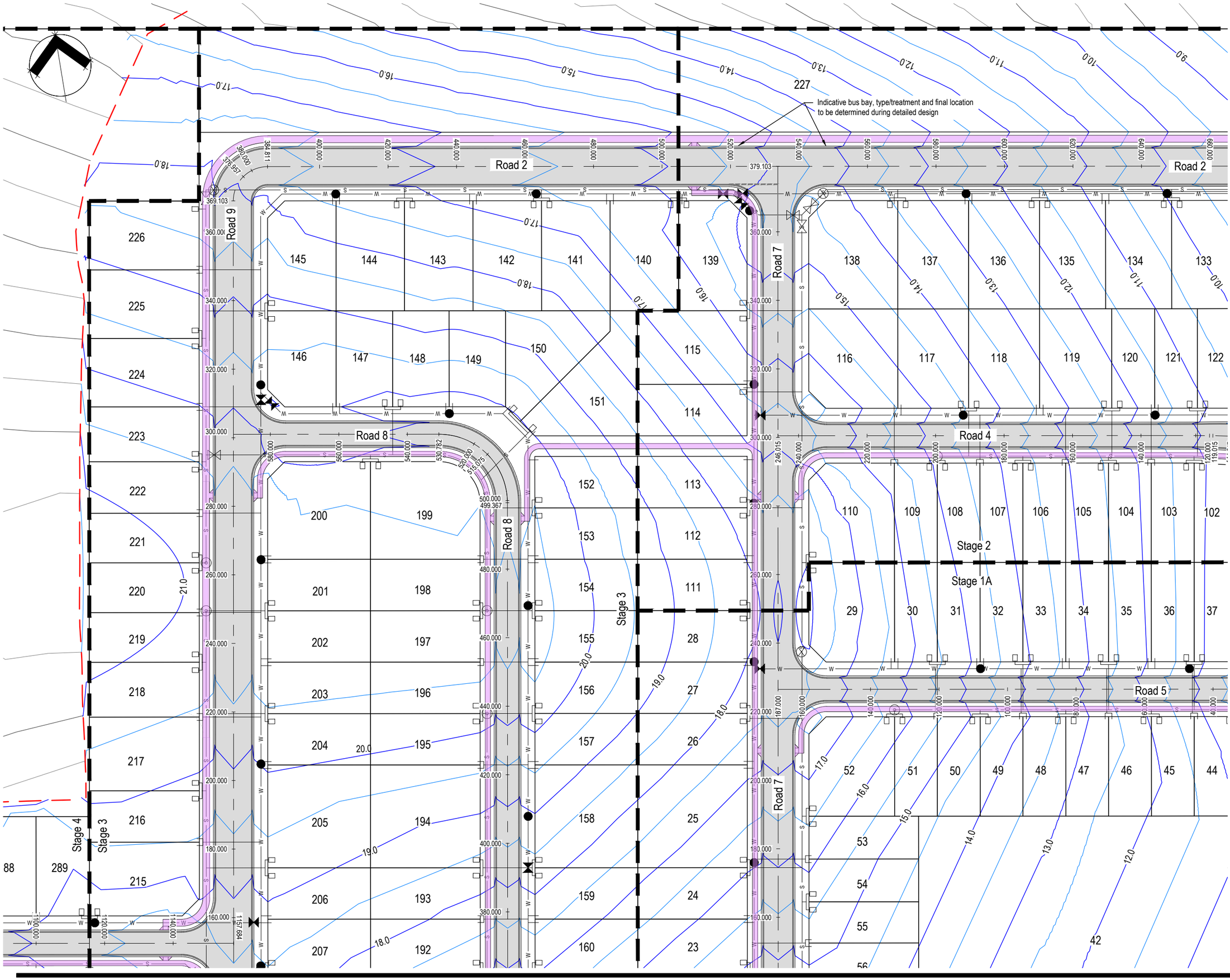
metres 0 5 10 15 20 25

Drawing Title

Design Layout
Sheet 1 of 5

3204-1131

Drawing Number 3204/C122 *Revision* C



LEGEND (Existing)

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quality solutions sustainable future

Project Title

James Creek Road Subdivision

Client

MPD Investments Pty Ltd

Designed	Drawn	Checked
JLC	JLC	MVE
Approved	Date	
MVE	8/10/2021	

XREFs

Scale

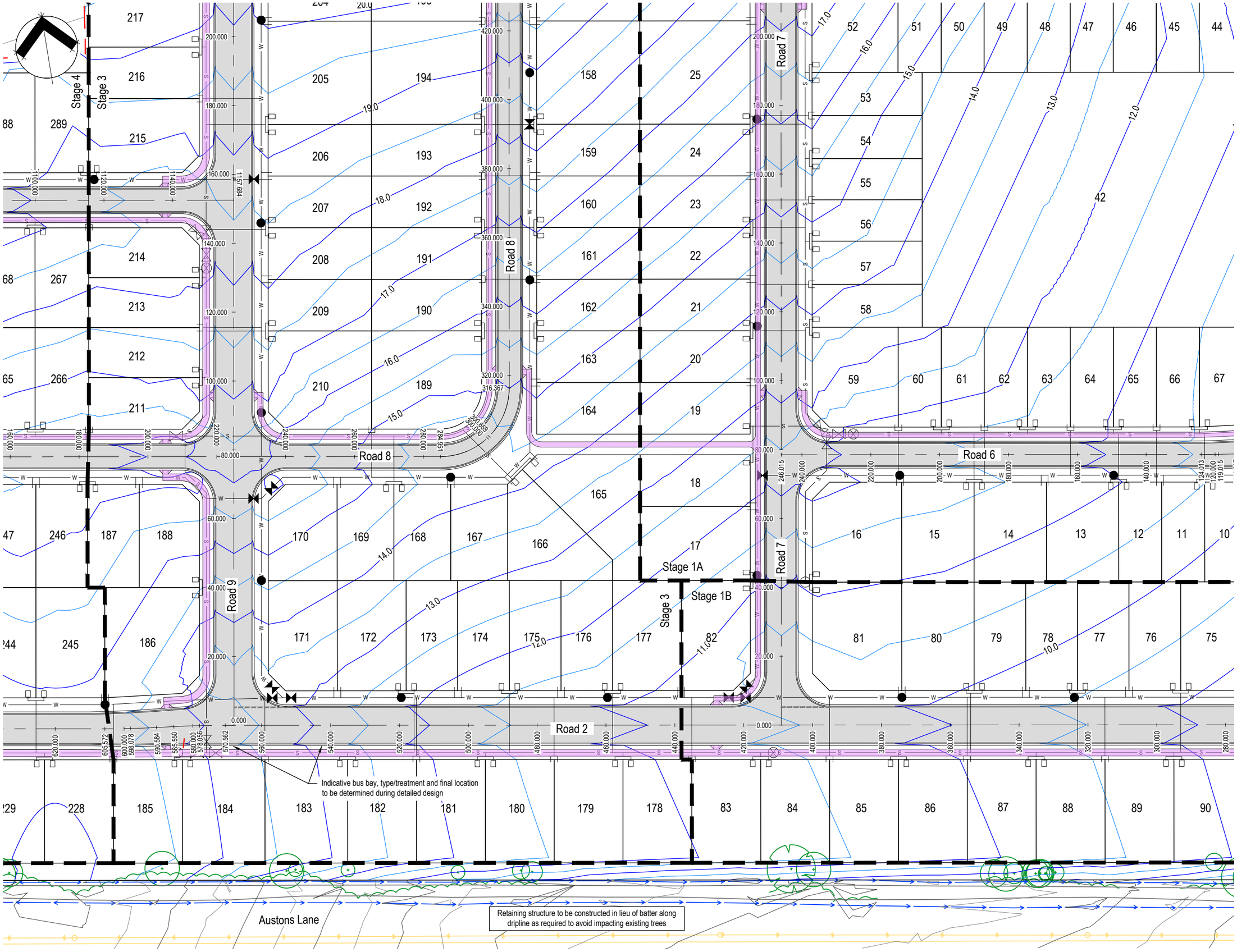
metres 0 5 10 15 20 25

Drawing Title

Design Layout
Sheet 2 of 5

3204-1131

Drawing Number	*Revision*
3204/C123	C



LEGEND (Existing)

- Electricity and power pole
- Tree line
- Fire hydrant
- Communication line and pit
- Watermain (approximate)
- Swale
- Road

LEGEND (Design)

- Road
- Footpath
- Water reticulation pipe
- Low pressure sewer main
- Sewer rising main
- Stage boundary
- Extent of works

Existing and design contours shown at 0.5 m intervals

Note:

1. Fencing to be installed as per landscaping design, refer to plan set by others.
2. Stormwater pits and pipes not shown as locations will be determined as part of detailed design.
3. Stage boundaries are extent of works unless shown otherwise (refer to Legend).

DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	App.	Chk.
C	Revised submission	10/11/2023	JLC	MVE	MVE
B	Drawing Schedule updated	13/04/2023	JLC	MVE	MVE
A	Updated to address Council's AIR	24/05/2022	JLC	MVE	MVE

Amendments

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Client

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Designed	JLC	Drawn JLC	Checked MVE
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XREFs			

Scale

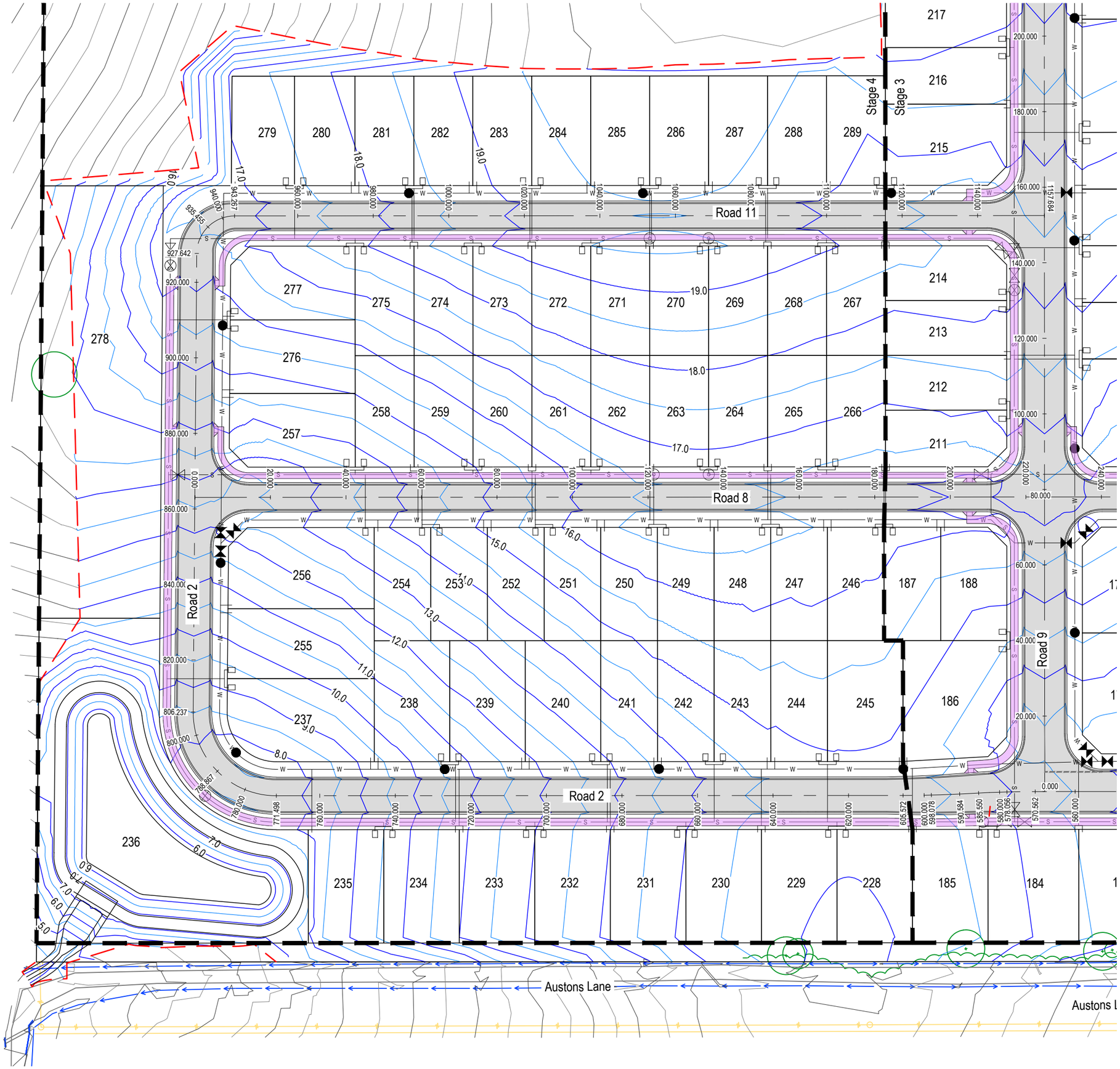
metres 0 5 10 15 20 25

Drawing Title

Design Layout
Sheet 3 of 5

3204-1131

Drawing Number 3204/C124 *Revision* C



LEGEND (Existing)

- Electricity and power pole
- Tree line
- Fire hydrant
- Communication line and pit
- Watermain (approximate)
- Swale
- Road

LEGEND (Design)

- Road
- Footpath
- Water reticulation pipe
- Low pressure sewer main
- Sewer rising main
- Stage boundary
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Existing and design contours shown at 0.5 m intervals

Note:

1. Fencing to be installed as per landscaping design, refer to plan set by others.
2. Stormwater pits and pipes not shown as locations will be determined as part of detailed design.
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Project Title

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Client

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Approved	MVE	Date 8/10/2021	

XREFs

Scale

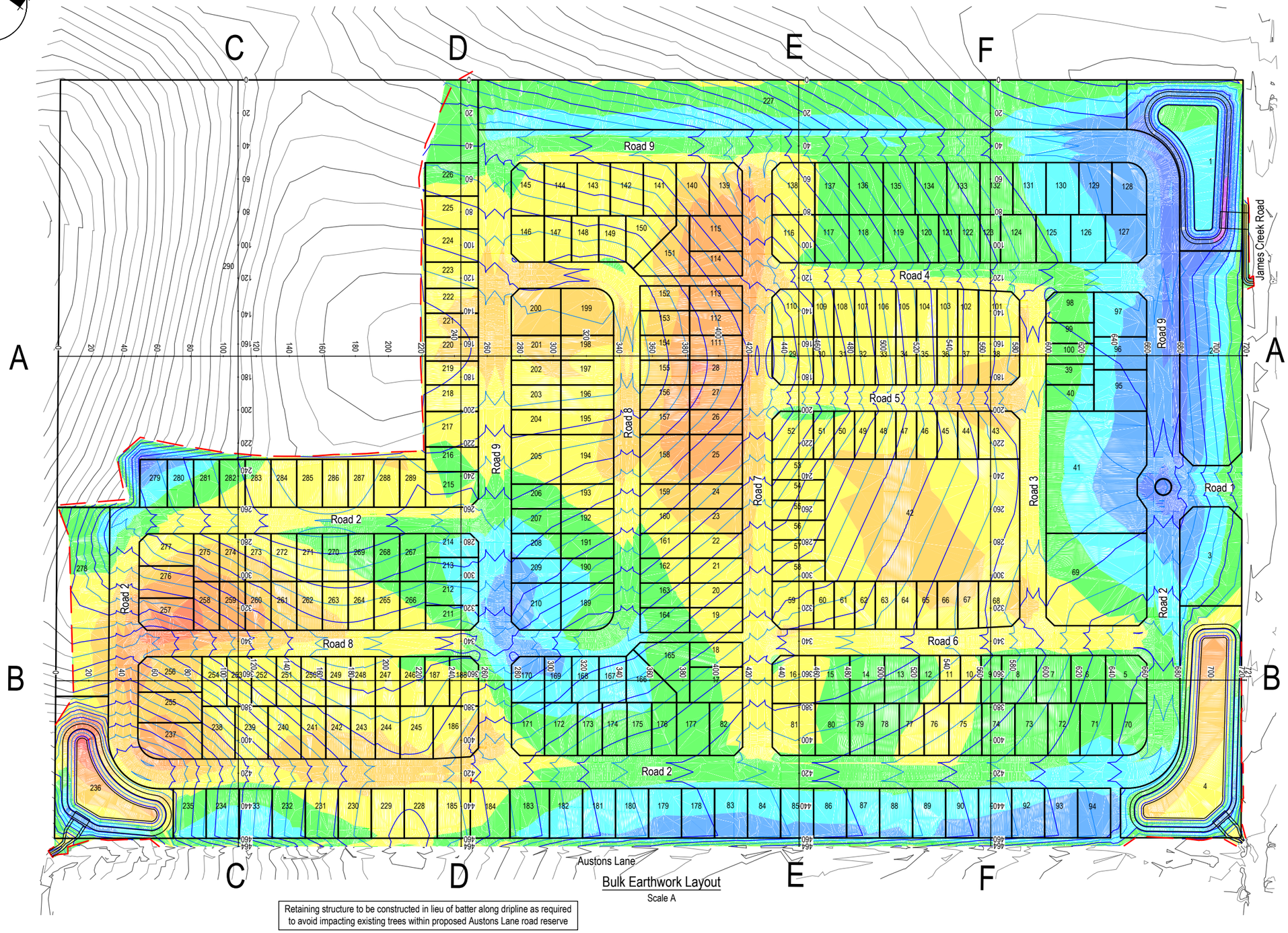
metres 0 5 10 15 20 25

Drawing Title

Design Layout
Sheet 4 of 5

3204-1131

Drawing Number 3204/C125 *Revision* C



Bulk Earthwork Layout

Scale A

Retaining structure to be constructed in lieu of batter along dripline as required to avoid impacting existing trees within proposed Austons Lane road reserve

LEGEND

- Cut 2.4 m to 2.9 m
- Cut 1.8 m to 2.4 m
- Cut 1.2 m to 1.8 m
- Cut 0.6 m to 1.2 m
- Cut 0.0 m to 0.6 m
- Fill 0.0 m to 0.6 m
- Fill 0.6 m to 1.2 m
- Fill 1.2 m to 1.8 m
- Fill 1.8 m to 2.4 m
- Fill 2.4 m to 2.5 m
- Extent of works

Existing and design contours shown at 0.5 m intervals

Note:

1. Bulk earthworks shown is from the existing surface to the design surface.
2. Lot grading and retaining to be finalised with detailed design. Maximum height of walls will be 2.0 m.
3. Stage boundaries are extent of works unless shown otherwise (refer to Legend).

DEVELOPMENT APPLICATION

Rev.	Description	Date	Des.	App.	Chk.
C	Revised submission	10/11/2023	JLC	MVE	MVE
B	Drawing Schedule updated	13/04/2023	JLC	MVE	MVE
A	Updated to address Council's AIR	24/05/2022	JLC	MVE	MVE

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Approved	MVE	Date	8/10/2021		
XREFs					

Scale

A metres 0 12.5 25 37.5 50 62.5

Bulk Earthworks Parameters

Parameter	Base Surface	Comparison Surface	Total Area (m²)	Total Cut Volume (m³)	Total Fill Volume (m³)	Balance (m³)
Cut - Fill	Existing surface	Design surface	280,915	78,065	88,345	10,280 (fill)

Notes:

1. Figures are approximate, design will be refined at detailed design stage to include more of a balanced earthworks.

Drawing Title

Site Cross Sections
Sheet 1 of 2

3204-1132

Drawing Number *Revision*

3204/C135 C

Enclosure 9

Bushfire Provisions update letter prepared by GeoLINK dated 2 November 2023

2 November 2023
Ref No: 3204-1127

MPD Investments Unit Trust
C/o Mike Willoughby
mike@wmdev.com.au

Attention: Mike Willoughby

Dear Mike

Bushfire Provisions - Lot 104 DP 751388, James Creek Road

Section 100B of the *Rural Fires Act 1997* establishes that a 'Bushfire Safety Authority' is required for a subdivision of bushfire prone land that could be lawfully used for residential or rural residential purposes.

Clarence Valley Council's bushfire prone land mapping has been prepared as a requirement of Section 10.3 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) in accordance with the NSW Rural Fire Service (RFS) *Guideline to Bushfire Prone Land Mapping*. Lot 104 DP 751388 is not mapped as bushfire prone land.

A consent authority can refer a development application to the NSW Rural Fire Service (RFS) under the provisions of EP&A Act Section 4.15, even where it is not mapped as bushfire prone land. No formal request was issued to the applicant by Council, however, it is acknowledged that surrounding vegetation, including to the north of the site on Lot 8 DP 1093910, could present a potential hazard in the event of a bushfire emergency. The land to the south is considered managed land.

Subsequently, the proposed subdivision layout includes a 25 m wide area of managed land (open space and road) to the north, east and west of the proposed residential lots, in accordance with the requirements of Planning for Bushfire Protection (PBP) 2019 Table A1.12.3 for residential development in Forest Fire Danger Index (FFDI) 80 areas. The 25 m wide area is to be maintained to the standard of an Inner Protection Area in accordance with PBP 2019 Appendix A Section 4.1.1, thus providing sufficient separation distance between the residential lots and the bushfire hazard to meet the requirements of BAL 29. Any revegetation outside the 25 m wide area of managed land should be spaced to ensure that tress canopies (at maturity) will not encroach into the managed area.

It is also recommended that the individual lots within the subdivision be managed as an Inner Protection Area in accordance with PBP 2019 Appendix A Section 4.1.1.

Additionally, provision for access and services (water supply and electrical services) have been applied to the overall design of the subdivision proposal in accordance with Section 5 of PBP 2019.

These measures include:

- Firefighting vehicles are provided with safe, all-weather access to structures.
- The capacity of access roads is adequate for firefighting vehicles. There are no ‘dead end’ roads and all roads are sealed two-way roads capable of handling Category 1 type firefighting appliances.
- Roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating, as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.
- Adequate water supply will be provided for firefighting purposes with the reticulated water supply to comply with AS 2419.
- Electricity services will be placed underground, thus limiting the possibility of ignition of surrounding bushland or the fabric of buildings.

Given the mitigation measures outlined above, the proposed subdivision complies with the relevant performance criteria and acceptable solutions of PBP 2019, even though the site is not mapped as bushfire prone land.

Yours sincerely,
GeoLINK

Paul Creenaune
Senior Bushfire Consultant

B. Urb & Reg Planning
Grad Dip (Bushfire Protection)

Enclosure 10

Biodiversity Assessment report prepared by GeoLINK dated 7 November 2023

Biodiversity Assessment

Lot 104 DP 751388, James Creek Road

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Prepared for: MPD Investments Unit Trust

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Certification

	Name	Signature	Date
Prepared by	Sam Smith		23/05/2023
Reviewed by	Grant McLean		25/10/2023

UPR	Description	Issued By	Date Issued
3204-1060	First issue	Sam Smith	13/09/2021
3204-1099	Second issue	Sam Smith	11/05/2022
3204-1123	Third issue	Sam Smith	7/11/2023

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Executive Summary

This Biodiversity Assessment was completed to assess potential biodiversity impacts from a proposed residential subdivision at Lot 104 DP751388 James Creek Road, James Creek. The site has been substantially cleared of all woody vegetation and does not contain any areas of biodiversity value (as per the Biodiversity Values Map and Threshold Tool) and the proposal does not exceed clearing thresholds as per Part 7.2 of the Biodiversity Conservation Regulation 2017; therefore, a Biodiversity Development Assessment Report (BDAR) is not required.

Field assessment of the site determined:

- No threatened flora species occur at the site.
- No threatened ecological communities occur at the site.
- No significant habitat for threatened fauna occurs or would be affected by the proposed development.

The proposed development may result in the following potential biodiversity impacts:

- The removal of up to 0.1 ha of PCT 3253 Northern Hinterland Grey Gum-Turpentine Mesic Forest.
- Light spill into adjacent vegetation to the north of the site.
- Noise and disturbance to locally occurring fauna within adjacent habitat areas during the establishment and construction phases. Additionally, the occupation of the site would result in ongoing noise and disturbance which has potential to result in:
  - Disturbance of adjacent fauna habitat to the north and west.
  - Potential for predation of native fauna from roaming domestic animals.
  - Potential for vehicle strike to wandering fauna.

Given the degraded and modified condition of vegetation at the site, and the low impacts on native vegetation and habitat, biodiversity impacts of the Proposal are relatively low.

Statutory assessment was completed for the Proposal as follows:

- State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Biodiversity and Conservation SEPP): requirements have been addressed as required. Core Koala habitat is not present and negligible impacts to Koala habitat would occur.
- *Biodiversity Conservation Act 2016* (BC Act): habitat for threatened species or communities would not be significantly affected by the Proposal. Due to the area of vegetation requiring removal being below clearing thresholds, the Biodiversity Offsets Scheme (BOS) in the BC Act is not triggered and a Biodiversity Development Assessment Report (BDAR) is not required.
- *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act):* the Proposal's impacts are not likely to have a significant impact on any threatened biodiversity listed under the EPBC Act. Accordingly, an EPBC Act Referral is not considered a requirement for the Proposal.

1. Introduction

1.1 Background

GeoLINK has been engaged by MPD Investments Unit Trust to prepare a Biodiversity Assessment for a proposed residential subdivision at Lot 104 DP751388 James Creek Road, James Creek (refer to **Illustration 1.1**). The Biodiversity Assessment will support a Statement of Environmental Effects (SEE) for the Proposal.

This assessment has been prepared to:

- Identify any ecological constraints for the Proposal (e.g. habitat for threatened species or communities listed in the *Biodiversity Conservation Act 2016* (BC Act) or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- Identify trees/ native vegetation which may require removal for the Proposal.
- Assess the impacts of the Proposal against relevant statutory requirements.

1.2 The Site

The site comprises Lot 104 DP751388 James Creek Road, James Creek (refer to **Illustration 1.2**), a parcel of vacant land approximately 33 hectares in area which is grazed by cattle. The site has been historically cleared and modified for agriculture and sugar cane production and comprises improved pasture. No natural watercourses or water features occur at the site.

The site is zoned under the Clarence Valley Local Environment Plan 2011 as follows:

- Zone B1 – Neighbourhood Centre.
- Zone R1 – General Residential.
- Zone R3 – Medium Density Residential.

The site occurs on the New Italy (ne) soil landscape (Morand, 2001), characterised by moderately deep, poorly/ imperfectly drained Grey Kurosols and moderately deep, imperfectly drained Yellow Kurosols throughout hillslopes and crests. Shallow (<100 cm), moderately well-drained Orthic Tenosols (Siliceous Sands) occur within rolling to steep low hills forming on the Maclean Sandstone Member of the Walloon Coal Measures.

Photographs of the site are provided at **Appendix A**.

1.3 The Proposal

The Proposal is for subdivision of the site and associated development, including an internal access road that would connect to James Creek Road. The Proposal involves:

- Creation of 332 lots (327 residential lots, one commercial lot, four drainage reserves and associated public open space areas). Residential lots about the southern and eastern boundaries, whereas lots are offset 25 m (by a perimeter road reserve) from the northern boundary and 50 m from the western boundary.
- Construction of infrastructure provisions (including service installations/ connections and road construction).

Access for all proposed lots will be via an intersection to James Creek Road. The internal road network comprises a permeable symmetric layout of through roads, including a main ring road and several smaller loop roads.

1.4 Assessment Pathway

This Biodiversity Assessment has been completed to address the requirements of the *Biodiversity Conservation Act 2016* (BC Act) regarding impacts to threatened species and communities listed in the Act. To determine whether the project triggers the Biodiversity Offsets Scheme (BOS), the following steps were taken:

1. Review of the OEH Biodiversity Values Map and Threshold Tool: https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap. The Map does not show any areas of biodiversity value as occurring at the site (refer to **Figure 1.1**).
2. Review of clearing requirements to determine if the Proposal exceeds BOS thresholds. The site is not mapped in the 'minimum lot size map' in the Clarence Valley Local Environmental Plan 2011. The minimum lot size was therefore determined as per Section 7.2 (b) of the Biodiversity Conservation Regulation 2017, whereby the minimum lot size is *"the actual size of the allotment of land on which the proposed development is to be carried out*". On this basis, the minimum lot size associated with the site is 33 ha.

Disturbed pastureland comprises a mixture of agricultural grasses and environmental weeds. The average native groundcover as a proportion of total groundcover is 2%. Where there is less than 15% native ground cover, all vegetation can be considered exotic (refer to **Section 3**).

The BOS threshold (as per Part 7.2 of the Biodiversity Conservation Regulation 2017) for a minimum lot size of 33 ha is 0.5 ha. Vegetation impacted by the Proposal comprises disturbed pastureland.

Additionally, there is potential to encroach on trees in the north-east corner. These trees cover an area no greater than 0.1 ha. As such, native vegetation loss would not exceed the minimum clearing threshold of 0.5 ha.

On this basis the Proposal does not impact on biodiversity value land or exceed clearing thresholds, therefore a Biodiversity Development Assessment Report (BDAR) is not required.

Figure 1.1 Biodiversity Values (BV) mapping showing BV mapped land (purple) and the site (blue)

0 1 Km

Locality Plan - Illustration 1.1

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Lot 104 DP 751388 James Creek Rd, James Creek Biodiversity Assessment
3204-10042

Information shown is for illustrative purposes only
Drawn by: AB Checked by: AB Reviewed by: ILC
Source of base data: OpenStreet Map
Date: 29/09/2020
Revision: A

LEGEND

- Site boundary
- Cadastre
- Proposed layout

0 50 Metres

Site Plan - Illustration 1.2

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Lot 104 DP 751388 James Creek Rd, James Creek Biodiversity Assessment
3204-1140

Information shown is for illustrative purposes only
Drawn by: AEA Checked by: AB Reviewed by: SDS
Source of base data: Airbus 30/09/2023
Date: 01/11/2023
Revision: B

2. Methodology

2.1 Desktop Review

Prior to the site assessment, the following desktop analysis was completed:

- A search of the BioNet Wildlife Atlas (10 km x 10 km grid centred on the site); completed 16 October 2023.
- A search of the Protected Matters Search Tool (PMST) for Matters of National Environmental Significance (MNES) within a 10 km radius of the site; completed 16 October 2023.

Details of the survey methodology are provided in **Section 2.2**. Results of database searches are attached at **Appendix B**.

2.2 Field Assessment

Initial field assessment was completed on 1 November 2018.

Additional field assessment was competed 30 September 2020 and 20 October 2020 to address the State Environmental Planning Policy (SEPP) Koala Habitat Protection 2021 (now replaced by the State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Biodiversity and Conservation SEPP).

Further assessment of grassland in accordance with the guidelines for Assessing Native Groundcover (NSW Local Land Services, 2023) was competed 10 October 2023.

Field assessment utilised the following methodology:

- Walking survey to identify vegetation types and identify threatened flora or ecological communities listed in the BC Act or EPBC Act.
- Completion of flora inventory based on random meander survey.
- Targeted assessment of all impact areas for the project and inventory of native tree loss, based on site plans.
- Assessment of grassland in accordance with the guidelines for Assessing Native Groundcover (NSW Local Land Services) to determine percentage of native groundcover (refer to **Appendix C**).
- Identification and survey (by GPS) of any hollow-bearing trees or other significant habitat features.
- Targeted searches for Koala scats using the Spot Assessment Technique (SAT), as per Phillips & Callaghan (2011) with three SAT plots assessed at three locations: in the north-east corner of the site, along the southern boundary and along the western boundary.
- Tree counts and identification to determine if high quality Koala habitat (as per the Koala SEPP) occurs.
- Opportunistic survey of all fauna based on visual or aural observations.

Given that the site is mostly cleared and is highly disturbed, the scope of assessment is considered adequate.

3. Vegetation

3.1 Desktop Analysis

BioNet search results identified records of eight threatened flora species (including five species also listed in the EPBC Act) and habitat for 12 threatened ecological communities (two of which are listed under the EPBC Act) within the search area (refer to **Appendix B**). PMST results identified habitat for 28 threatened flora species and six threatened ecological communities within the search area.

3.2 Site Assessment

3.2.1 Vegetation Communities

Vegetation at the site has been historically cleared and comprises highly disturbed improved pasture dominated by the introduced species Kikuyu* (*Cenchrus clandestinum*), Whiskey Grass* (*Andropogon virginicus*). Other common agricultural grasses and herbs include Vasey Grass* (*Paspalum urvillei*), White Clover* (*Trifolium repens*), Milkwort* (*Polygala paniculata*), and Annual Ragweed (*Ambrosia artemisiifolia*). Infrequent native ground cover species include Shorthair Plumegrass (*Dichelachne micrantha*), Pennywort (*Centella asiatica*), Barbed Wire Grass (*Cymbopogon refractus*) and White Root (*Lobelia purpurascens*).

The average native groundcover as a proportion of total groundcover is 2% within the site. Where there is less than 15% native ground cover, all vegetation can be considered exotic and is not characteristic of any plant community type (PCT) in the BioNet Vegetation Classification system (refer to **Appendix C**).

*Introduced species

Woody vegetation is limited to a small group of trees in the north-east corner of the site and a line of scattered mixed mature eucalypts along the western and southern boundary. Typical species include Grey Ironbark (*Eucalyptus siderophloia*), Grey Gum (*Eucalyptus propinqua*), Grafton Stringybark (*Eucalyptus tindaliae*), Pink Bloodwood (*Corymbia intermedia*), Tallowwood (*Eucalyptus microcorys*), and Swamp Box (*Lophostemon suaveolens*). No midstorey occurs and native groundcover is very sparse to absent.

Mixed scattered trees are broadly characteristic of PCT 3253 *Northern Hinterland Grey Gum-Turpentine Mesic Forest*.

A vegetation plan is provided at **Illustration 3.1**. A flora inventory is attached at **Appendix D**.

3.2.2 Threatened and Significant Flora

No threatened flora species were confirmed at the site.

3.2.3 Threatened Ecological Communities (TECs)

No TECs occur at the site. The site is not depicted as being prone to one in 100-year flooding in Councils online mapping and the soil landscape is an erosional landscape (not an alluvial landscape); floodplain TECs do not occur.

3.2.4 Condition

The site has been highly modified and disturbed from previous broadscale clearing, sugar cane production, ongoing grazing, and slashing. Native vegetation is very sparse and limited tree cover is subject to grazing and slashing disturbance.

523800 524000 524200 524400

6742400 6742200 6742000

James Creek Road

Austons Lane

LEGEND

- Site boundary
- Cadastre
- PCT 3253 Northern Hinterland Grey Gum - Turpentine Mesic Forest
- Proposed layout
- Broad-leaved Paperbark
- Brush Box
- Grafton Stringybark
- Grey Ironbark
- Hard Quandong
- Hickory Wattle
- Pink Bloodwood
- Red Ash
- Small-fruited Grey Gum
- Swamp Box
- Tallowwood
- White Mahogany
- Hollow-bearing tree

0 50 Metres

Vegetation Plan - Illustration 3.1

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Lot 104 DP 751388 James Creek Rd, James Creek Biodiversity Assessment
3204-1140

Information shown is for illustrative purposes only
Drawn by: AEA Checked by: AB Reviewed by: SDS
Source of base data: Airbus 30/09/2023
Date: 01/11/2023
Revision: B

4. Fauna Habitat

4.1 Desktop Analysis

BioNet search results identified records of 44 threatened fauna species listed under the BC Act (including nine species also listed in the EPBC Act) within the search area (refer to **Appendix B**). PMST results identified habitat for 59 threatened fauna species and 62 migratory fauna species within the search area.

4.2 Site Features

4.2.1 Habitat Values

A range of common fauna species were observed during the field assessment (**Appendix E**). The site provides habitat for a range of common fauna species which utilise farmland and disturbed vegetation, a common habitat type in the locality which is present on adjacent land parcels. Owing to a lack of native vegetation and poor structural complexity, the site provides relatively poor resources for foraging and breeding.

Two hollow-bearing trees occur at the site (refer to **Illustration 3.1**) containing a number of medium and large limbs and trunk hollows (refer to **Table 4.1**). The mature Tallowwood on the western boundary (DBH: 1.2 m, height: 24 m) is a particularly large tree. Tree hollows provide potential breeding sites for common bird species (e.g. Eastern Rosella, Rainbow Lorikeet), tree roosting microchiropteran bats and arboreal mammals. Both trees will be retained in situ.

Table 4.1 Habitat Trees

Species	Scientific Name	Location	Easting	Northing	Hollow Type	Hollow Size
Small-fruited Grey Gum	*Eucalyptus propinqua*	North-east corner	524515	6742294	Trunk x 1	Large
Tallowwood	*Eucalyptus microcorys*	Western boundary	523769	6742176	1 x large limb hollow, 1 x large and 5 x medium limb hollows	Large and medium

4.2.2 Threatened Fauna Species

One threatened fauna species was recorded during multiple site visits – up to eight Grey-crowned Babblers (*Pomatostomus temporalis temporalis*) were observed foraging within the site and within the road reserve on the eastern side of James Creek Road (opposite the site) (refer to **Plate 4.1**). While habitat for the species on the site is very poor, birds may forage opportunistically at the site.

Plate 4.1 Grey-crowned Babbler observed at the site

No Koala scats were detected during SAT surveys undertaken during the site inspection.

Based on the desktop analysis and habitat present, five-part tests of significance were prepared in accordance with Section 7.3 of the BC Act for those species assessed as having a moderate likelihood of occurrence within the site (refer to **Table 4.2**, **Appendix F** and **Appendix G**).

Table 4.2 BC Act Listed Threatened Fauna Potentially Occurring On Site

Scientific Name	Common Name	BC Act	Likelihood of Occurrence
Woodland Birds			
Pomatostomus temporalis temporalis	Grey-crowned Babbler	V	**Known** – Species recorded during site visits.
Glossopsitta pusilla	Little Lorikeet	V	**Moderate** – Potential foraging habitat in the form of blossoming eucalypts. Local BioNet records.
Stagonopleura guttata	Diamond Firetail	V	
Ground Dwelling Birds			
Dromaius novaehollandiae	Emu population in the NSW North Coast Bioregion and Port Stephens LGA	E	**Moderate** - Potential foraging habitat occur at the site. BioNet records in the locality.
Arboreal Mammals			
Petaurus norfolcensis	Squirrel Glider	V	**Moderate –** Potential habitat present across the site. Hollow-bearing trees present at the site. Koala food tree species present at site. Local BioNet records.
Phascogale tapoatafa	Brush-tailed Phascogale	V	
Phascolarctos cinereus	Koala	E	
Megabats			
Pteropus poliocephalus	Grey-headed Flying-fox	V	**Moderate** – Potential foraging habitat in the form of blossoming eucalypts. Local BioNet records.
Microbats			
Chalinolobus nigrogriseus	Hoary Wattled Bat	V	**Moderate –** Potential habitat present across the site. Hollow-bearing trees present at the site. Local BioNet records.
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V	
Miniopterus australis	Little Bent-winged Bat	V	
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	
Myotis macropus	Southern Myotis	V	
Saccolaimus flaviventris	Yellow-bellied Sheathtail-Bat	V	
Scoteanax rueppellii	Greater Broad-nosed Bat	V	
V = Vulnerable; E = Endangered			

4.2.3 Wildlife Corridors and Key Habitats

No wildlife corridors or key habitats are depicted at or in proximity to the site. Local agricultural clearing has contributed to increased fragmentation and habitat isolation to patches of vegetation proximate to the site.

5. Matters of National Significance

This chapter describes Matters of National Environmental Significance (MNES) relating to Commonwealth legislation under the EPBC Act. The following biodiversity MNES protected under the EPBC Act were considered for their relevance to the Project:

- Listed threatened species and communities.
- Listed migratory species.
- Critical habitat.
- Wetlands of national and international importance.

This BAR provides an assessment of all EPBC Act listed threatened species and communities that may be impacted. This list of species and communities for assessment has also been supplemented and refined with database searches (i.e. BioNet, BAM-C, PMST, and NSW Fisheries databases) to provide a thorough assessment.

5.1 EPBC Act Listed Threatened Species and Communities

5.1.1 Nationally Threatened Ecological Communities

PMST results identified habitat for six EPBC Act listed TECs within the search area.

No TECs occur at the site. The site is not depicted as being prone to one in 100-year flooding in Councils online mapping and the soil landscape is an erosional landscape (not an alluvial landscape); floodplain TECs do not occur.

5.1.2 Nationally Threatened Flora

PMST results identified habitat for 28 EPBC Act listed threatened flora species.

No threatened flora species were confirmed at the site.

5.1.3 Nationally Threatened Fauna

PMST results identified habitat for 59 EPBC Act listed threatened fauna species. Of these, three species where identified to have a moderate or higher likelihood of occurrence at the site based on previous record (BioNet) and availability of habitat (refer to **Table 5.1** and **Appendix F**).

Assessments of significance have been completed for these species in accordance with the EPBC Act Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (Department of the Environment 2013) (refer to **Appendix G**).

Table 5.1 EPBC Act Listed Threatened Fauna Potentially Occurring On Site

Scientific Name	Common Name	EPBC Act	Likelihood of Occurrence
Woodland Birds			
Stagonopleura guttata	Diamond Firetail	V	**Moderate** - Potential foraging habitat occur at the site.
Arboreal Mammals			
Phascolarctos cinereus	Koala	E	**Moderate –** Potential habitat present across the site. Koala food tree species present at site.
Megabats			
Pteropus poliocephalus	Grey-headed Flying-fox	V	**Moderate** – Potential foraging habitat in the form of blossoming eucalypts.
V = Vulnerable; E = Endangered			

5.2 Migratory Species

Migratory species are protected under international agreements, to which Australia is a signatory, including JAMBA, CAMBA, RoKAMBA and the Bonn Convention on the Conservation of Migratory species of Wild Animals. Migratory species are considered MNES and are protected under the EPBC Act.

PMST results identified habitat for 62 EPBC Act listed migratory species. Due to the habitat and condition of the site, no migratory species are likely to occur or utilise the site on a migratory basis.

5.3 Critical Habitat

No EPBC Act listed critical habitat has been recorded or is considered likely to occur within the site.

5.4 Wetlands of National and International Importance

No national or international important wetlands were identified by the PMST as occurring within or proximate to the site.

6. Impacts and Mitigation

6.1 Potential Impacts of the Works

The current subdivision design, including design of bulk earthworks and drainage proposes to retain the existing vegetation within the subject site close to the western, southern and eastern boundaries. Every effort will be made to avoid any impact to this vegetation. However, the proposed works include cut and fill close to a number of the existing trees, and the layout is subject to detailed design. As such, for the purpose of this assessment, it has been assumed that all vegetation within the subject lot will be removed, with the exception of the trees along the southern boundary adjacent to Austons Lane (refer to **Illustration 3.1**). Additionally, up to four trees opposite the east of the subject site may need to be removed to facilitate construction of the new intersection providing access to the subdivision, including widening of the road. Total vegetation loss is detailed below.

Potential impacts of the Proposal may include:

- The removal of up to 0.1 ha of PCT 3253 *Northern Hinterland Grey Gum-Turpentine Mesic Forest*.
- Noise and disturbance to locally occurring fauna within adjacent habitat areas during the establishment and construction phases.
- Light spill into adjacent vegetation to the north of the site.
- During occupation, ongoing noise and disturbance which has potential to result in:
  - Disturbance of adjacent fauna habitat to the north and west.
  - Potential for predation of native fauna from roaming domestic animals.
  - Potential for vehicle strike to wandering fauna.

6.2 Mitigation

To minimise biodiversity impacts which may result from the Proposal, the following measures are prescribed:

- Detailed design of stormwater basins shall ensure that suitable setbacks are maintained to allow for the retention of scattered trees along the site boundaries if possible. If trees in the north-east are encroached on, only the minimum are to be disturbed for construction of the basin.
- The limit of vegetation clearing must be clearly delineated on site prior to works commencing.
- If proposed, landscaping should aim to utilise endemic native species.
- Measures must be implemented during construction to ensure the potential for the introduction of weed propagules to the site is minimised.
- Erosion and sediment control measures will be implemented (in accordance with the *Landcom/ Department of Housing Managing Urban Stormwater; Soils and Construction Guidelines*) and maintained to prevent sediment moving off-site and sediment laden water entering any water course.

7. Statutory Assessment

The following sections assess the findings of the site assessment with regard to relevant statutory requirements.

7.1 Clarence Valley Residential Zones Development Control Plan

Part E of the Clarence Valley Residential Zones Development Control Plan (DCP) 2011 notes that development consent is required for the actions of ringbarking, cutting down, topping, lopping, removal, injuring or wilfully destroying species of tree(s) or other native vegetation on Residential zoned land. Approval of the DA of which this report form's part will address this issue.

Part Y of the DCP relates to biodiversity and habitat protection. Biodiversity and habitat controls apply to land likely to have existing native vegetation in the Clarence Valley Local Government Area in a number of zones. Residential and business zones are not subject to the requirements of Part Y; hence no further consideration is required.

7.2 State Environmental Planning Policy (SEPP) (Biodiversity and Conservation) 2021

7.2.1 Introduction

The site is zoned B1 Neighbourhood Centre, R1 General Residential and R3 Medium Density Residential under the Clarence Valley Local Environmental Plan 2011 and therefore Chapter 4 of the State Environmental Planning Policy (Biodiversity & Conservation) 2021 applies to the Proposal. As the Proposal will impact areas of native vegetation, investigation is required to determine whether 'core Koala habitat' is present. The Policy defines 'core Koala habitat' as:

a. *an area of land which has been assessed by a suitably qualified and experienced person as being 'highly suitable koala habitat' and where koalas are recorded as being present at the time of assessment of the land as highly suitable koala habitat, or*
b. *an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas have been recorded as being present in the previous 18 years.*

'Highly suitable habitat' is where 15% or greater of the total number of trees within any Plant Community Type (PCT) are the regionally relevant tree species.

The following Schedule 2 tree species (North Coast Koala management area) are present at the site:

- Pink Bloodwood (*Corymbia intermedia*).
- Grey Ironbark (*Eucalyptus siderophloia*).
- Small-fruited Grey Gum (*Eucalyptus propinqua*).
- Tallowwood (*Eucalyptus microcorys*).
- Stringybark (*Eucalyptus tindaliae*).
- Forest Oak (*Allocasuarina torulosa*).

Trees >10 cm dbh along all three main aggregations at the site (north-east corner, southern boundary, western boundary) were counted and the number of Schedule 2 trees noted. Results of this assessment were as follows:

- North-east corner: 32 trees present, of which 12 are Schedule 2 trees. Proportion of Schedule 2 trees = 37.5%. Highly suitable Koala habitat present.
- Southern boundary: 32 trees present, of which 17 are Schedule 2 trees. Proportion of Schedule 2 trees = 53%. Highly suitable Koala habitat present.
- Western boundary: 40 trees present, of which 20 are Schedule 2 trees. Proportion of Schedule 2 trees = 50%. Highly suitable Koala habitat present.

On this basis all woody vegetation at the site comprises highly suitable Koala habitat (as defined in the Policy).

7.2.2 Assessment

In the absence of any formalised guidelines to support the Policy, the following assessment process was completed:

1. Analysis of Koala records in BioNet with regard to any Koala records within 2.5 km of the site in the last 18 years (accepted as being three Koala generations) and where records have a locational accuracy < 1,000 metres.
2. Completion of three Koala survey plots using the Spot Assessment Technique ('SAT') as per Phillips & Callaghan 2011, sampling PCT 3253 (refer **Illustration 3.1**); targeted searches under 3 x paddock trees (immature Forest Red Gum).

Based on step 1, BioNet records do not indicate any Koala records within 2.5 kms of the site, with the closest record being a rehabilitation record from near Maclean in 2019 (refer **Figure 7.1**), approximately 3 km west of the site. The lack of Koala records in the broader locality supports evidence that a Koala population does not currently reside within or proximate to the locality, as supported by recent Council reporting (Clarence Valley Koalas: Sighting Data Analysis October 2023).

Step 2 (SAT survey plots) did not return any signs of Koalas (faecal pellets, sightings, scratches on smooth-barked trees). Results are reflective of the lack of Koala records in the locality (as per Step 1).

Core Koala habitat is not present on site as:

- No Koalas were recorded as being present at the time of the site assessment.
- No Koalas have been recorded as being present on site in the previous 18 years.

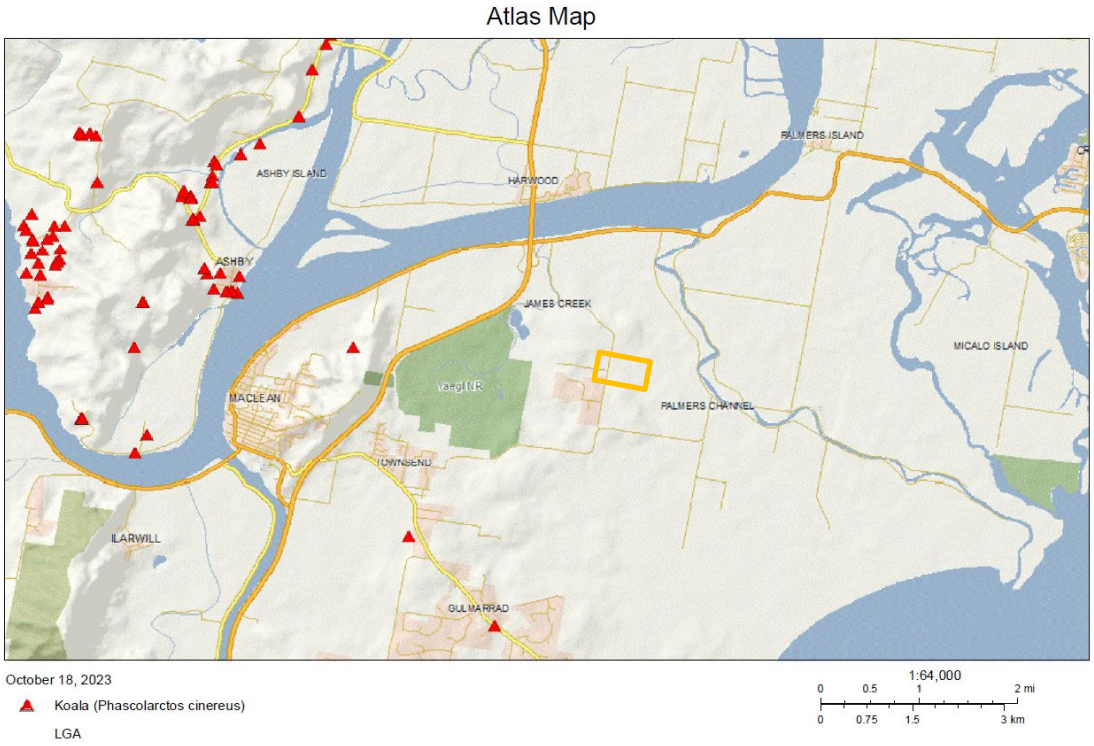

Figure 7.1 BioNet Koala records (site shown in orange)

As native vegetation is being removed for the Proposal (three Forest Red Gum), a Koala Assessment Report (KAR) is required which must address five key principles:

1. *understand Koala habitat values,*
2. *avoid intensifying land use in Koala habitat areas through appropriate landscape planning and site selection,*
3. *encourage the proper conservation and management of areas of natural vegetation that provide habitat for Koalas,*
4. *minimise potential direct impacts to Koalas though Koala sensitive design, and*
5. *implement best practice measures for the management of identified risks to Koalas.*

A KAR has been prepared in table format to address the requirements set out in the *Koala SEPP 2021 FAQs — development applications* guideline (DPIE 2021); refer **Table 7.1**.

Table 7.1 Koala Assessment Report

KAR Requirement	Response
Principle 1. Understand Koala habitat values	
What is known about the size, health and viability of the Koala population?	There is no evidence of a Koala population currently residing within the locality.
What is known about the generational persistence of the local Koala populations? This should be informed by a record analysis to determine population trends and persistence over time.	There is no evidence of a Koala population currently residing within the locality, as supported by site survey and BioNET records.
What is the broader landscape context of the habitat within the site area? For instance, is it contiguous with broader areas of habitat or relatively isolated, and what are the likely	Habitat south of the site connects into extensive areas of conservation reserve within Yuraygir National Park. Koala records within this landscape are very few, with a single record from

KAR Requirement	Response
regional movement patterns of Koalas using the site area?	2004 between Yamba and Brooms Head (BioNET). This supports the theory that there is no Koala population within the Yamba locality and the likelihood of animals immigrating into the area and establishing a population are extremely low.
Does the site area contain particular values likely to serve an important ecological function for Koalas? For instance, does it provide linkage between other habitats or serve as a habitat buffer to broader areas?	The site provides poor foraging and refuge habitat based on the lack of trees. There is high connectivity values with forested vegetation to the north and west (which adjoins Yaegl Nature Reserve). However, with no resident Koala population, these values are essentially void.
Could the habitat area and/ or Koala population using the site area be important to the recovery of the Koala? For instance, does the habitat contain features that might provide refuge during droughts, extreme heat, or fire? Or is the population considered to be healthy, robust or showing relatively low incidence of disease?	There is no evidence of a Koala population currently residing within the locality.
Drawing on evidence presented, what significance are the values of the site to preserving the existing Koala population and supporting recovering and expanding populations?	The site contains relatively poor resources for Koalas, with vegetation being small in area and of reduced quality for foraging or refuge.
Principle 2. Avoid intensifying land use in Koala habitat areas through appropriate landscape planning and site selection	
How has the development footprint avoided core Koala habitat?	Core Koala habitat does not occur. The Proposal has been designed to allow for the retention of the scattered trees around the site boundaries.
What feasible alternative site selections were assessed as part of the process?	The Proposal has been designed to retain boundary trees where Koala may seek refuge.
Principle 3. Encourage the proper conservation and management of areas of natural vegetation that provide habitat for Koalas	
Development avoids the direct loss of core Koala habitat within the site area and avoids fragmentation.	Core Koala habitat does not occur at the site; no fragmentation of consolidated areas of potential habitat would occur as a result of the Proposal.
Core Koala habitat is excluded from the development footprint.	Core Koala habitat does not occur at the site; no significant Koala habitat occurs within or will be affected by the proposed development.
Principle 4. Minimise potential direct impacts to Koalas through Koala sensitive design	
Development avoids direct impacts to core Koala habitat within the site area.	n/a; core Koala habitat is absent from the site.
Where some loss of core Koala habitat cannot be avoided (and provided it is consistent with all other criteria), development is designed in a way that retains higher value areas across the site and avoids fragmentation of habitat within the site area and more broadly within the region.	n/a; core Koala habitat is absent from the site.
Development is undertaken in a way that maintains the potential function of the core Koala habitat.	Potential Koala refuge areas are maintained around the perimeter of the site outside the development footprint.

KAR Requirement	Response
Principle 5. Implement best practice measures for the management of identified risks to Koalas	
All relevant indirect impacts to Koalas and Koala habitat associated with the development are identified.	Few indirect impacts to Koalas are likely given due to the lack of a local population.
Development uses best practice management measures to address the potential impacts considered likely to pose an increased risk to Koalas or their habitat.	n/a

Based on BioNET results and site investigations, Koalas are unlikely to occur at the site. The site does not contain core Koala habitat and impacts to Koalas and their habitats are negligible. On this basis, the Policy has been satisfactorily addressed and there are no further requirements.

7.3 Biodiversity Conservation Act 2016 (BC Act)

The BC Act requires a test of significance (five-part test) when assessing whether an action, development or activity is likely to significantly affect threatened species, ecological communities, or their habitats. Based on the potential for several threatened fauna species to occur at the site, tests of significance have been completed (refer to **Appendix G**).

The tests of significance concluded that habitat for threatened species is unlikely to be significantly affected by the Proposal. Native vegetation loss does not exceed clearing thresholds in the Biodiversity Offsets Scheme in the BC Act. On this basis, development of the site (as proposed) does not require a BDAR.

7.4 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The objective of the EPBC Act is to ensure that actions likely to cause a significant impact on MNES undergo an assessment and approval process. Under the EPBC Act, a person must not take an action that has, will have or is likely to have a significant impact on any of the MNES without approval from the Australian Government Minister for the Environment (the Minister). Proposed 'actions' that have the potential to significantly impact on matters of MNES must be referred to the Australian Minister for the Environment for assessment. The purpose of the referral process is to determine whether or not a proposed action will need formal assessment and approval under the EPBC Act, and what assessment method will apply. If the Minister determines that a referred project is a 'controlled action' under the EPBC Act, the approval of the Minister would be required. MNES relevant to this report include threatened species, ecological communities, and migratory species.

The EPBC Act has been considered in this assessment through:

- Desktop review to determine the listed biodiversity matters that are predicted to occur within the locality of the Proposal and hence could occur, subject to the habitats present.
- Field surveys for listed threatened entities including migratory species.
- Assessment of potential impacts on threatened and migratory species, including assessments of significance in accordance with the EPBC Act significant impact guidelines (Department of the Environment 2013) where relevant.
- Identification of suitable impact mitigation and environmental management measures for threatened and migratory species, where required.

This biodiversity assessment identified that the Proposal's impacts are not likely to have a significant impact on any threatened biodiversity listed under the EPBC Act (refer to **Appendix G**). Accordingly, an EPBC Act Referral is not considered a requirement for the Proposal.

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Appendix A

Photographs

Plate 1. Typical improved pasture at the site; view from north-east to west

Plate 2. Single immature tree to be removed in north-east of site (circled in red). Trees along the site boundary with James Creek Road will be retained in situ. View to south

Plate 3. Immature trees to be removed in south-east of site (circled in red); view to north

Plate 4. Mature Tallowwood (hollow-bearing tree) on the western boundary - to be retained in situ

Appendix B

Database Search Results

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Licensed Report of all Valid Records of Threatened (listed on BC Act 2016) or Commonwealth listed Animals in selected area [North: -29.40 West: 153.20 East: 153.30 South: -29.50] returned a total of 723 records of 44 species.
Report generated on 16/10/2023 11:30 AM

Kingdom	Class	Family	Species Code	Scientific Name	Common Name	NSW status	Comm. status	Records	Info
Animalia	Amphibia	Myobatrachidae	3137	*Crinia tinnula*	Wallum Froglet	V,P		1	
Animalia	Amphibia	Hylidae	3166	*Litoria aurea*	Green and Golden Bell Frog	E1,P	V	1	
Animalia	Amphibia	Hylidae	3169	*Litoria brevipalmata*	Green-thighed Frog	V,P		1	
Animalia	Aves	Casuariidae	0001	*Dromaius novaehollandiae*	Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area	E2,P		271	
Animalia	Aves	Columbidae	0025	*Ptilinopus magnificus*	Wompoo Fruit-Dove	V,P		5	
Animalia	Aves	Columbidae	0021	*Ptilinopus regina*	Rose-crowned Fruit-Dove	V,P		2	
Animalia	Aves	Podargidae	0314	*Podargus ocellatus*	Marbled Frogmouth	V,P		1	
Animalia	Aves	Apodidae	0334	*Hirundapus caudacutus*	White-throated Needletail	P	V,C,J,K	1	
Animalia	Aves	Ciconiidae	0183	*Ephippiorhynchus asiaticus*	Black-necked Stork	E1,P		23	
Animalia	Aves	Ardeidae	0197	*Botaurus poiciloptilus*	Australasian Bittern	E1,P	E	1	
Animalia	Aves	Accipitridae	0218	*Circus assimilis*	Spotted Harrier	V,P		1	
Animalia	Aves	Accipitridae	0226	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	V,P		14	
Animalia	Aves	Accipitridae	0230	*Lophoictinia isura*	Square-tailed Kite	V,P,3		2	
Animalia	Aves	Accipitridae	8739	*Pandion cristatus*	Eastern Osprey	V,P,3		53	
Animalia	Aves	Gruidae	0177	*Grus rubicunda*	Brolga	V,P		15	
Animalia	Aves	Burhinidae	0175	*Esacus magnirostris*	Beach Stone-curlew	E4A,P		4	
Animalia	Aves	Rostratulidae	0170	*Rostratula australis*	Australian Painted Snipe	E1,P	E	2	
Animalia	Aves	Scolopacidae	0149	*Numenius madagascariensis*	Eastern Curlew	P	CE,C,J,K	6	
Animalia	Aves	Laridae	0117	*Sternula albifrons*	Little Tern	E1,P	C,J,K	1	
Animalia	Aves	Psittacidae	0260	*Glossopsitta pusilla*	Little Lorikeet	V,P		1	
Animalia	Aves	Psittacidae	8913	*Pezoporus wallicus wallicus*	Eastern Ground Parrot	V,P,3		2	
Animalia	Aves	Strigidae	0248	*Ninox strenua*	Powerful Owl	V,P,3		1	
Animalia	Aves	Tytonidae	0252	*Tyto longimembris*	Eastern Grass Owl	V,P,3		4	
Animalia	Aves	Tytonidae	0250	*Tyto novaehollandiae*	Masked Owl	V,P,3		1	

Animalia	Aves	Pomatostomidae	8388	*Pomatostomus temporalis temporalis*	Grey-crowned Babbler (eastern subspecies)	V,P		31	
Animalia	Aves	Neosittidae	0549	*Daphoenositta chrysoptera*	Varied Sittella	V,P		2	
Animalia	Aves	Campephagidae	0428	*Coracina lineata*	Barred Cuckoo-shrike	V,P		4	
Animalia	Aves	Estrildidae	0652	*Stagonopleura guttata*	Diamond Firetail	V,P		2	
Animalia	Mammalia	Dasyuridae	1008	*Dasyurus maculatus*	Spotted-tailed Quoll	V,P	E	8	
Animalia	Mammalia	Dasyuridae	1017	*Phascogale tapoatafa*	Brush-tailed Phascogale	V,P		4	
Animalia	Mammalia	Dasyuridae	1045	*Planigale maculata*	Common Planigale	V,P		1	
Animalia	Mammalia	Phascolarctidae	1162	*Phascolarctos cinereus*	Koala	E1,P	E	9	
Animalia	Mammalia	Petauridae	1137	*Petaurus norfolcensis*	Squirrel Glider	V,P		6	
Animalia	Mammalia	Potoroidae	1187	*Aepyprymnus rufescens*	Rufous Bettong	V,P		18	
Animalia	Mammalia	Pteropodidae	1280	*Pteropus poliocephalus*	Grey-headed Flying-fox	V,P	V	177	
Animalia	Mammalia	Emballonuridae	1321	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	V,P		1	
Animalia	Mammalia	Molossidae	1329	*Micronomus norfolkensis*	Eastern Coastal Free-tailed Bat	V,P		5	
Animalia	Mammalia	Vespertilionidae	1354	*Chalinolobus nigrogriseus*	Hoary Wattled Bat	V,P		2	
Animalia	Mammalia	Vespertilionidae	1372	*Falsistrellus tasmaniensis*	Eastern False Pipistrelle	V,P		2	
Animalia	Mammalia	Vespertilionidae	1357	*Myotis macropus*	Southern Myotis	V,P		8	
Animalia	Mammalia	Vespertilionidae	1361	*Scoteanax rueppellii*	Greater Broad-nosed Bat	V,P		4	
Animalia	Mammalia	Vespertilionidae	1025	*Vespadelus troughtoni*	Eastern Cave Bat	V,P		1	
Animalia	Mammalia	Miniopteridae	1346	*Miniopterus australis*	Little Bent-winged Bat	V,P		17	
Animalia	Mammalia	Miniopteridae	3330	*Miniopterus orianae oceanensis*	Large Bent-winged Bat	V,P		7	

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Licensed Report of all Valid Records of Threatened (listed on BC Act 2016) or Commonwealth listed Plants in selected area [North: -29.40 West: 153.20 East: 153.30 South: -29.50] returned a total of 222 records of 8 species.
Report generated on 16/10/2023 11:30 AM

Kingdom	Class	Family	Species Code	Scientific Name	Common Name	NSW status	Comm. status	Records	Info
Plantae	Flora	Juncaginaceae	3363	*Maundia triglochinoides*		V		4	
Plantae	Flora	Lauraceae	8480	*Endiandra muelleri subsp. bracteata*	Green-leaved Rose Walnut	E1		6	
Plantae	Flora	Myrtaceae	4283	*Rhodamnia rubescens*	Scrub Turpentine	E4A	CE	5	
Plantae	Flora	Myrtaceae	4284	*Rhodomyrtus psidioides*	Native Guava	E4A	CE	1	
Plantae	Flora	Polygonaceae	5280	*Persicaria elatior*	Tall Knotweed	V	V	199	
Plantae	Flora	Polypodiaceae	8156	*Drynaria rigidula*	Basket Fern	E1,3		2	
Plantae	Flora	Proteaceae	5446	*Macadamia tetraphylla*	Rough-shelled Bush Nut	V	V	2	
Plantae	Flora	Simaroubaceae	9497	*Quassia sp. Moonee Creek*	Moonee Quassia	E1	E	3	

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Licensed Report of all Valid Records of Threatened (listed on BC Act 2016) or Commonwealth listed Communities in selected area [North: -29.40 West: 153.20 East: 153.30 South: -29.50] returned 0 records for 12 entities.
Report generated on 16/10/2023 11:31 AM

Kingdom	Class	Family	Species Code	Scientific Name	Common Name	NSW status	Comm. status	Records	Info
Community				*Coastal Cypress Pine Forest in the New South Wales North Coast Bioregion*	Coastal Cypress Pine Forest in the New South Wales North Coast Bioregion	E3		K	
Community				*Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*	Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K	
Community				*Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community*	Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community		E	K	
Community				*Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*	Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K	
Community				*Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*	Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K	
Community				*Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions*	Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	E3		K	
Community				*Lowland Rainforest of Subtropical Australia*	Lowland Rainforest of Subtropical Australia		CE	K	
Community				*Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion*	Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion	E3		K	
Community				*Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion*	Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion	E3		K	

Community	*Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*	Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	K	
Community	*Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	K	
Community	*Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions*	Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions	E3	K	

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 16-Oct-2023

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	6
Listed Threatened Species:	87
Listed Migratory Species:	62

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	4
Commonwealth Heritage Places:	None
Listed Marine Species:	72
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	7
Regional Forest Agreements:	1
Nationally Important Wetlands:	4
EPBC Act Referrals:	7
Key Ecological Features (Marine):	None
Biologically Important Areas:	1
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area	In feature area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community likely to occur within area	In feature area
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Community likely to occur within area	In buffer area only
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community likely to occur within area	In feature area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In buffer area only
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia			
Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Botaurus poiciloptilus			
Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area	In buffer area only
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In buffer area only
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Critically Endangered	Species or species habitat may occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat may occur within area	In buffer area only
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat may occur within area	In feature area
FISH			
Epinephelus daemelii Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Nannoperca oxleyana](#) Oxleyan Pygmy Perch [64468]	Endangered	Species or species habitat known to occur within area	In feature area
[Thunnus maccoyii](#) Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only
FROG			
[Litoria aurea](#) Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Litoria olongburensis](#) Wallum Sedge Frog [1821]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Mixophyes iteratus](#) Giant Barred Frog, Southern Barred Frog [1944]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
INSECT			
[Argynnis hyperbius inconstans](#) Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
[Chalinolobus dwyeri](#) Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Dasyurus maculatus maculatus (SE mainland population)](#) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area	In feature area
[Notamacropus parma](#) Parma Wallaby [89289]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Petauroides volans](#) Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In feature area
[Petaurus australis australis](#) Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Potorous tridactylus tridactylus			
Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pseudomys novaehollandiae			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area	In feature area
Xeromys myoides			
Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area	In feature area
PLANT			
Acronychia littoralis			
Scented Acronychia [8582]	Endangered	Species or species habitat known to occur within area	In feature area
Allocasuarina thalassoscopica			
[21927]	Endangered	Species or species habitat known to occur within area	In buffer area only
Angophora robur			
Sandstone Rough-barked Apple [56088]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Arthraxon hispidus			
Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Baloghia marmorata			
Marbled Balogia, Jointed Baloghia [8463]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Cryptostylis hunteriana			
Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area	In feature area
Endiandra hayesii Rusty Rose Walnut, Velvet Laurel [13866]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Eucalyptus glaucina Slaty Red Gum [5670]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Eucalyptus tetrapleura Square-fruited Ironbark [7490]	Vulnerable	Species or species habitat may occur within area	In feature area
Hibbertia marginata [21970]	Vulnerable	Species or species habitat known to occur within area	In feature area
Leichhardtia longiloba listed as Marsdenia longiloba Clear Milkvine [91911]	Vulnerable	Species or species habitat known to occur within area	In feature area
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area	In feature area
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat known to occur within area	In feature area
Melichrus gibberagee Narrow-leaf Melichrus [91558]	Endangered	Species or species habitat may occur within area	In buffer area only
Olax angulata Minnie Waters Olax [10666]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Owenia cepiodora Onionwood, Bog Onion, Onion Cedar [11344]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Paspalidium grandispiculatum a grass [10838]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat known to occur within area	In feature area
Prostanthera palustris Swamp Mint-bush [66703]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Rutidosis heterogama Heath Wrinklewort [13132]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Samadera sp. Moonee Creek (J.King s.n. Nov. 1949) [86885]	Endangered	Species or species habitat known to occur within area	In feature area
Syzygium hodgkinsoniae Smooth-bark Rose Apple, Red Lilly Pilly [3539]	Vulnerable	Species or species habitat may occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Vincetoxicum woollsii listed as Tylophora woollsii [40080]	Endangered	Species or species habitat likely to occur within area	In feature area
REPTILE			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Coeranoscincus reticulatus Three-toed Snake-tooth Skink [59628]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
SHARK			
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area	In buffer area only
Ardenna grisea Sooty Shearwater [82651]		Species or species habitat likely to occur within area	In buffer area only
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area	In buffer area only
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Marine Species			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Dugong dugon Dugong [28]		Species or species habitat may occur within area	In buffer area only
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In buffer area only
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In buffer area only
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area	In buffer area only
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area	In buffer area only
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area	In buffer area only
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In buffer area only
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting known to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area	In buffer area only
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area	In buffer area only
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In buffer area only
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area	In buffer area only
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Breeding known to occur within area	In feature area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area	In buffer area only
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area	In buffer area only
Tringa incana Wandering Tattler [831]		Roosting known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area	In buffer area only
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [11330]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11329]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Corporation [15744]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [11735]	NSW	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area	In buffer area only
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]		Species or species habitat likely to occur within area	In buffer area only
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area	In buffer area only
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area	In buffer area only
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area	In buffer area only
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In buffer area only
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area	In buffer area only
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Roosting known to occur within area overfly marine area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area overfly marine area	In feature area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area	In buffer area only
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area	In buffer area only
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area	In buffer area only
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In buffer area only
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area overfly marine area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area	In buffer area only
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area	In buffer area only
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area	In feature area
Pandion haliaetus Osprey [952]		Breeding known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In buffer area only
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area overfly marine area	In buffer area only
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area overfly marine area	In buffer area only
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Sterna striata White-fronted Tern [799]		Migration route may occur within area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Thalassarche melanophris](#) Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Thalassarche salvini](#) Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
[Thalassarche steadi](#) White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Tringa brevipes as Heteroscelus brevipes](#) Grey-tailed Tattler [851]		Roosting known to occur within area	In buffer area only
[Tringa incana as Heteroscelus incanus](#) Wandering Tattler [831]		Roosting known to occur within area	In buffer area only
[Tringa nebularia](#) Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area overfly marine area	In feature area
[Tringa stagnatilis](#) Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area	In buffer area only
[Xenus cinereus](#) Terek Sandpiper [59300]		Roosting known to occur within area overfly marine area	In buffer area only
Mammal			
[Dugong dugon](#) Dugong [28]		Species or species habitat may occur within area	In buffer area only
Reptile			
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State	Buffer Status
Bundjalung	National Park	NSW	In buffer area only
Chatsworth Hill	State Conservation Area	NSW	In buffer area only
Clarence Estuary	Nature Reserve	NSW	In buffer area only
Mororo Creek	Nature Reserve	NSW	In buffer area only
Woodford Island	Nature Reserve	NSW	In buffer area only
Yaegl	Nature Reserve	NSW	In feature area
Yuraygir	National Park	NSW	In buffer area only

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
North East NSW RFA	New South Wales	In feature area

Nationally Important Wetlands [Resource Information]

Wetland Name	State	Buffer Status
Bundjalung National Park	NSW	In buffer area only
Clarence River Estuary	NSW	In buffer area only
The Broadwater	NSW	In buffer area only
Wooloweyah Lagoon	NSW	In buffer area only

EPBC Act Referrals

[Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Manufactured Housing Estate	2022/09340		Assessment	In buffer area only
Controlled action				
Flying Fox Dispersal Action	2008/4363	Controlled Action	Completed	In buffer area only
Redevelopment of existing unused Prawn Farm for farming Black Tiger Prawns	2002/660	Controlled Action	Post-Approval	In buffer area only
Upgrading the Pacific Highway - Woolgoolga to Ballina Upgrade, NSW	2012/6394	Controlled Action	Post-Approval	In feature area
Not controlled action				
Construction of a Dual Occupancy Dwelling on a Residential Allotment	2009/4955	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Dispersal of Flying Foxes from Maclean High School	2010/5656	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

Biologically Important Areas

Scientific Name	Behaviour	Presence	Buffer Status
Dolphins			
Tursiops aduncus			
Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Known to occur	In buffer area only

Bioregional Assessments

SubRegion	BioRegion	Website	Buffer Status
Clarence-Moreton	Clarence-Moreton	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Appendix C

Assessment of Native Groundcover Datasheet

Assessing Native Groundcover
Quadrat Field Assessment Method Field Sheet

Date:	10/10/2023
Assessor:	HRL
Project #:	3204 James Creek Rd

Start time:	11:00
End time:	14:00

Field notes:	grass is grazed fairly short by macropods.
	north facing part of the slope has some dead patches, dry Spring presumably responsibl
	Transects probably accurately reflect majority of the paddock species
	paddock dominated by Kikuyu, Paspalum, Whiskey Grass
	Most common native picked up in transects was Dichelachne
	birds- Kookaburra, Pipit, Kingfisher, previous visit group of Grey Crowned Babblers

Summary Data

Average overall cover
75.5

Average native cover
1.86

Average native groundcover as a proportion of total groundcover (see note below)
2

** Note: The row above is rounded to the nearest whole number*

% Native Cover Rules - When to Include Grasslands in BOS Clea

Where there is greater than 75% native vegetation in the ground cover then treat the vegetation as 100% native and assess the area to be cleared accordingly

Where the proportion of exotic to native vegetation in the ground cover is between 15-75% - the calculation of native vegetation extent is adjusted by multiplying the proportion (%) of native cover by the total area to be cleared

Where there is less than 15% native ground cover all vegetation can be considered exotic and the area clearing threshold will not be exceeded.

	Field Data															Summary Data		
	Q#	Overall	Native	Q#	Overall	Native	Q#	Overall	Native	Q#	Overall	Native	Q#	Overall	Native		Overall	Native
Patch 1	**Q1**	75	10	**Q2**	60	0	**Q3**	100	0	**Q4**	75	0	**Q5**	75	0	**Patch 1 # Plots:**	**10**	**10**
	Q6	60	0	**Q7**	85	1	**Q8**	90	0	**Q9**	90	0	**Q10**	80	0	**Patch 1 Average:**	**79**	**1.1**
Patch 2	**Q1**	100	0	**Q2**	95	10	**Q3**	70	0	**Q4**	85	2	**Q5**	95	1	**Patch 2 # Plots:**	**10**	**10**
	Q6	90	1	**Q7**	100	1	**Q8**	100	1	**Q9**	95	10	**Q10**	90	1	**Patch 2 Average:**	**92**	**2.7**
Patch 3	**Q1**	100	10	**Q2**	100	0	**Q3**	100	2	**Q4**	100	1	**Q5**	95	10	**Patch 3 # Plots:**	**10**	**10**
	Q6	95	5	**Q7**	100	0	**Q8**	95	5	**Q9**	95	10	**Q10**	100	5	**Patch 3 Average:**	**98**	**4.8**
Patch 4	**Q1**	20	0	**Q2**	30	0	**Q3**	5	0	**Q4**	10	0	**Q5**	10	0	**Patch 4 # Plots:**	**10**	**10**
	Q6	50	0	**Q7**	10	0	**Q8**	40	0	**Q9**	20	0	**Q10**	50	0	**Patch 4 Average:**	**24.5**	**0**
Patch 5	**Q1**	50	5	**Q2**	75	0	**Q3**	95	1	**Q4**	90	0	**Q5**	80	0	**Patch 5 # Plots:**	**10**	**10**
	Q6	95	1	**Q7**	90	0	**Q8**	80	0	**Q9**	90	0	**Q10**	95	0	**Patch 5 Average:**	**84**	**0.7**

Species List (all plots)
*Pennisetum clandestinum
*Polygala paniculata
*Paspalum
Dichelachne micrantha
*Conyza bonariensis
*Senecio madagascariensis
*Gamochaeta purpurea
*Ambrosia artemisiifolia
*Trifolium repens
Centella asiatica
*Sporobolus africanus
*Bidens pilosa
Microtis parviflora
*Baccharis halimifolia
*Andropogon virginicus
*Ageratum houstonianum
*Lysimachia arvensis
Lobelia purpurascens
*Verbena bonariensis
*Stachys arvensis
Lachnagrostis filiformis
Cymbopogon refractus
Sphaeromophaea australis

	Quadrat Location		
		along 0-50 m	across 0-10 m
Patch 1	**Q1**	2	2
	Q2	3	10
	Q3	4	5
	Q4	8	9
	Q5	12	1
	Q6	17	6
	Q7	28	5
	Q8	34	1
	Q9	39	7
	Q10	46	9
Patch 2	**Q1**	9	8
	Q2	30	10
	Q3	31	8
	Q4	34	8
	Q5	34	4
	Q6	41	6
	Q7	44	7
	Q8	47	5
	Q9	49	9
	Q10	50	7
Patch 3	**Q1**	0	7
	Q2	4	0
	Q3	13	1
	Q4	20	0
	Q5	38	3
	Q6	47	5
	Q7	48	8
	Q8	48	6
	Q9	49	0
	Q10	50	2
Patch 4	**Q1**	1	1
	Q2	7	2
	Q3	12	9
	Q4	16	10
	Q5	17	3
	Q6	33	10
	Q7	36	6
	Q8	37	3
	Q9	47	6
	Q10	49	3
Patch 5	**Q1**	2	1
	Q2	7	6
	Q3	9	3
	Q4	12	0
	Q5	13	8
	Q6	13	5
	Q7	24	6
	Q8	25	1
	Q9	30	1
	Q10	33	6

Appendix D

Flora Inventory

Table D1. Flora Inventory

Family	Scientific name	Common name
Amaranthaceae	*Gomphrena celosioides**	Gomphrena Weed
Apiaceae	*Centella asiatica*	Pennywort
Apiaceae	*Cyclospermum leptophyllum**	Slender Celery
Apocynaceae	*Gomphocarpus physocarpus**	Balloon Cotton Bush
Asteraceae	*Ambrosia artemisiifolia**	Annual Ragweed
Asteraceae	*Baccharis halimifolia**	Groundsel Bush
Asteraceae	*Bidens pilosa**	Cobbler's Pegs
Asteraceae	*Cirsium vulgare**	Spear Thistle
Asteraceae	*Conyza bonariensis**	Flaxleaf Fleabane
Asteraceae	*Hypochaeris radicata**	Catsear
Asteraceae	*Gamochaeta americana**	Cudweed
Asteraceae	*Ozothamnus diosmifolius*	White Dogwood
Asteraceae	*Senecio madagascariensis**	Fireweed
Asteraceae	*Sigesbeckia orientalis subsp. orientalis*	Indian Weed
Asteraceae	*Sonchus asper**	Prickly Sowthistle
Casuarinaceae	*Casuarina glauca*	Swamp Oak
Convolvulaceae	*Dichondra repens*	Kidney Weed
Cyperaceae	*Cyperus brevifolius**	Mullumbimby Couch
Cyperaceae	*Cyperus polystachyos*	Bunchy Sedge
Cyperaceae	*Juncus usitatus*	Pin Rush
Elaeocarpaceae	*Elaeocarpus obovatus*	Hard Quandong
Fabaceae (Faboideae)	*Podolobium scandens*	Netted Shaggy Pea
Fabaceae (Faboideae)	*Pultenaea villosa*	Hairy Bush-pea
Fabaceae (Faboideae)	*Trifolium repens**	White Clover
Fabaceae (Mimosoideae)	*Acacia concurrens*	Curracabah
Fabaceae (Mimosoideae)	*Acacia disparrima subsp. disparrima*	Salwood
Fabaceae (Mimosoideae)	*Acacia falcata*	Hickory Wattle
Fabaceae (Mimosoideae)	*Acacia melanoxylon*	Sally Wattle
Hypericaceae	*Hypericum gramineum*	Small St John's Wort
Lauraceae	*Cinnamomum camphora**	Camphor Laurel
Lomandraceae	*Lomandra longifolia*	Spiny-headed Mat-rush
Lomandraceae	*Lomandra multiflora*	Many-flowered Mat-rush
Luzuriagaceae	*Eustrephus latifolius*	Wombat Berry
Luzuriagaceae	*Geitonoplesium cymosum*	Scrambling Lily
Lythraceae	*Cuphea carthagenensis**	Cuphea
Malvaceae	*Sida rhombifolia**	Paddy's Lucerne
Moraceae	*Maclura cochinchinensis*	Cockspur Thorn
Myrtaceae	*Angophora floribunda*	Rough-barked Apple

Family	Scientific name	Common name
Myrtaceae	*Angophora woodsiana*	Smudgy Apple
Myrtaceae	*Corymbia intermedia*	Pink Bloodwood
Myrtaceae	*Eucalyptus carnea*	White Mahogany
Myrtaceae	*Eucalyptus microcorys*	Tallowwood
Myrtaceae	*Eucalyptus propinqua*	Small-fruited Grey Gum
Myrtaceae	*Eucalyptus siderophloia*	Grey Ironbark
Myrtaceae	*Eucalyptus tindaliae*	Grafton Stringybark
Myrtaceae	*Lophostemon suaveolens*	Swamp Box
Myrtaceae	*Melaleuca quinquenervia*	Broad-leaved Paperbark
Phormiaceae	*Dianella caerulea*	Blue Flax lily
Phytolaccaceae	*Phytolacca octandra**	Inkweed
Poaceae	*Andropogon virginicus**	Whiskey Grass
Poaceae	*Axonopus fissifolius**	Narrow-leaved Carpet Grass
Poaceae	*Cenchrus clandestinus**	Kikuyu
Poaceae	*Cynodon dactylon*	Common Couch
Poaceae	*Dichelachne micrantha*	Shorthair Plumegrass
Poaceae	*Echinopogon ovatus*	Forest Hedgehog Grass
Poaceae	*Eragrostis curvula**	African Lovegrass
Poaceae	*Eragrostis leptostachya*	Paddock Lovegrass
Poaceae	*Imperata cylindrica*	Blady Grass
Poaceae	*Lachnagrostis aemula*	Blowngrass
Poaceae	*Microlaena stipoides var. stipoides*	Weeping Grass
Poaceae	*Paspalum mandiocanum**	Broad-leaved Paspalum
Poaceae	*Paspalum urvillei**	Vasey Grass
Poaceae	*Sporobolus africanus**	Parramatta Grass
Polygalaceae	*Polygala paniculata**	Milkwort
Polygonaceae	*Persicaria decipiens*	Slender Knotweed
Polygonaceae	*Rumex crispus**	Curled Dock
Primulaceae	*Lysimachia arvensis**	Scarlet Pimpernel
Ranunculaceae	*Ranunculus inundatus*	River Buttercup
Solanaceae	*Physalis peruviana**	Cape Gooseberry
Solanaceae	*Solanum aviculare*	Kangaroo Apple
Solanaceae	*Solanum mauritianum**	Wild Tobacco Bush
Verbenaceae	*Lantana camara**	Lantana
Verbenaceae	*Verbena bonariensis**	Purpletop

* Introduced species

Appendix E

Fauna Inventory

Table E1. Fauna Inventory

Scientific name	Common name	Record Basis
Birds		
Ardea ibis	Cattle Egret	O
Chenonetta jubata	Australian Wood Duck	C
Coracina novaehollandiae	Black-faced Cuckoo-shrike	O
Corvus orru	Torresian Crow	O
Cracticus nigrogularis	Pied Butcherbird	O
Cracticus tibicen	Australian Magpie	O
Dacelo novaeguineae	Laughing Kookaburra	O
Eolophus roseicapilla	Galah	O
Eurystomus orientalis	Dollarbird	C
Gerygone olivacea	White-throated Gerygone	C
Grallina cyanoleuca	Magpie Lark	O
Hirundo neoxena	Welcome Swallow	O
Malurus cyaneus	Superb Fairy Wren	O
Manorina melanocephala	Noisy Miner	O
Myzomela sanguinolenta	Scarlet Honeyeater	C
Ocyphaps lophotes	Crested Pigeon	O
Oriolus sagittatus	Olive-backed Oriole	C
Pachycephala rufiventris	Rufous Whistler	C
Pardalotus striatus	Striated Pardalote	C
Platycercus eximius	Eastern Rosella	O
Pomatostomus temporalis temporalis	Grey-crowned Babbler	O
Rhipidura leucophrys	Willie Wagtail	O
Todiramphus sanctus	Sacred Kingfisher	C
Trichoglossus haematodus	Rainbow Lorikeet	O
Vanellus miles	Masked Lapwing	O
Mammals		
Bos taurus	Cow	O
Macropus giganteus	Eastern Grey Kangaroo	O
Trichosurus sp.	Brushtail Possum	Scat

C= Call; O = Observed

Appendix F

Potential for Threatened Fauna Occurrence

Threatened Fauna Potential Occurrence Assessment

For this proposed activity, the likelihood of occurrence of threatened and migratory fauna species and populations was determined based on the criteria shown in **Table F.1**

Table F.1 Potential of Occurrence Criteria for Threatened Species and Populations of Fauna

Potential of Occurrence	Criteria
Known	The species was observed in the subject site either during the current survey or during another survey less than one year prior.
High	• A species has a high likelihood of occurrence if: • The subject site contains or forms part of a large area of high-quality suitable habitat. • Important habitat elements (i.e. for breeding or important life cycle periods such as winter foraging periods) are abundant within the subject site. • The species has been recorded recently in similar habitat in the locality. • The subject site is likely to support resident populations or to contain habitat that is visited by the species during regular seasonal movements or migration.
Moderate	• A species has a moderate likelihood of occurrence if: • The subject site contains or forms part of a small area of high-quality suitable habitat. • The subject site contains or forms part of a large area of marginal habitat. • Important habitat elements (i.e. for breeding or important life cycle periods such as winter foraging periods) are sparse or absent within the subject site • The subject site is unlikely to support resident populations or to contain habitat that is visited by the species during regular seasonal movements or migration but is likely to be used occasionally during seasonal movements and/ or dispersal.
Low	• A species has a low likelihood of occurrence if: • Potentially suitable habitat exists but the species has not been recorded recently (previous 10 years) in the locality despite intensive survey (i.e. the species is considered to be locally extinct). • The species is considered to be a rare vagrant, likely only to visit the subject site very rarely; e.g. during juvenile dispersal or exceptional climatic conditions (e.g. extreme drought conditions in typical habitat of inland birds).
None	Suitable habitat is absent from the subject site.

Table F.2 Threatened Fauna Potential Occurrence Assessment*

***Marine reptiles, mammals and pelagic shorebirds for which no habitat occurs are not included**

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/or OEH Threatened Species Profiles websites)	Potential of Occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
INSECTS						
Argynnis hyperbius inconstans	Australian Fritillary	E	CE	Restricted to south-east Queensland and north-east NSW in open swampy coastal areas where the larval food plant Arrowhead Violet (*Viola betonicifolia*) occurs.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.
AMPHIBIANS						
Crinia tinnula	Wallum Froglet	V	-	Acid paperbark and sedge swamps known as 'wallum'; this is a banksia-dominated lowland heath ecosystem characterised by acidic waterbodies.	Low	Poor quality habitat occurs at the site; no further assessment required.
Litoria aurea	Green and Golden Bell Frog	E	V	Paperbark swamps and sedge swamps of the coastal 'wallum' country amongst sedges and rushes.	Low	Poor quality habitat occurs at the site; no further assessment required.
Litoria brevipalmata	Green-thighed Frog	V	-	Rainforest, moist to dry eucalypt forest and heath, typically where surface water gathers after rain.	Low	Poor quality habitat occurs at the site; no further assessment required.
Litoria olongburensis	Olongburra Frog	V	V	Amongst vegetation in and around permanent swamps, lagoons, farm dams and on flood-prone river flats, particularly where there are bullrushes or spikerushes.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.
Mixophyes iteratus	Giant Barred Frog	E	E	Deep, damp leaf litter in rainforests, moist eucalypt forest and near dry eucalypt forest.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/or OEH Threatened Species Profiles websites)	Potential of Occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
REPTILES						
Coeranoscincus reticulatus	Three-toed Snake-tooth Skink	V	V	Rainforest and occasionally moist eucalypt forest, on loamy or sandy soils.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.
FISH						
Nannoperca oxleyana	Oxleyan Pygmy Perch	E (FM Act)	E	Still or slow-moving acidic waterbodies with areas of dense aquatic vegetation and undercut banks in banksia dominated lowland heath.	None	No suitable habitat occurs at the site. No BioNet records within locality: no further assessment required.
AVIFAUNA						
Anthochaera phrygia	Regent Honeyeater	CE	CE	Dry open forest and woodland with an abundance of nectar-producing eucalypts, particularly box-ironbark woodland, swamp mahogany forests, and riverine sheoak woodlands.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.
Botaurus poiciloptilus	Australasian Bittern	E	E	Permanent freshwater wetlands with tall dense vegetation, particularly bullrushes and spikerushes.	Low	Poor quality habitat occurs at the site; no further assessment required.
Calyptorhynchus lathami lathami	South Eastern Glossy Black-Cockatoo	V	V	Sheoaks in coastal forests and woodlands, timbered watercourses, and moist and dry eucalypt forests of the coast and the Great Divide up to 1,000 m. Hollow nesters. In central NSW, a very high preference for *E. crebra* among other Eucalyptus, living or dead trees, >8 m above ground, in branches >30 cm diam, steeply angled.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.
Circus assimilis	Spotted Harrier	V	-	Grassy open woodland, inland riparian woodland, grassland and shrub steppe.	Low	Poor quality habitat occurs at the site; no further assessment required.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/or OEH Threatened Species Profiles websites)	Potential of Occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
Coracina lineata	Barred Cuckoo-shrike	V	-	Rainforest, eucalypt woodlands, swamp woodlands and timber along watercourses.	Low	Poor quality habitat occurs at the site; no further assessment required.
Cyclopsitta diophthalma coxeni	Coxen's Fig-parrot	CE	CE	Drier rainforests and adjacent wet eucalypt forest, wetter lowland also wetter lowland rainforests.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.
Daphoenositta chrysoptera	Varied Sittella	V	-	Inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.	Low	Poor quality habitat occurs at the site; no further assessment required.
Dromaius novaehollandiae	Emu population in the NSW North Coast Bioregion and Port Stephens LGA	E	-	Open forest, woodland, coastal heath, coastal dunes, wetland areas, tea tree plantations and open farmland, and occasionally in littoral rainforest.	**Moderate**	**Potential foraging habitat occur at the site. BioNet records in the locality; Assessment of Significance undertaken.**
Ephippiorhynchus asiaticus	Black-necked Stork	E	-	Swamps, mangroves, mudflats, dry floodplains.	Low	Poor quality habitat occurs at the site; no further assessment required.
Erythrotriorchis radiatus	Red Goshawk	CE	E	Open woodland and forest, preferring a mosaic of vegetation types, a large population of birds as a source of food, and permanent water. Typically found in riparian habitats along or near watercourses or wetlands. In NSW, preferred habitats include mixed subtropical rainforest, Melaleuca swamp forest and riparian Eucalyptus forest of coastal rivers. Population in NSW is naturally small (probably only one pair) and lies at extreme of the natural range of the species in Australia.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.
Esacus magnirostris	Beach Stone-curlew	CE	-	Tidal flats at the mouth of estuaries or on open beaches.	None	No suitable habitat occurs at the site; no further assessment required.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/or OEH Threatened Species Profiles websites)	Potential of Occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
Falco hypoleucos	Grey Falcon	V	V	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. Frequents timbered lowland plains, particularly Acacia shrublands with watercourses, but also hunts in tussock grassland and open woodland, feeding almost entirely on small birds and rarely small mammals. Nests in tall trees such as *E.camaldulensis* and *E.coolabah*, reusing other raptors nests.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.
Glossopsitta pusilla	Little Lorikeet	V	-	Forages in open Eucalyptus forest and woodland; also feeds on Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity.	**Moderate**	**Potential foraging habitat occurs at the site; Assessment of Significance undertaken.**
Grantiella picta	Painted Honeyeater	V	V	Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. Specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus *Amyema*.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.
Grus rubicunda	Brolga	V	-	Shallow swamps, floodplains, grasslands and pastoral lands, usually in pairs or parties.	Low	Poor quality habitat occurs at the site; no further assessment required.
Haliaeetus leucogaster	White-bellied Sea-eagle	V	-	Coastal habitats and around terrestrial wetlands characterised by the presence of large areas of open water (larger rivers, swamps, lakes, ocean). Habitats may include freshwater swamps, lakes, reservoirs, billabongs, saltmarsh and sewage ponds in addition to bays and inlets, beaches, reefs, lagoons, estuaries and mangroves.	Low	Poor quality habitat occurs at the site; no further assessment required.
Lathamus discolor	Swift Parrot	E	CE	On mainland Australia foraging occurs where eucalypts are flowering profusely or where abundant lerp infestations occur. Favoured feed trees include winter flowering species such as Swamp Mahogany *Eucalyptus robusta*, Spotted Gum *Corymbia maculata*, Red Bloodwood *C. gummifera*, Forest Red Gum *E.*	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/or OEH Threatened Species Profiles websites)	Potential of Occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
				tereticornis, Mugga Ironbark *E. sideroxylon*, and White Box *E. albens*. Commonly used lerp infested trees include Inland Grey Box *E. microcarpa*, Grey Box *E. moluccana*, Blackbutt *E. pilularis* and Yellow Box *E. melliodora*.		
Lophoictinia isura	Square-tailed Kite	V	-	Dry woodland and open forest, particularly along major rivers and belts of trees in urban or semi-urban areas. Home ranges can extend over at least 100 km2.	Low	Poor quality habitat occurs at the site; no further assessment required.
Ninox strenua	Powerful Owl	V	-	Woodland and open forest to tall moist forest and rainforest. Requires large tracts of forest or woodland habitat but may also occur in fragmented landscapes.	Low	Poor quality habitat occurs at the site; no further assessment required.
Pandion cristatus	Eastern Osprey	V	-	Littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. Typically occur in coastal areas but occasionally travel inland along major rivers. Wetland habitats include inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes.	Low	Poor quality habitat occurs at the site; no further assessment required.
Pezoporus wallicus wallicus	Eastern Ground Parrot	V	-	Heathland and sedgeland within or adjacent to swamps.	Low	Poor quality habitat occurs at the site; no further assessment required.
Podargus ocellatus	Marbled Frogmouth	V	-	Subtropical rainforest spending most time is deep, wet sheltered gullies.	Low	Poor quality habitat occurs at the site; no further assessment required.
Pomatostomus temporalis temporalis	Grey-crowned Babbler	V	-	Open woodlands dominated by mature eucalypts, with regenerating trees, tall shrubs, and an intact ground cover of grass and forbs.	**Known**	**Species recorded at the site during site visits; Assessment of Significance undertaken.**
Ptilinopus magnificus	Wompoo Fruit-dove	V	-	Rainforests, low-elevation moist eucalypt forest, and Brush Box forests.	Low	Poor quality habitat occurs at the site; no further assessment required.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/or OEH Threatened Species Profiles websites)	Potential of Occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
Ptilinopus regina	Rose-crowned Fruit-dove	V	-	Subtropical and dry rainforest, moist eucalypt forest and swamp forest.	Low	Poor quality habitat occurs at the site; no further assessment required.
Rostratula australis	Australian Painted Snipe	E	E	Well-vegetated shallows and margins of wetlands, dams, sewage ponds, wet pastures, marshy areas, irrigation systems, lignum, tea-tree scrub, and open timber.	Low	Poor quality habitat occurs at the site; no further assessment required.
Stagonopleura guttata	Diamond Firetail	V	V	Grassy eucalypt woodlands, open forest, mallee, temperate grassland, and secondary grassland derived from other communities, riparian areas, and sometimes in lightly wooded farmland.	**Moderate**	**Potential foraging habitat occurs at the site; Assessment of Significance undertaken.**
Sternula albifrons	Little Tern	E	-	Coastal waters, bays, shallow inlets, salt or brackish lakes.	Low	Poor quality habitat occurs at the site; no further assessment required.
Sternula nereis nereis	Australian Fairy Tern	-	V	Nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. Feeds in Coastal waters.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.
Turnix melanogaster	Black-breasted Button-quail	CE	V	Drier rainforests and vine scrubs, often in association with Hoop Pine and a deep moist leaf litter layer. During drought it may move to adjacent wetter rainforests.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.
Tyto longimembris	Eastern Grass Owl	V	-	Areas of tall grass, including tussocks in swampy areas, grassy plains, swampy heath, cane grass, sedges on flood plains.	Low	Poor quality habitat occurs at the site; no further assessment required.
Tyto novaehollandiae	Masked Owl	V	-	Dry eucalypt forest and woodlands.	Low	Poor quality habitat occurs at the site; no further assessment required.

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/or OEH Threatened Species Profiles websites)	Potential of Occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
MAMMALS						
Aepyprymnus rufescens	Rufous Bettong	V	-	Tall moist eucalypt forest to open woodland with tussock grass understorey.	Low	Poor quality habitat occurs at the site; no further assessment required.
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	Near cave entrances and crevices in cliffs.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.
Chalinolobus nigrogriseus	Hoary Wattled Bat	V	-	Dry open eucalypt forest dominated by spotted gum, boxes and ironbarks. Also, healthy coastal forests where Red Bloodwood and Scribbly Gum are common. Naturally sparse understorey is favourable.	**Moderate**	**Potential roosting and foraging habitat occurs at the site; Assessment of Significance undertaken.**
Dasyurus maculatus	Spotted-tailed Quoll	V	E	Dry and moist eucalypt forests and rainforests, fallen hollow logs, large rocky outcrops.	Low	Poor quality habitat occurs at the site; no further assessment required.
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-	Moist and dry eucalypt forest and rainforest, particularly at high elevations.	**Moderate**	**Potential roosting and foraging habitat occurs at the site; Assessment of Significance undertaken.**
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V	-	Occurs in dry sclerophyll forest and woodland east of the Great Dividing Range. Roosts in tree hollows.	**Moderate**	**Potential roosting and foraging habitat occurs at the site; Assessment of Significance undertaken.**
Miniopterus australis	Little Bent-winged Bat	V	-	Moist eucalypt forest, rainforest and dense coastal scrub.	**Moderate**	**Potential roosting and foraging habitat occurs at the site; Assessment of Significance undertaken.**
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	Forest or woodland, roost in caves, old mines and stormwater channels.	**Moderate**	**Potential roosting and foraging habitat occurs at the site;**

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/or OEH Threatened Species Profiles websites)	Potential of Occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
						Assessment of Significance undertaken.
Myotis macropus	Southern Myotis	V	-	Bodies of water, rainforest streams, large lakes, reservoirs.	**Moderate**	**Potential foraging habitat occurs at the site; Assessment of Significance undertaken.**
Petauroides volans	Southern Greater Glider	E	E	Ranges and coastal plains of eastern Australia, where it inhabits a variety of eucalypt forests and woodlands. Feeds on Eucalyptus leaves, with some buds and flowers, favoured species vary regionally. Prefers large hollows in large old trees.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.
Petaurus australis australis	Yellow-bellied Glider (south-eastern)	V	V	Tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Dens in tree hollows of large trees, often in family groups. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.
Petaurus norfolcensis	Squirrel Glider	V	-	Blackbutt, bloodwood and ironbark eucalypt forest with heath understorey in coastal areas, and box-ironbark woodlands and River Red Gum forest inland.	**Moderate**	**Potential foraging habitat occurs at western margin of the site; Assessment of Significance undertaken.**
Phascogale tapoatafa	Brush-tailed Phascogale	V	-	Drier forests and woodlands with hollow-bearing trees and sparse ground cover.	**Moderate**	**Potential foraging habitat occurs at western margin of the site; Assessment of Significance undertaken.**
Phascolarctos cinereus	Koala	E	E	Appropriate food trees in forests and woodlands, and treed urban areas. Ideally rainfall 700-1500 mm but can be found in more extreme environments. Home ranges for individuals vary widely from 3-500 ha. Utilise more than 400 species of tree, with localised preferences.	**Moderate**	**Potential foraging habitat occurs at the site; Assessment of Significance undertaken.**

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/or OEH Threatened Species Profiles websites)	Potential of Occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
Planigale maculata	Common Planigale	V	-	Rainforest, eucalypt forest, heathland, marshland, grassland and rocky areas with surface cover close to water.	Low	Poor quality habitat occurs at the site; no further assessment required.
Potorous tridactylus	Long-nosed Potoroo	V	V	Cool temperate rainforest, moist and dry forests, and wet heathland, inhabiting dense layers of grass, ferns, vines and shrubs.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.
Pseudomys novaehollandiae	New Holland Mouse	-	V	Occurs in open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	**Moderate**	**Potential foraging habitat occurs at the site; Assessment of Significance undertaken.**
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-	Forages in a variety of habitats, roosts in tree hollows and buildings.	**Moderate**	**Potential roosting and foraging habitat occur at the site; Assessment of Significance undertaken.**
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-	Woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest.	**Moderate**	**Potential roosting and foraging habitat occur at the site; Assessment of Significance undertaken.**
Vespadelus troughtoni	Eastern Cave Bat	V	-	Cave roosting species found in dry open forest and woodland near cliffs and rocky overhangs.	Low	Poor quality habitat occurs at the site; no further assessment required.
Xeromys myoides	False Water-rat	-	V	Primarily in habitats mangrove forests but has been recorded in a variety of well-watered habitats including, freshwater lagoons, sedged lakes close to foredunes, and swamps.	Low	Poor quality habitat occurs at the site. No BioNet records within locality; no further assessment required.

V = Vulnerable; E = Endangered; CE = Critically Endangered

Appendix G

Tests of Significance

BC Act Five-part Tests for Threatened Species

Tests of significance ('five-part tests') under Section 7.3 of the BC Act have been completed for the following threatened fauna species:

- Brush-tailed Phascogale.
- Diamond Firetail.
- Eastern Coastal Free-tailed Bat.
- Eastern False Pipistrelle.
- Emu population NSW North Coast Bioregion.
- Greater Broad-nosed Bat.
- Grey-crowned Babbler.
- Grey-headed Flying-fox.
- Hoary Wattled Bat.
- Koala.
- Large Bent-winged Bat.
- Little Bent-winged Bat.
- Little Lorikeet.
- Southern Myotis.
- Squirrel Glider.
- Yellow-bellied Sheathtail-bat.

The site habitat values and extent of local population per species/ species group are detailed below. To minimise repetition, the responses to the five-part tests are structured as follows:

- Part (a), (c), (d) and (e) are answered per species or as a collective group of species depending on the nature of impacts.
- Part (b) deals specifically with threatened ecological communities, and hence is not relevant to the subject threatened species assessment.

a) In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Brush-tailed Phascogale

Brush-tailed Phascogales prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. They are agile climbers foraging preferentially in rough barked trees of 25 cm DBH or greater. The diet mostly comprises arthropods but also includes other invertebrates, nectar and sometimes small vertebrates. Females have exclusive territories of approximately 20 - 40 ha, while males have overlapping territories often greater than 100 ha. Brush-tailed Phascogales nest and shelter in tree hollows with entrances 2.5 - 4 cm wide and use many different hollows over a short time span. Mating occurs May - July; males die soon after the mating season whereas females can live for up to three years but generally only produce one litter.

Threatening processes for this species include:

- Loss and fragmentation of habitat.
- Loss of hollow-bearing trees.
- Predation by foxes and cats.
- Competition for nesting hollows with the introduced honeybee.

Potential Impacts of the Proposal

The Proposal would result in the loss of up to 0.1 ha of PCT 3253 and non-native pastureland; no hollow-bearing trees will be removed. The vegetation to be removed comprises low quality habitat for Brush-tailed Phascogales in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Brush-tailed Phascogale would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Diamond Firetail

The Diamond Firetail is endemic to south-eastern Australia, extending from central Queensland to the Eyre Peninsula in South Australia. It is widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Central and South Western Slopes and the North West Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. This species has a scattered distribution over the rest of NSW, though is very rare west of the Darling River.

The Diamond Firetail is found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum Eucalyptus pauciflora Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland.

They appear to be sedentary, though some populations move locally, especially those in the south. Diamond Firetail feed exclusively on the ground, on ripe and partly-ripe grass and herb seeds and green leaves, and on insects (especially in the breeding season). They roost in dense shrubs or in smaller nests built especially for roosting. Nests are globular structures built either in the shrubby understory, or higher up, especially under hawk's or raven's nests.

Threatening processes for this species include:

- Clearing and fragmentation of woodland, open forest, grassland and mallee habitat for agriculture and residential development, and firewood collection.
- Poor regeneration of open forest and woodland habitats. Invasion of weeds, resulting in the loss of important food plants.
- Invasion of weeds, resulting in loss of important food plants.
- Modification and destruction of ground - and shrub layers within habitat through removal of native plants, litter and fallen timber; introduction of exotic pasture grasses; heavy grazing and compaction by stock; and frequent fire.
- Predation of eggs and nestlings by increased populations of native predators such as the Pied Currawong *Strepera graculina*.
- Risk of local extinction due to small, isolated populations.
- Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners.

Potential Impacts of the Proposal

The Proposal would result in the loss of up to 0.1 ha of PCT 3253 and non-native pastureland that is regarded as low-quality foraging habitat for the Diamond Firetail. Additionally, this represents only a minor portion of the potential foraging habitat available within remnant forests/ woodlands occurring in the locality that would not be affected by the Proposal.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Diamond Firetail would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Eastern Coastal Free-tailed Bat

The Eastern Coastal Free-tailed Bat occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. They typically roost in tree hollows but will also roost under bark or in man-made structures. Usually solitary but also recorded roosting communally; probably insectivorous.

Threatening processes for this species include:

- Loss of hollow-bearing trees.
- Loss of foraging habitat.
- Application of pesticides in or adjacent to foraging areas.
- Artificial light sources spilling onto foraging and/ or roosting habitat.
- Large scale wildfire or hazard reduction burns on foraging and/ or roosting habitat.

Potential Impacts from the Proposal

The Proposal would result in the loss of up to 0.1 ha of PCT 3253; no hollow-bearing trees will be removed. The majority of the development footprint comprises cleared pasture which comprises low quality foraging habitat for the Eastern Coastal Free-tailed Bat in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Eastern Coastal Free-tailed Bat would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Eastern False Pipistrelle

The Eastern False Pipistrelle prefers moist habitats, with trees taller than 20 m. It hunts beetles, moths, weevils and other flying insects above or just below the tree canopy. Generally, roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. Females are pregnant in late spring to early summer.

Threatening processes for this species include:

- Disturbance to winter roosting and breeding sites.
- Loss of roosting habitat, primarily hollow-bearing eucalypts.
- Loss and fragmentation of foraging habitat, particularly extensive areas of continuous forest and areas of high productivity.

Potential Impacts from the Proposal

The Proposal would result in the loss of up to 0.1 ha of PCT 3253; no hollow-bearing trees will be removed. The majority of the development footprint comprises cleared pasture which comprises low quality foraging habitat for the Eastern False Pipistrelle in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Eastern False Pipistrelle would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Emu Population NSW North Coast Bioregion

The site occurs within an area known to be utilised by the Coastal Emu Population which is listed as an endangered population under the BC Act. The Yuraygir sub population occurring south of the Clarence River is known to occupy the coastal strip of Yuraygir National Park as well as surrounding contiguous areas in the Sandon and Brooms Head area in the north to Minnie Water and Red Rock in the south and Tucabia, Tyndale and Shark Creek to Pillar Valley and the lower Clarence River wetlands in the west. A detailed review of the movements and range of the Yuraygir sub-population of Coastal Emus was undertaken as part of the *Coastal Emu Management Plan* for the Woolgoolga to Ballina (W2B) Pacific Highway Upgrade project (Jacobs, 2015) by interpretation and discussion of the annual emu census results from NPWS land managers (Gina Hart and Matt Clarke) and interviews with long-standing property owners. Key findings of this review include:

The majority of the sub-population is centred on Yuraygir National Park including Station Creek to Red Rock, Wooli, Diggers Camp, Minnie Waters, Sandon, Sandon River, Brooms Head, Wooloweyah, James Creek and Taloumbi.

The population is divided by a number of social groups that show fidelity to particular areas and habitat that support important pre and post-breeding life-cycle events. The degree of relatedness and interaction between the groups is not known.

- *Groups range a considerable distance and include:*
  - *One ranging within the area south of Tucabia from the Coldstream River wetlands in the west to Pillar Valley and Yuraygir National Park in the east.*
  - *A second group that is largely found on the agricultural land and forests between Pine Brush and Candole State Forest in the south, Tyndale Swamp and north to Shark Creek and Green Hill and the cane farms around Shark Creek including Byrons Lane and McIntyres Lane at Tyndale.*
    - *These two groups frequently access floodplain wetlands and creeks such as Chaffin Swamp and Pillar Valley Creek. They utilise modified agricultural habitats during pre and post-breeding activities in spring and summer with the cane fields frequently occupied by adult males raising young.*
    - *Anecdotal information on breeding activities suggests that breeding occurs in four broad areas: Station Creek to Red Rock River (south), Wooli - Diggers Camp - Minnie Water - Sandon River (central), Brooms Head - Sandon River - Candole State Forest - Wallaby Lane (north), Pillar Valley around Chaffin Hill and Whites Hill in the western edge of their range (west).*

The CVC Emu register shows a record of two Emus recorded in proximity to the site along James Creek Road three years ago. Other records in the locality of the site include records along Palmers Channel Bank Road to the east and Gardiners Road to the south of the site. Emu records associated with the site are low in comparison with other areas of habitat occurring south of Gulmarrad and east of Palmers Channel.

Potential Impacts from the Proposal

The Proposal would result in the removal of an area representing potential opportunistic foraging habitat for birds within the local population as part of the broader home range utilised by this species. This habitat does not represent good quality, permanent or nesting habitat. The removal of this habitat is unlikely to substantially affect the local population of the species given that a large area of habitat is utilised by the population locally including large areas of agricultural (sugar cane) land and as such foraging resources for the local population would be impacted to a minor and incremental extent.

Other potential impacts of the Proposal are associated with increased traffic movements and associated increases to roadkill risk and the increased potential of Emu interactions with domestic dogs. Given the relatively low number of Emu records in the locality of the site (CVC Emu Register) compared to other known areas of occupancy for this species, it would be highly unlikely that an adverse effect on the life cycle of this population would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Large and Little Bent-winged Bat

Bentwing-bats occur in moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Roosting occurs in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats. Little Bentwing-bats often share roosting sites with the Common Bentwing-bat and, in winter, the two species may form mixed clusters.

In NSW, the largest maternity colony is in close association with a large maternity colony of Eastern Bentwing-bats and appears to depend on the large colony to provide the high temperatures needed to rear its young. Maternity colonies form in spring and birthing occurs in early summer. Males and juveniles disperse in summer. Only five nursery sites/ maternity colonies are known in Australia.

Threatening processes for these species include:

- Disturbance of colonies, especially in nursery or hibernating caves, may be catastrophic.
- Destruction of caves that provide seasonal or potential roosting sites.
- Changes to habitat, especially surrounding maternity/ nursery caves and winter roosts.
- Pesticides on insects and in water consumed by bats bio accumulates, resulting in poisoning of individuals.
- Predation from foxes, particularly around maternity caves, winter roosts and roosts within culverts, tunnels and under bridges.
- Predation from feral cats, particularly around maternity caves, winter roosts and roosts within culverts, tunnels and under bridges.
- Introduction of exotic pathogens such as the White-nosed fungus.
- Hazard reduction and wildfire fires during the breeding season.
- Large scale wildfire or hazard reduction can impact on foraging resources.
- Poor knowledge of reproductive success and population dynamics.

Potential Impacts from the Proposal

The Proposal would result in the loss of up to 0.1 ha of PCT 3253; no hollow-bearing trees will be removed. The majority of the development footprint comprises cleared pasture which comprises low quality foraging habitat for the Eastern or Little Bentwing-bat in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Eastern or Little Bentwing-bat would occur such that a viable local population of these species is likely to be placed at risk of extinction.

Greater Broad-nosed Bat

The Greater Broad-nosed Bat utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although usually roosting in tree hollows, the species has also been found in buildings. Open woodland habitat and dry open forest suits the direct flight of this species as it searches for beetles and other large, slow-flying insects; this species has been known to eat other bat species. Little is known of the reproductive cycle, however a single young is born in January; prior to birth, females congregate at maternity sites

located in suitable trees, where they appear to exclude males during the birth and raising of a single young.

Threatening processes for this species include:

- Disturbance to roosting and summer breeding sites.
- Foraging habitats are being cleared for residential and agricultural developments, including clearing by residents within rural subdivisions.
- Loss of hollow-bearing trees.
- Pesticides and herbicides may reduce the availability of insects or result in the accumulation of toxic residues in individuals' fat stores.
- Changes to water regimes are likely to impact food resources, as is the use of pesticides and herbicides near waterways.

Potential Impacts from the Proposal

The Proposal would result in the loss of up to 0.1 ha of PCT 3253; no hollow-bearing trees will be removed. The majority of the development footprint comprises cleared pasture which comprises low quality foraging habitat for the Greater Broad-nosed Bat in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Greater Broad-nosed Bat would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Grey-crowned Babbler

Grey-crowned Babblers (GCB) inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Other habitat includes woodlands on fertile soils in coastal regions. Flight is laborious so birds prefer to hop to the top of a tree and glide down to the next one. Birds are generally unable to cross large open areas.

Babblers live in family groups that consist of a breeding pair and young from previous breeding seasons. A group may consist of up to 15 birds. All members of the family group remain close to each other when foraging. They build and maintain several conspicuous, dome-shaped stick nests about the size of a football. A nest is used as a dormitory for roosting each night. Nests are usually located in shrubs or sapling eucalypts, although they may be built in the outermost leaves of low branches of large eucalypts. Nests are maintained year round, and old nests are often dismantled to build new ones.

Breeding occurs between July and February. Usually, two to three eggs are laid and incubated by the female. During incubation, the adult male and several helpers in the group may feed the female as she sits on the nest. Young birds are fed by all other members of the group. Territories range from one to 50 hectares (usually around 10 hectares) and are defended all year. Territorial disputes with neighbouring groups are frequent and may last up to several hours, with much calling, chasing and occasional fighting.

Babblers feed on invertebrates, either by foraging on the trunks and branches of eucalypts and other woodland trees or on the ground, digging and probing amongst litter and tussock grasses.

Threatening processes for this species include:

- Loss, degradation and fragmentation of woodland habitat on high fertility soils.
- Excessive total grazing pressure and loss of coarse woody debris is resulting in degradation and loss of important habitat components.

- Infestation of habitat by invasive weeds including exotic perennial grasses. These weeds are very aggressive and form dense grass swards covering inter-tussock spaces preventing access to leaf and stick litter where babblers commonly forage for invertebrates.
- Inappropriate fire regimes - excessive fires lead to loss of tree and shrub regeneration and absence of fire may lead to the grass sward being too dense and therefore unsuitable for foraging by babblers.
- Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners.
- Climate change impacts including reduction in resources due to drought.
- Nest predation by species such as ravens and butcherbirds may be an issue in some regions where populations are small and fragmented.

Potential Impacts from the Proposal

The Proposal would result in the loss of up to 0.1 ha of PCT 3253; potential foraging habitat within retained trees will be retained. The majority of the development footprint comprises cleared pasture which comprises low quality foraging habitat for the Grey-crowned Babbler in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Grey-crowned Babbler would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Grey-headed Flying-fox

Grey-headed Flying-foxes (GHFF) have a distribution that typically extends approximately 200 km from the coast of Eastern Australia, from Rockhampton in Queensland to Adelaide in South Australia. Foraging areas include subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. GHFF feed on the nectar and pollen of native trees, in particular *Eucalyptus, Melaleuca* and *Banksia*, and fruits of rainforest trees and vines, as well as from cultivated gardens and orchards. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Individual camps may have tens of thousands of animals and are used for mating, and for giving birth and rearing young. Annual mating commences in January and conception occurs in April or May; a single young is born in October or November. Site fidelity to camps is high; some camps have been used for over a century. GHFF may travel up to 50 km from the camp to forage; commuting distances are more often <20 km.

Threatening processes for this species include:

- Clearing of woodlands for agriculture.
- Loss of roosting and foraging sites.
- Electrocution on powerlines, entanglement in netting and on barbed wire.
- Heat stress.
- Conflict with humans.
- Incomplete knowledge of abundance and distribution across the species' range.

Potential Impacts from the Proposal

Vegetation/ habitat requiring removal for the Proposal would be unlikely to contain important foraging resources for GHFF in the context of substantial areas of adjacent forest on site and in the locality. No potential roost habitat would be affected. Minor native tree loss for the works (up to 0.1 ha of PCT 3253) represents a negligible contraction in foraging resources for the species.

On this basis it is considered that the proposed work would be unlikely to have an adverse effect on the life cycle of GHFF such that a viable local population of the species is placed at risk of extinction.

Hoary Wattled Bat

In NSW, the Hoary Wattled Bat occurs in dry open eucalypt forests, favouring forests dominated by Spotted Gum, boxes and ironbarks, and heathy coastal forests where Red Bloodwood and Scribbly Gum are common. Because it flies fast below the canopy level, forests with naturally sparse understorey layers may provide the best habitat. The species roosts in hollows and rock crevices and will occupy urban areas with suitable habitat. Birthing usually occurs during October and November when twins are born.

Threatening processes for this species include:

- Clearing and fragmentation of dry forest and woodland habitat through clearing for agriculture and development.
- Loss of tree hollows for roosting and maternity sites from forest management favouring younger stands of trees.
- Loss of hollow-bearing trees used for roosting and maternity sites as a result of too-frequent burning for grazing and forestry management activities.
- Pesticides on insects and in water consumed by bats bio accumulates, resulting in poisoning of individuals. The use of pesticides also reduces available insect food sources.

Potential Impacts from the Proposal

The Proposal would result in the loss of up to 0.1 ha of PCT 3253; no hollow-bearing trees will be removed. The majority of the development footprint comprises cleared pasture which comprises low quality foraging habitat for the Hoary Wattled Bat in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Hoary Wattled Bat would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Koala

The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In New South Wales it mainly occurs on the central and north coasts, with populations on the western side of the Great Dividing Range.

Habitat consists of eucalypt woodlands and forests, in which the Koala feeds on more than 70 eucalypt species and 30 non-eucalypt species. Preferred browse species are different across regions. Koalas are inactive for most of the day and do most of their feeding and moving during the night. Although predominantly arboreal, Koalas would descend and traverse open ground to move between trees. Home range size varies with quality of habitat, ranging from less than two hectares to several hundred hectares in size. Generally solitary, the Koala has complex social hierarchies based on a dominant male with a territory that overlaps that of several females, with sub-ordinate males on the periphery. Females breed at two years of age and produce one young per year.

Threatening processes for this species include:

- Loss, modification and fragmentation of habitat.
- Predation by feral and domestic dogs.
- Intense fires that scorch or kill the tree canopy.
- Road-kills.
- Climate change and reduction in resources due to drought.

Potential Impacts of the Proposal

The Proposal would result in the loss of up to 0.1 ha of PCT 3253; potential foraging habitat within retained trees will be retained. The majority of the development footprint comprises cleared pasture which comprises unsuitable foraging habitat for the Koala in the context of the site and adjacent areas of suitable foraging and breeding habitat. Low numbers of Koala records within the vicinity of the site and lack of evidence of Koala activity on site, indicates the area is unlikely to support a resident breeding population of Koala at or in close proximity to the site.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Koala would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Little Lorikeet

The Little Lorikeet mostly forages in the canopy of open eucalypt forest and woodland, utilising Eucalyptus, Angophora, Melaleuca and other tree species. Nomadic movements are common, influenced by season and food availability, although some areas retain residents for much of the year. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. The species feeds mostly on nectar and pollen, but occasionally also on native fruits such as mistletoe. Nests are generally located (within hollows) in proximity to feeding areas if possible and entrances are small (three centimetres) and usually high above the ground (two to 15 metres). Nest sites are often used repeatedly for decades, suggesting that preferred sites are limited. Riparian trees are often chosen, including species like Allocasuarina. The nesting season extends from May to September, producing 3-4 young.

- Threatening processes for this species include:
- Clearing of woodlands for agriculture.
- Loss of old hollow-bearing trees.
- Competition with the introduced Honeybee.
- Infestation of habitat by invasive weeds.
- Inappropriate fire regimes.
- Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners.
- Climate change impacts including reduction in resources due to drought.
- Degradation of woodland habitat and vegetation structure due to overgrazing.

Potential Impacts from the Proposal

The Proposal would result in the loss of up to 0.1 ha of PCT 3253; potential foraging habitat within retained trees will be retained. Additionally, no hollow-bearing trees will be removed. The majority of the development footprint comprises cleared pasture which comprises low quality foraging habitat for the Little Lorikeet in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Little Lorikeet would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Southern Myotis

The Southern Myotis occurs close to bodies of water, rainforest streams, large lakes and reservoirs where they feed on fish and aquatic macroinvertebrates by skimming or trawling the surface of the water with their large feet to catch prey. They generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Within the region females typically have one young each year usually in November or December.

Threatening processes for this species include:

- Loss or disturbance of roosting sites.
- Clearing adjacent to foraging areas.
- Application of pesticides in or adjacent to foraging areas.
- Reduction in stream water quality affecting food resources.

Potential Impacts from the Proposal

The Proposal would result in the loss of up to 0.1 ha of PCT 3253. The majority of the development footprint comprises cleared pasture which comprises low quality foraging habitat for the Southern Myotis in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Southern Myotis Bat would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Squirrel Glider

Squirrel Gliders inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. They prefer mixed species stands with a shrub or Acacia mid-storey. Squirrel Gliders live in family groups of a single adult male one or more adult females and offspring and require abundant tree hollows for refuge and nest sites. The diet varies seasonally and consists of *Acacia* gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein.

Threatening processes for this species include:

- Habitat loss and degradation.
- Fragmentation of habitat.
- Loss of hollow-bearing trees.
- Loss of understorey food resources.
- Inappropriate fire regimes.
- Reduction in food resources due to drought.
- Mortality due to entanglement on barbed wire.
- Occupation of hollows by exotic species.
- Mortality due to collision with vehicles.
- Predation by exotic predators.
- Changes in spatial and temporal distribution of habitat due to climate changes.

Potential Impacts from the Proposal

The Proposal would result in the loss of up to 0.1 ha of PCT 3253; no hollow-bearing trees will be removed. The vegetation to be removed comprises low quality habitat for Squirrel Gliders in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Squirrel Glider would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Yellow-bellied Sheathtail Bat

Yellow-bellied Sheathtail Bats are wide ranging in distribution and habitat type preferences. They forage high and fast through the canopy in taller forest types, flying lower through the strata in shorter forest types. They feed on insects and are nocturnally active. Typically, they roost in groups of 1 – 6 individuals in tree hollows and buildings. In treeless areas they have been recorded roosting in mammal burrows. The breeding season is from December to mid-March where a single young is born.

Threatening processes for this species include:

- Disturbance to roosting and summer breeding sites.
- Foraging habitats are being cleared for residential and agricultural developments, including clearing by residents within rural subdivisions.
- Loss of hollow-bearing trees; clearing and fragmentation of forest and woodland habitat.
- Pesticides and herbicides may reduce the availability of insects or result in the accumulation of toxic residues in individuals' fat stores.
- Climate change and reduction in resources due to drought.

Potential Impacts from the Proposal

The Proposal would result in the loss of up to 0.1 ha of PCT 3253; no hollow-bearing trees will be removed. The majority of the development footprint comprises cleared pasture which comprises low quality foraging habitat for the Yellow-bellied Sheathtail Bat in the context of the site and adjacent areas of suitable foraging and breeding habitat.

On this basis, it would be highly unlikely that an adverse effect on the life cycle of the Yellow-bellied Sheathtail Bat would occur such that a viable local population of the species is likely to be placed at risk of extinction.

b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

No threatened ecological communities occur.

in relation to the habitat of a threatened species or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

The habitat to be removed is immature, isolated and does not provide any significant resources for any of the subject species in the context of the site and locality.

In relation to Emu habitat to be removed the Proposal would remove an area of opportunistic foraging habitat which is well represented locally. CVC Emu register records suggest that the site is utilised on a very occasional basis compared to other areas to the south of Gulmarrad.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or Activity, and

The affected vegetation/ habitat is already highly fragmented. The proposed development would not fragment habitat for any of the subject species and no barriers or dispersal to movement would result.

In relation to Emu habitat the Proposal is unlikely to fragment habitat for the local population given the nomadic nature of the Emu and numerous options for movement through the landscape associated in the locality of the site.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,

The affected trees comprise a negligible foraging resource for the subject species and loss of these trees is of low importance in a local context.

In relation to Emu habitat, the Proposal would remove an area of potential foraging habitat which is well represented within the locality. The site has no particular values as permanent or breeding habitat for the Emu.

c) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

No areas of outstanding biodiversity value have been declared in Clarence Valley Local Government Area.

d) whether the proposed development or Activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

A key threatening process (KTP) is a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species or ecological communities. The current list of KTP listed under the BC Act, and whether the Proposal is recognised as a KTP is shown in **Table G.1**.

Table G.1 Key Threatening Processes

Key Threatening Process (as per Schedule 4 of the BC Act)	Is the development or Activity proposed of a class of development or activity that is recognised as a threatening process?		
	Likely	Possible	Unlikely
Aggressive exclusion of birds by noisy miners (Manorina melanocephala)			✓
Alteration of habitat following subsidence due to longwall mining			✓
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands			✓
Anthropogenic climate change		✓	
Bushrock removal			✓
Clearing of native vegetation	✓		
Competition and grazing by the feral European Rabbit (Oryctolagus cuniculus)			✓
Competition and habitat degradation by feral goats (Capra hircus)			✓
Competition from feral honeybees (Apis mellifera)			✓
Death or injury to marine species following capture in shark control programs on ocean beaches			✓
Entanglement in or ingestion of anthropogenic debris in marine and estuarine environments			✓
Forest eucalypt dieback associated with over-abundant psyllids and bell miners			✓
Habitat loss and degradation by Feral Horses			✓
Herbivory and environmental degradation caused by feral deer			✓
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition			✓

Key Threatening Process (as per Schedule 4 of the BC Act)	Is the development or Activity proposed of a class of development or activity that is recognised as a threatening process?		
	Likely	Possible	Unlikely
Importation of red imported fire ants (*Solenopsis invicta*)			✓
Infection by Psittacine circoviral (beak and feather) disease affecting endangered psittacine species and populations			✓
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis			✓
Infection of native plants by *Phytophthora cinnamomi*			✓
Introduction and Establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae			✓
Introduction of the large earth bumblebee (*Bombus terrestris*)			✓
Invasion and establishment of exotic vines and scramblers			✓
Invasion and establishment of Scotch Broom (*Cytisus scoparius*)			✓
Invasion and establishment of the Cane Toad (*Bufo marinus*)			✓
Invasion, establishment and spread of Lantana (*Lantana camara*)			✓
Invasion of native plant communities by African Olive (*Olea europaea L. subsp. cuspidata*)			✓
Invasion of native plant communities by *Chrysanthemoides monilifera*			✓
Invasion of native plant communities by exotic perennial grasses			✓
Invasion of the Yellow Crazy Ant (*Anoplolepis gracilipes*) into NSW			✓
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants			✓
Loss of hollow-bearing trees			✓
Loss or degradation (or both) of sites used for hill-topping by butterflies			✓
Predation and hybridisation by feral dogs (*Canis lupus familiaris*)			✓
Predation by the European Red Fox (*Vulpes vulpes*)			✓
Predation by the feral cat (*Felis catus*)		✓	
Predation by *Gambusia holbrooki* (Plague Minnow or Mosquito Fish)			✓
Predation by the Ship Rat (*Rattus rattus*) on Lord Howe Island			✓
Predation, habitat degradation, competition and disease transmission by feral pigs (*Sus scrofa*)			✓
Removal of dead wood and dead trees			✓

The Proposal may be characteristic of the following KTPs:

- Clearing of native vegetation: Refers to the destruction of a sufficient proportion of one or more strata (layers) within a stand or stands of native vegetation. The 0.1 ha of PCT 3253 from a disturbed area indicates contributions to this KTP are very low.
- The Proposal incrementally contributes to *Anthropogenic climate change*, through the generation of carbon dioxide during operation of machinery and vehicles and associated fuel consumption however the impact is not considered significant.

- Predation by the feral cat (*Felis catus*): There is a potential the Proposal (after the occupation stage) contributes to the increase of feral cat due to poor management of domestic cats, allowing them free roam and breed. However, this impact is not considered significant.

On this basis the degree that the Proposal would contribute to any threatening process is not considered likely to place the local population of any of the subject species at significant risk of extinction.

EPBC Act Significance Assessments

For threatened biodiversity listed under the EPBC Act, significance assessments have been completed in accordance with the EPBC Act Policy Statement 1.1 Significant Impact Guidelines (Department of Environment, 2013). These significance assessments have been prepared for the following community and threatened species:

- Vulnerable species:
  - Diamond Firetail.
  - Grey-headed Flying-fox.
- Endangered Species:
  - Koala.

EPBC Act Listed Vulnerable Species

The Diamond Firetail and Grey-headed Flying-fox are listed as Vulnerable under the EPBC Act. The following assessment has been undertaken following the Matters of National Environmental Significance, Significant Impact Guidelines 1.1. Under the Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity, and/ or
- at or near the limit of the species range.

Is this part of an important population:

Diamond Firetail

Diamond firetails occur on the south-east mainland of Australia from south-east Queensland to Eyre Peninsula, South Australia, and about 300 km inland from the sea. Their range once extended to north Queensland inland from Cardwell, but they now occur only in the very south of the state. Diamond firetails occur in eucalypt, acacia or casuarina woodlands, open forests, and other lightly timbered habitats, including farmland and grassland with scattered trees. They prefer areas with relatively low tree density, few large logs, and little litter cover but high grass cover. Diamond firetails usually occur in flocks of between 5 to 40, and occasionally more. The species appears to be sedentary, though some populations move locally. Occurrences of this species within the site are not at the limits of the species' distribution (refer to **Figure 7.2**), nor would they be considered to be a key source for breeding or dispersal for the species across its range. As such the habitat within the site can only be considered to represent a small part of the foraging habitat for individuals occurring within the greater locality. Individuals potentially occurring within the site and subject to the proposed action are not considered to be part of an important population.

Diamond Firetail have been listed Vulnerable under the EPBC Act as of 31 March 2023 and as such due to insufficient monitoring data for the species no important populations have been established (DCCEEW, 2023). Furthermore, there is currently no nation recovery plan for this species.

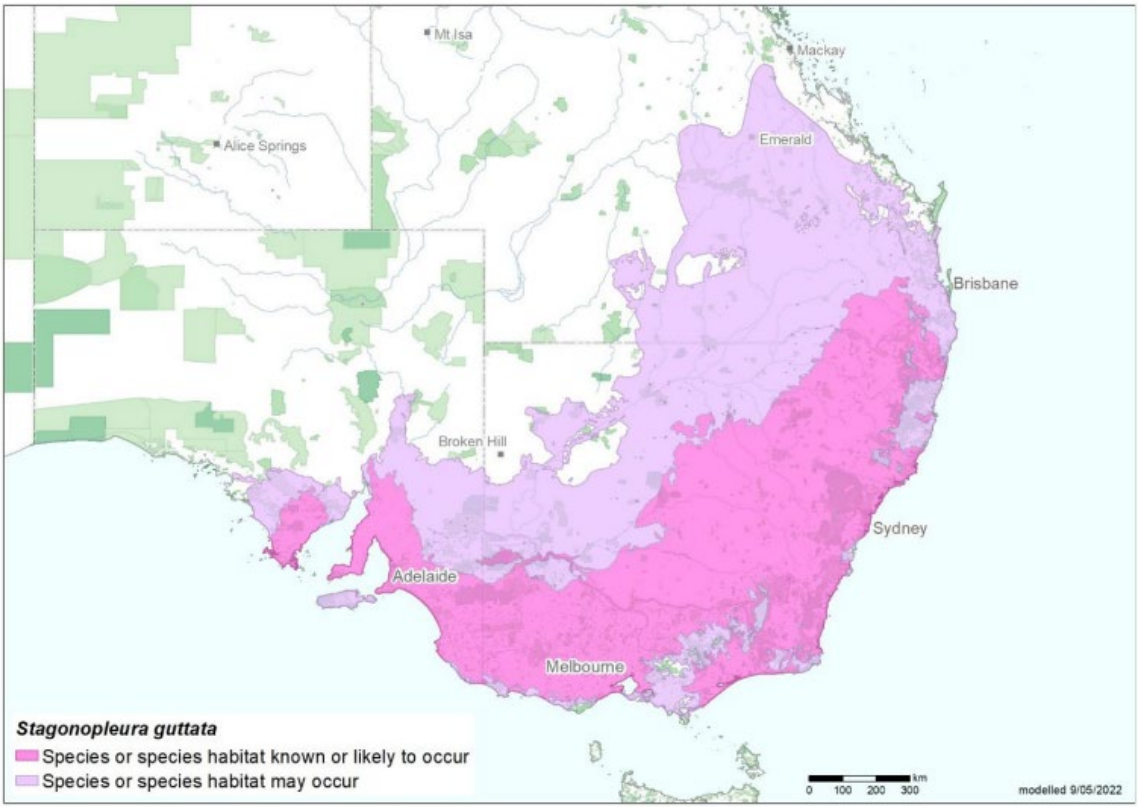

Figure 7.2 Modelled distribution of Diamond Firetail

Grey-headed Flying-fox

Grey-headed Flying-fox (GHFF) occur across a range of wooded habitats where their favoured food, eucalypt blossom occurs. They set up roosting camps in association with blossom availability, which are usually situated in dense vegetation and associated with water. GHFF can migrate up to 75 km north during the winter and during this time young flying-foxes establish camps.

With reference to National Flying-fox monitoring viewer, there are no recorded Flying-fox camps within the site (DCCEEW, 2023). The closest significant recorded camps in relation to the site include:

- Maclean (Maclean camp #56) – approximately 4 km to the south-west of the site, according to the National Flying Fox monitoring viewer this camp includes 16,000+ individuals in 2022.
- Yamba (Yamba Shores camp #519) – approximately 8 km north-east of the site, according to the National Flying Fox monitoring viewer this camp includes between up to 499 individuals from surveys in 2015.

Occurrences of this species within the site are not at the limits of the species' distribution, nor are any maternity camps present in the site, and as such the habitat within the site can only be considered to represent a part of the foraging range of widely occurring individuals.

Overall, the Proposal is not expected to result in a significant reduction of occupancy for any important GHFF populations.

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will result in one or more of the following:

- **Lead to a long-term decrease in the size of an important population of a species.**

Diamond Firetail

The population subject to the proposed action is not considered an important population (refer above).

Grey-headed Flying-fox

The population subject to the proposed action is not considered an important population (refer above).

- **Reduce the area of occupancy of an important population.**

Diamond Firetail

The population subject to the proposed action is not considered an important population (refer above).

Grey-headed Flying-fox

The population subject to the proposed action is not considered an important population (refer above).

- **Fragment an existing important population into two or more populations.**

Diamond Firetail

The population subject to the proposed action is not considered an important population (refer above).

Grey-headed Flying-fox

The population subject to the proposed action is not considered an important population (refer above).

- **Adversely affect habitat critical to the survival of a species.**

Diamond Firetail

Based on the impacts required for the Proposal, clearing of up to 0.1 ha of PCT 3253 and non-native pastureland, no habitat critical to the species will be removed. On the basis the Proposal will not adversely affect habitat critical to the survival of the species.

Grey-headed Flying-fox

The foraging habitat within the site meets the criteria for habitat critical for the survival of GHFF due to its proximity to existing camps (within 50 km) (DCCEEW, 2021).

However, the removal of clearing of up to 0.1 ha of PCT 3253 and non-native pastureland would result in minimal impacts to foraging habitat for the GHFF and the Proposal would not impact on roosting sites for the species. On the basis the Proposal will not adversely affect habitat critical to the survival of the species.

- **Disrupt the breeding cycle of an important population.**

Diamond Firetail

The population subject to the proposed action is not considered an important population (refer above).

Grey-headed Flying-fox

The population subject to the proposed action is not considered an important population (refer above).

- **Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.**

Diamond Firetail

No, the scope of the Proposal would not modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

Grey-headed Flying-fox

No, the scope of the Proposal would not modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- **Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.**

Diamond Firetail

No, the Proposal would not result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.

Grey-headed Flying-fox

No, the Proposal would not result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.

- **Introduce disease that may cause the species to decline.**

Diamond Firetail

The Proposal would be unlikely to introduce any disease that may cause the species to decline.

Grey-headed Flying-fox

Australian flying-foxes, including the GHFF, are natural reservoirs for at least three diseases - Australian Bat Lyssavirus (ABL), Hendra virus and Menangle virus. While injured and orphaned Grey-headed Flying-foxes have a higher chance of testing positive for ABL, it is unlikely the Proposal will introduce this disease.

- **Interfere substantially with the recovery of the species.**

Diamond Firetail

No, due to the scope of the works and the level of disturbance, the Proposal would not interfere substantially with the recovery of the species.

Grey-headed Flying-fox

No, due to the scope of the works and the level of disturbance, the Proposal would not interfere substantially with the recovery of the species.

Conclusion

Overall due to the relatively low extent and magnitude of impacts associated with the Proposal, it is unlikely that the Proposal would result in a significant impact to Diamond Firetail or GHFF.

EPBC Act Listed Endangered Species

The Koala is listed as Endangered under the EPBC Act. The following assessment has been undertaken following the Matters of National Environmental Significance, Significant Impact Guidelines 1.1. Under the Act, populations are:

- a geographically distinct regional population, or collection of local populations, or
- a population, or collection of local populations, that occurs within a particular bioregion.

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will result in one or more of the following:

- **Lead to a long-term decrease in the size of a population.**

Koala

Based on the impacts required for the Proposal, clearing of up to 0.1 ha of PCT 3253 and non-native pastureland there would be negligible loss of potential foraging and breeding habitat for a local Koala population.

On this basis, the Proposal would not lead to a long-term decrease in the size of the local Koala population.

- **Reduce the area of occupancy of the species.**

Koala

The impacts required for the Proposal are the clearing of up to 0.1 ha of PCT 3253 and non-native pastureland. On this basis the Proposal would not reduce the area of occupancy of the species.

- **Fragment an existing population into two or more populations.**

Koala

Habitat within the site is already fragmented at a local scale by historic clearing and development. Landscape scale fragmentation is unlikely to occur from the Proposal as the scope of work would not involve breaking apart of large blocks of vegetation into many smaller patches. No further habitat fragmentation on a landscape scale would occur as a result of the Proposal.

On this basis, the Proposal would not result in the fragmentation of an existing population into two or more populations.

- **Adversely affect habitat critical to the survival of a species.**

Koala

The vegetation clearing may remove up to 0.1 ha of PCT 3253, this vegetation is highly disturbed and better-quality habitat exists adjacent to site in greater quantity. Therefore, the Proposal would not result in significant impacts that would adversely affect habitat critical to the survival of the Koala.

- **Disrupt the breeding cycle of a population.**

Koala

Due to the Proposal occurring within disturbed and highly modified area, it is considered unlikely that local population of Koala would be restricted to the site. Habitat within the site is already fragmented at a local scale by the historic clearing and neighbouring properties. The Proposal unlikely to exacerbate

movement or significantly reduce area of occupancy of breeding individuals for the population. It is unlikely the Proposal would significantly disrupt the breeding cycle of the population of Koalas.

- **Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.**

Koala

The vegetation within the site is disturbed from frequent mowing/ slashing. The Proposal is limited to this area and would not have direct impacts on better quality habitat outside of the Proposal footprint. Therefore, on this basis the Proposal would not modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the Koala is likely to decline.

- **Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the critically endangered or endangered species' habitat.**

Koala

It is unlikely that invasive species (such as introduced predators) that are harmful to the Koala would become further established as a result of the Proposal.

- **Introduce disease that may cause the species to decline.**

Koala

It is unlikely that the Proposal would significantly fragment a koala population to the point where dispersal is limited and therefore disease transmission between individuals is increased. As *Chlamydia* bacteria in Koalas and Koala Retrovirus is primarily transmitted between Koala individuals it is unlikely that the Proposal would introduce disease that may cause the species to decline.

- **Interfere substantially with the recovery of the species.**

Koala

No, due to the scope of the works and the level of disturbance, the Proposal would not interfere substantially with the recovery of the species.

Conclusion

Overall due to the relatively low extent and magnitude of impacts associated with the Proposal and with mitigations put in place where required, it is unlikely that the Proposal would result in a significant impact to Koalas.

Tests of Significance References

Department of Climate Change, Energy, the Environment and Water (2023). *Conservation Advice for Stagonopleura guttata (diamond firetail)*. Commonwealth of Australia.

Department of Climate Change, Energy, the Environment and Water (2023). National Flying-fox monitoring viewer. Commonwealth of Australia. https://www.environment.gov.au/webgis-framework/apps/ffc-wide/ffc-wide.jsf [Accessed 23 October 2023].

Enclosure 11

Development Capital Cost Calculation prepared by Burchills Engineering Solutions dated 2 November 2023

The experience you deserve

BURCHILLS
ENGINEERING SOLUTIONS

Our Ref: BE21 0466_2023-11-02_James Creek Yamba_Covering Letter_Cost Estimates
Enquiries to: Paul Kelly / Jonathan Cuell

2 November 2023

WM Developments Pty Ltd
19 Yamanie Court
NERANG QLD 4211

Attention: Mike Willoughby

Dear Mike

Re: James Creek Development at Yamba
Covering Letter for Updated Preliminary Cost Estimate
(Opinion of Capital Investment Costs)

Burchills Engineering Solutions have reviewed the preliminary engineering drawings prepared by GeoLink for the proposed James Creek Subdivision of Lot 104 James Creek Road at Yamba, based on the modified 343-Lot subdivision concept and have prepared an Opinion of Capital Costs (please refer attached copy of Preliminary Cost Estimate) associated with the delivery of the proposed subdivisional works complete through to the securing of allotment titles.

The Preliminary Cost Estimate provided, dated 27 October 2023 for a total amount of $39,480,520, has been based on a cross-section of current civil construction market rates, with general allowances for electrical and landscape construction costs and allowances for the various professional consultancy fees involved.

Should you require clarification in relation to this, please do not hesitate to contact either myself or Paul Kelly on (07) 5509 6400 or Paul's mobile 0406 869 474.

Yours faithfully

JONATHAN CUELL
Civil & Water Manager

MIEAust, NER, RPEQ 21773

Enc: Copy of Preliminary Cost Estimate dated 27 October 2023

PRELIMINARY CIVIL COST ESTIMATE

Project: **James Creek Road, Yamba**
(Based on Concept Sketches prepared by GeoLink, current as at October 2023, for 343 Lot Residential Subdivision)

Date: 27 October 2023

Job No: BE21 0466

BE21 0466_James Creek_Prelim Civil Cost Estimate_27 October 2023.xls

			EXTERNAL WORKS				INTERNAL WORKS			
ITEM	*SECTION & DESCRIPTION*	*UNIT*	*QTY*	*RATE*	*AMOUNT*	*SUB-TOTAL*	*QTY*	*RATE*	*AMOUNT*	*SUB-TOTAL*
	OVERALL FEASIBILITY ESTIMATE SUMMARY:									
1.	**SITE ESTABLISHMENT:**					**$205,000**				**$531,000**
2.	**BULK EARTHWORKS:**					**$68,700**				**$7,851,700**
3.	**ROADWORKS:**					**$698,700**				**$6,843,300**
4.	**STORMWATER DRAINAGE:**					**Nil**				**$3,176,750**
5.	**POTABLE WATER RETICULATION:**					**$559,500**				**$1,443,000**
6.	**SEWERAGE RETICULATION:**					**$1,221,000**				**$2,761,000**
7.	**ELECTRICAL & COMMUNICATIONS (ROAD CROSSINGS ONLY) - PROVISIONAL:**					**Nil**				**$294,000**
8.	**STORMWATER TREATMENT:**					**Nil**				**$441,000**
	SUB-TOTALS:					**$2,752,900**				**$23,341,750**
9.	**COMBINED SUB-TOTAL (CIVIL CONSTRUCTION) - INTERNAL & EXTERNAL:**	**$26,094,650**								
10.	**Other Costs:**									
	(a) Contingency Allowance (15%).	Allow				$412,940				$3,501,270
	(b) Allowance for Insurances.	Allow				$13,800				$116,800
	SUB-TOTALS:					**$3,179,640**				**$26,959,820**
11.	GST Allowance (10%)	(Not Included)				(Not incl.)				(Not incl.)
12.	Long Service Leave Levy - NSW Building & Construction Industry (0.25%)	Allow				**$7,950**				**$67,400**
	CIVIL CONSTRUCTION SUB-TOTALS (Not including GST):					**$3,187,590**				**$27,027,220**
	Internal Subdivision Civil Construction Costs: for 343 Res. Lots Total (Not incl. GST):	**Cost per Lot**					**$78,800**			
13.	**OTHER DEVELOPMENT CONSTRUCTION COSTS:** *(The following additional development costs are intended as indicative allowances only and are subject to confirmation by the relevant consultants and authorities).*									
14.	**ELECTRICITY RETICULATION:**					**$30,000**				**$3,258,500**
15.	**ALLOWANCES FOR LANDSCAPING:**					**$100,000**				**$1,865,000**
	CONSTRUCTION COSTS SUB-TOTAL (CIVILS, ELECTRICAL, LANDSCAPE):					**$3,317,590**				**$32,150,720**
	Internal Subdivision Construction Costs: for 343 Res. Lots Total (Not incl. GST):	**Cost per Lot**					**$93,800**			

PRELIMINARY CIVIL COST ESTIMATE

Project: **James Creek Road, Yamba**
(Based on Concept Sketches prepared by GeoLink, current as at October 2023, for 343 Lot Residential Subdivision)

Date: 27 October 2023

Job No: BE21 0466

BE21 0466_James Creek_Prelim Civil Cost Estimate_27 October 2023.xls

			EXTERNAL WORKS				INTERNAL WORKS			
ITEM	*SECTION & DESCRIPTION*	*UNIT*	*QTY*	*RATE*	*AMOUNT*	*SUB-TOTAL*	*QTY*	*RATE*	*AMOUNT*	*SUB-TOTAL*
16.	**TOTAL ESTIMATED CONSTRUCTION COST (EXTERNAL & INTERNAL WORKS):** (GST not included)									**$35,468,310**
17.	**Allowance for Professional Fees:**									
	Town Planning	Per Lot					343	350	120,050	
	Architects (Allowance)	Per Lot					343	100	34,300	
	Surveyors	Per Lot					343	1,500	514,500	
	Civil Engineers (Say 5%)	Allow							1,450,000	
	Geotechnical Consultants	Per Lot					343	450	154,350	
	Electrical Consultant	Per Lot					343	550	188,650	
	Landscape Architects	Per Lot					343	650	222,950	**$2,684,800**
18.	**Council and Government Fees & Charges:**									(Not included)
19.	**Project Management:**	Per Lot					343	3,400	1,166,200	
20.	**Titles Registration:**	Per Lot					343	370	126,910	
21.	**Miscellaneous Legal Costs (Allowance only):**	Per Lot					343	100	34,300	**$1,327,410**
22.	**Sales and Marketing Costs:**									(Not included)
23.	**TOTAL ESTIMATED PROJECT DEVELOPMENT COSTS:** (GST not included)									**$39,480,520**

PRELIMINARY CIVIL COST ESTIMATE

Project: **James Creek Road, Yamba**
(Based on Concept Sketches prepared by GeoLink, current as at October 2023, for 343 Lot Residential Subdivision)

Date: 27 October 2023

Job No: BE21 0466

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			EXTERNAL WORKS				INTERNAL WORKS			
ITEM	*SECTION & DESCRIPTION*	*UNIT*	*QTY*	*RATE*	*AMOUNT*	*SUB-TOTAL*	*QTY*	*RATE*	*AMOUNT*	*SUB-TOTAL*
	ESTIMATED CONSTRUCTION COSTS BREAKDOWN:									
1.	**SITE ESTABLISHMENT:**									
	(a) Site establishment, including mobilisation and de-establishment.	Per Stage			45,000		5	40,000	200,000	
	(b) Provision for traffic, including TMP.	Allow			90,000				50,000	
	(c) Allowances for sediment and erosion controls.	Per Stage			30,000		5	30,000	150,000	
	(d) Preparation for site clearing:									
	(i) Level 4 arborist.	Allow							5,000	
	(ii) EPA rescue permit and spotter/catcher.	Allow							6,000	
	(e) Allowance for general site clearing of existing trees, grasses, debris.	Allow			25,000				110,000	
	(f) Allowance for any site demolition works (Provisional).	Allow			15,000				10,000	
						$205,000				**$531,000**
2.	**BULK EARTHWORKS:**									
	(a) Topsoil stripping (nominal 150mm depth) to all works areas.	cu. m.	600	7.00	4,200		41,700	7.00	291,900	
	(b) Bulk earthworks allowance - indicative only, based on preliminary site modelling by GeoLink, including roadworks, verges and re-shaping for allotment building pads.	cu. m.					206,000	9.00	1,854,000	
	(c) Allowance for bulk earthworks to site frontage works and roadworks upgrade areas, including allowance for pavement box.	cu. m.	4,000	10.00	40,000					
	(d) Allowance for removal of unsuitable subgrade material, including replacement with imported fill material (if required).	cu. m.	400	25.00	10,000		20,000	25.00	500,000	
	(e) Allowance for Level 1 certification.	Allow			4,000				190,000	
	(f) Inspection by Principal's geotechnical engineer, including stability assessment.	Allow			3,000				25,000	
	(g) Topsoil replacement to verges, batters and lots.	cu. m.	600	9.00	5,400		41,700	9.00	375,300	
	(h) Allowance for stabilisation treatment to finished allotment pads and batters - Vital Strike with Seed. (Provisional)	sq. m.	2,100	1.00	2,100		194,000	1.00	194,000	
	(i) Allowance for retaining walls to allotments:									
	(i) 1.0m nominal height (precast concrete sleeper walls).	lin. m.					4,300	550	2,365,000	
	(ii) 2.0m nominal height (precast concrete sleeper walls).	lin. m.					1,600	1,000	1,600,000	
	(iii) 2-Tier x 1.0m nominal height landscape boulder feature walls to site frontage.	lin. m.					415	1,100	456,500	
	(j) Allowance for acoustic fencing to site frontage.	Allow			Nil				Nil	
						$68,700				**$7,851,700**
3.	**ROADWORKS:**									
	(a) Allowance for external works for main intersection onto James Creek Road, including roadworks to site frontage and turn-lanes.	Allow			600,000					
	(b) Allowance for concrete footpaths to James Creek Road site frontage (nominal 2.0m width) - external siteworks.	lin. m.	430	190.00	81,700					
	(c) Internal Driveway Accesses (nominal 4.0m width - concrete).	lin. m.					150	680	102,000	
	(d) Internal Local Access Roads (7.0m K-K)	lin. m.					1,210	1,020	1,234,200	
	(e) Internal Minor-Collector Roads (9.0m K-K)	lin. m.					1,360	1,300	1,768,000	
	(f) Internal Collector Roads (11.0m K-K)	lin. m.					1,560	1,600	2,496,000	
	(g) Internal Main Eastern Entry Collector Road (nominal 13.0m K-K)	lin. m.					60	1,880	112,800	

PRELIMINARY CIVIL COST ESTIMATE

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			EXTERNAL WORKS				INTERNAL WORKS			
ITEM	*SECTION & DESCRIPTION*	*UNIT*	*QTY*	*RATE*	*AMOUNT*	*SUB-TOTAL*	*QTY*	*RATE*	*AMOUNT*	*SUB-TOTAL*
	(h) Extra/over allowance for internal Main Eastern Entry roundabout, including medians, feature pavements etc. (Provisional)	Allow							100,000	
	(i) Concrete footpaths:									
	(i) Internal footpaths (nom. 1.2m width) - Parkland Paths.	lin. m.					230	130.00	29,900	
	(ii) Internal footpaths (nom. 1.2m width) - Link Paths.	lin. m.					580	130.00	75,400	
	(iii) Internal footpaths (nom. 1.5m width) - Community Paths.	lin. m.					1,360	150.00	204,000	
	(iv) Internal footpaths (nom. 2.0m width) - Perimeter Shared Paths / Bikepaths.	lin. m.					1,800	190.00	342,000	
	(v) Allowance for bikepath turnaround feature areas.	No.					1	20,000	20,000	
	(j) Allowance for pavement marking and signage.	Allow			5,000				15,000	
	(k) Allowance for temporary turnaround areas to roadworks stage limits. (Provisional)	No.					4	10,000	40,000	
	(l) Allowance for cover-turf to road verges.	sq. m.	2,000	6.00	12,000		38,000	8.00	304,000	
						$698,700				**$6,843,300**
4.	**STORMWATER DRAINAGE:**									
	(a) Stormwater Drainage Lines:									
	(i) RCP's - inter-allotment	lin. m.							Nil	
	(ii) RCP's - 375 to 525mm dia.	lin. m.					2,250	330.00	742,500	
	(iii) RCP's - 600 to 825mm dia.	lin. m.					960	500.00	480,000	
	(iv) RCP's - 900 to 1200mm dia.	lin. m.					770	850.00	654,500	
	(v) RCP's - 1350 to 1500mm dia.	lin. m.					225	1,050.00	236,250	
	(vi) RCP's - 1650 to 1800mm dia.	lin. m.					45	1,300.00	58,500	
	(vii) E/O for additional bedding. (Provisional)	cu. m.					1,250	100.00	125,000	
	(viii) E/O for excavation of rock in trenches. (Provisional)	Allow							100,000	
	(b) Stormwater Structures:									
	(i) Inter-allotment pits	No.							Nil	
	(ii) Gully pits.	No.					95	3,500	332,500	
	(iii) Gully pit / manholes.	No.					23	4,500	103,500	
	(iv) Manholes.	No.					3	4,000	12,000	
	(v) Larger gully pit / manholes.	No.					12	7,500	90,000	
	(vi) Large gully pit / chamber manholes.	No.					7	11,000	77,000	
	(vii) Large weir outlet pits to basins.	No.					3	6,000	18,000	
	(viii) Large headwalls to basin inlets and outlets.	No.					6	4,500	27,000	
	(c) Allowance for bio-basin outlets into existing gullies, including the following scour protection:									
	(i) Cement grouted stone-pitching to outlets.	sq. m.					120	240.00	28,800	
	(ii) Rock protection on geotextile to stormwater inlets/outlets (nom. 400mm thickness).	sq. m.					120	140.00	16,800	
	(d) Allowance for safety fences to large headwalls.	lin. m.					80	180.00	14,400	
	(e) CCTV video survey and condition reports (2 No).	Per Stage					5	12,000	60,000	
						Nil				**$3,176,750**

PRELIMINARY CIVIL COST ESTIMATE

Project: **James Creek Road, Yamba**
(Based on Concept Sketches prepared by GeoLink, current as at October 2023, for 343 Lot Residential Subdivision)

Date: 27 October 2023

Job No: BE21 0466

BE21 0466_James Creek_Prelim Civil Cost Estimate_27 October 2023.xls

			EXTERNAL WORKS				INTERNAL WORKS			
ITEM	*SECTION & DESCRIPTION*	*UNIT*	*QTY*	*RATE*	*AMOUNT*	*SUB-TOTAL*	*QTY*	*RATE*	*AMOUNT*	*SUB-TOTAL*
5.	**POTABLE WATER RETICULATION:**									
	(a) External Trunk Mains - James Creek Road frontage and northern extension (nominal 225mm dia. UPVC trunk main).	lin. m.	1,500	360	540,000				Nil	
	(b) Internal Reticulation Mains & Fittings.	lin. m.					4,400	300	1,320,000	
	(c) Road Crossing Service Conduits.	No.					45	900	40,500	
	(d) Sterilisation & Testing.	Per Stage			4,500		5	4,500	22,500	
	(e) Allowance for connections to existing Council water mains at internal stage limits.	Per Stage					5	12,000	60,000	
	(f) External connection to existing Council 250mm dia. trunk water main in James Creek Road.	No.	1	15,000	15,000					
	(g) Allowance for provision of bulk water meters to future high-density parcels.	No.			Nil				Nil	
						$559,500				**$1,443,000**
6.	**SEWERAGE RETICULATION:**									
	(a) External sewer rising main connection along James Creek Road and Gardiner Road frontage, to Diamond Street existing pump station (nominal 100mm dia. rising main).	lin. m.	4,900	240	1,176,000				Nil	
	(b) Internal Gravity Reticulation Sewer Mains, including all structures and fittings.	lin. m.					3,800	400	1,520,000	
	(c) E/O allowance for excavation of rock in trenches.	Allow			15,000				85,000	
	(d) Connections to existing Council sewer mains.	Per Stage					5	10,000	50,000	
	(e) Allowance for internal sewer rising main connecting internal pump stations.	lin. m.					650	240	156,000	
	(f) Allowance for internal sewer pump stations (2 No.)	No.					2	450,000	900,000	
	(g) Allowance for connection of sewer rising main to existing pump station in Diamond Street.	Allow			20,000					
	(h) CCTV video survey and condition reports (2 No per stage).	Per Stage			10,000		5	10,000	50,000	
						$1,221,000				**$2,761,000**
7.	**ELECTRICAL & COMMUNICATIONS (ROAD CROSSINGS ONLY): (PROVISIONAL)**									
	(a) Allowance for Road Crossing Conduits - Main Trunk Crossings	No.					16	4,500	72,000	
	(b) Allowance for Road Crossing Conduits - Allotment Service Crossings	No.					72	3,000	216,000	
	(c) Electrical Reticulation	(By others)							(By others)	
	(d) Co-ordination with electrical and communications consultant and sub-contractors.	Allow							6,000	
						Nil				**$294,000**
8.	**STORMWATER TREATMENT:** *(Note: Allowances only, subject to detailed SMP).*									
	(a) Allowance for stormwater treatment/detention basins - larger eastern basins.	No.					2	130,000	260,000	
	(b) Allowance for stormwater treatment/detention basin - smaller basin SW corner.	No.					1	100,000	100,000	
	(c) Allowance for concrete access ramp to basins.	No.					3	12,000	36,000	
	(d) Allowance for concrete overflow weir and scour protection to basins.	No.					3	15,000	45,000	
						Nil				**$441,000**
	SUB-TOTALS:					**$2,752,900**				**$23,341,750**
9.	**COMBINED SUB-TOTAL (CIVIL CONSTRUCTION) - INTERNAL & EXTERNAL:**	**$26,094,650**								

PRELIMINARY CIVIL COST ESTIMATE

Project: **James Creek Road, Yamba**
(Based on Concept Sketches prepared by GeoLink, current as at October 2023, for 343 Lot Residential Subdivision)

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			EXTERNAL WORKS				INTERNAL WORKS			
ITEM	*SECTION & DESCRIPTION*	*UNIT*	*QTY*	*RATE*	*AMOUNT*	*SUB-TOTAL*	*QTY*	*RATE*	*AMOUNT*	*SUB-TOTAL*
10.	**Other Costs:**									
	(a) Contingency Allowance (Allow 15%).	Allow			412,940				3,501,270	
	(b) Allowance for Insurances.	Allow			13,800	$426,740			116,800	$3,618,070
	SUB-TOTAL:					**$3,179,640**				**$26,959,820**
11.	GST Allowance (10%)	(Not Included)				(Not incl.)				(Not incl.)
12.	Long Service Leave Levy - NSW Building & Construction Industry (0.25%)	Allow				7,950				67,400
	CIVIL CONSTRUCTION SUB-TOTALS (Not including GST):					**$3,187,590**				**$27,027,220**
	Internal Subdivision Civil Construction Costs: for 343 Res. Lots Total (Not incl. GST):	**Cost per Lot**					**$78,800**			
13.	**OTHER DEVELOPMENT CONSTRUCTION COSTS:** *(The following additional development costs are intended as indicative allowances only and are subject to confirmation by the relevant consultants and authorities).*									
14.	**Electricity Reticulation:** (Subject to confirmation)									
	(a) Design/Construction by Private Contractor (incl. Communications Retic. for Telstra/NBN):									
	(i) Conventional Residential Lots - Internal.	Per Lot					343	9,500	3,258,500	
	(b) Allowance for Sub-Stations.	Allow							(Included)	
	(c) Adjust/Remove External Lines (if required).	Allow			30,000					
	(d) Allowance for Traffic-Signalisation.	Allow			Nil					
	(e) GST Allowance (10%)	Allow			(not incl.)	**$30,000**			(not incl.)	**$3,258,500**
15.	**Allowances for Landscaping:** (Subject to confirmation)									
	(a) Streetscaping / Landscaping - Internal:									
	(i) Conventional Residential Lots.	Per Lot					343	5,000	1,715,000	
	(b) Allowance for external landscape/steetscape treatment to James Creek Road.	Allow			100,000					
	(c) Allowance for Feature Areas, Furniture & Equipment to Internal Park Areas.	Allow							120,000	
	(d) Allowance for Bollards and Gates to Park Areas.	Allow							30,000	
	(e) GST Allowance (10%)	Allow			(not incl.)	**$100,000**			(not incl.)	**$1,865,000**
	CONSTRUCTION COSTS SUB-TOTAL (CIVILS, ELECTRICAL, LANDSCAPE):					**$3,317,590**				**$32,150,720**
	Internal Subdivision Construction Costs: for 343 Res. Lots Total (Not incl. GST):	**Cost per Lot**					**$93,800**			

PRELIMINARY CIVIL COST ESTIMATE

Project: **James Creek Road, Yamba**
(Based on Concept Sketches prepared by GeoLink, current as at October 2023, for 343 Lot Residential Subdivision)

Date: 27 October 2023

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			EXTERNAL WORKS				INTERNAL WORKS			
ITEM	*SECTION & DESCRIPTION*	*UNIT*	*QTY*	*RATE*	*AMOUNT*	*SUB-TOTAL*	*QTY*	*RATE*	*AMOUNT*	*SUB-TOTAL*
16.	**TOTAL ESTIMATED CONSTRUCTION COST (EXTERNAL & INTERNAL WORKS):** (GST not included)									**$35,468,310**

NOTES:

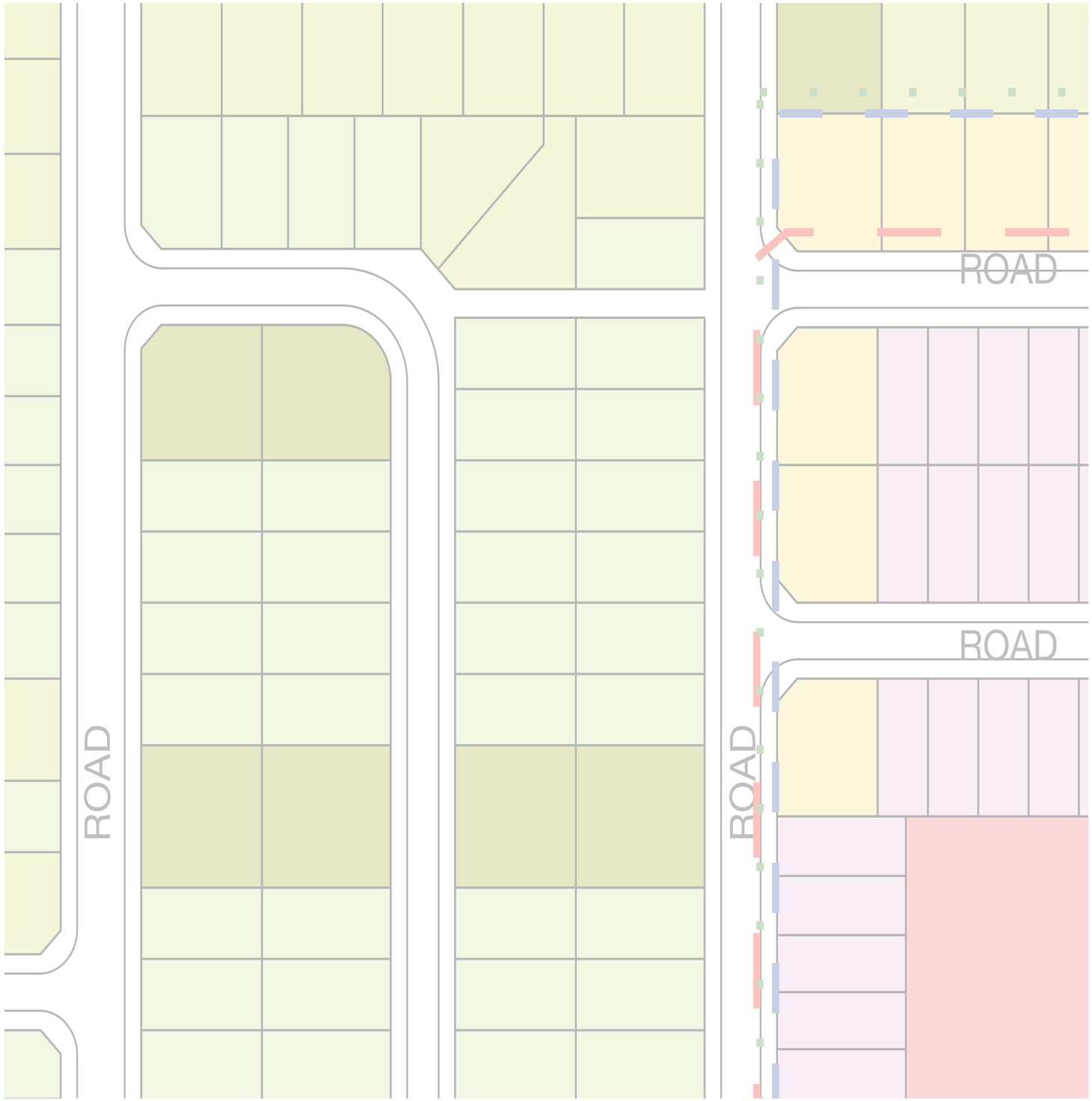
1. This cost estimate is based on preliminary concept sketches by GeoLink (current as at October 2023), based on a 343-Lot Residential Subdivision.
2. This preliminary cost estimate is based on historical costs from other civil projects and has been prepared in order to provide an initial broadscale assessment of indicative development costs only. There are many factors that can affect costs such as project specific site conditions, location, designs, standards & approvals, contractor materials & labour pricing, and general market conditions.
3. Market Conditions - Based on recent Tenders and communications with Civil Contractors there have been significant price increases over the last 12-18 months. Beyond this there is still a lot of uncertainty and instability on pricing directions. There are significant lead times on materials, shortage of labour and trades people /subcontractors. We strongly recommend the developer undertake their own enquiries and assessments and apply relevant alterations and contingency allowances as required.
4. This preliminary cost estimate is subject to detailed survey, geotechnical investigations and reporting, hydraulic modelling, detailed civil designs, stormwater management reporting, environmental investigations and relevant authority approvals.
5. No detailed design has been undertaken at the time of this preliminary estimate. Quantities shown are generally based on current preliminary development schematics prepared by GeoLink.
6. Site earthworks allowances shown in the estimate are indicative/broadscale only, based on preliminary site modelling by GeoLink and are subject to detailed earthworks modelling and geotechnical assessment.
7. No allowance has been made in the estimate for Acid-Sulfate Soils testing or treatment (if required).
8. No allowance has been made in the estimate for excavation in rock in general earthworks. Nominal, indicative allowances have been made for rock excavation in stormwater and sewer trenches, subject to geotech investigations and detailed designs.
9. Retaining wall rates shown are based generally on using proprietary concrete sleeper retaining walls, with some areas of landscape boulder walls. Quantities and costings shown are indicative only, subject to detailed earthworks modelling.
10. Allowances made for internal road carriageway widths are intended as indicative only at this stage, subject to a detailed traffic assessment and confirmation by Council.
11. Allowances made for external roadworks and upgrade works to James Creek Road are indicative/broadscale only, subject to concept confirmation and detailed engineering designs.
12. Civil services quantities and costings for stormwater drainage, water reticulation and sewerage reticulation are based generally on GeoLink preliminary schematics and are subject to detailed civil designs.
13. Costs allowed for sewerage reticulation are based on traditional gravity reticulation system subject to Council acceptance.
14. No allowance has been made for the protection and/or relocation of any existing services along external roads.
15. Allowances made in the estimate for stormwater treatment basins are indicative only, subject to preparation and approval of a detailed Stormwater Management Plan for the overall development.
16. Cost allowances shown for electrical reticulation and landscaping works are intended to be indicative only, subject to confirmation by the relevant consultants.
17. Nominal allowances have been made in the estimate for professional fees. These will be subject to confirmation by the relevant consultants.
18. This preliminary cost estimate does not include Council headworks fees or any application fees and charges.

DISCLAIMER

Please note that a preliminary development concept plan or development estimate produced by Burchills Engineering Solutions or its subsidiary companies for a given parcel of land has been produced to provide an indication of the possible civil construction costs or development outcome based on a preliminary appraisal of the facts and constraints relating to the parcel, but without the benefit of detailed technical assessment of the town planning constraints or detailed survey. The appraisal process which involves advice from other project consultants, preparation of technical reports, responding to the Council information requests and information requests from State and Federal referral agencies and finally receipt of a decision notice from Council will involve many changes to the development proposal to take account of a range of constraints and requirements of a range of legislation, guidelines and town planning outcomes. The information thus so given in this estimate is preliminary only and shall not be relied upon as a definitive statement of the development rights, costs or suitability of the land.

Enclosure 12

Master Plan and building typologies report prepared by RAD Architects dated November 2023



DEVELOPMENT APPLICATION

MASTER PLAN AND DWELLING TOPOLOGIES

LOCATION
LOT 103 DP751388, JAMES CREEK ROAD,
JAMES CREEK

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JOB NUMBER: 2842	CLIENT: MPD INVESTMENTS	DATE: NOV 23	rad
AMENDMENT:	PROJECT: village@ james creek	SCALE: AS SHOWN	
	TITLE: CONCEPT MASTER PLAN AND TYPOLOGY COVER	ISSUE: CONCEPT	
		DRAWING NO: 1	

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JOB NUMBER: 2842

AMENDMENT:

CLIENT: MPD INVESTMENTS

PROJECT: village@ james creek

TITLE: CONCEPT MASTER PLAN AND TYPOLOGY CONTENTS

DATE: NOV 23

SCALE: AS SHOWN

ISSUE: CONCEPT

DRAWING NO: 2

rad

Introducing "Village @James Creek" - Master Plan Design Intent Statement

In response to council concerns about the proposed development's potential impact on the surrounding rural and semi-rural setting, significant design adaptations have been incorporated to facilitate a more harmonious integration of a 'village' style settlement.

Preserving Landscape Identity: The revised proposal prioritizes the preservation of the natural setting by integrating a substantial 50-meter wide buffer between each residential lot and neighboring properties on three boundaries. This buffer acts as a distinct visual and spatial separation, distinguishing the new development from its rural and semi-rural surroundings.
Transitional Lot Planning: Deliberate lot arrangements ensure a gradual transition, positioning larger lots adjacent to the landscape buffer (600m2), gradually shifting to smaller lots deeper within the development within the higher density zone. This intentional placement maintains a harmonious interface with rural and semi-rural boundaries.
Topographical Considerations: Careful integration of the natural slope into the master plan design and strategic retaining wall placements minimize visual impacts. Enhanced landscaping softens the retaining walls, adhering to height limits for a consistent and integrated appearance.
Strategic Connectivity and Accessibility: The proposal envisions potential re-routing of local bus routes into the development (subject to future consultations) , optimizing internal road widths to accommodate a seamless integration. A compact layout with a transport node ensures convenient access to essential village green hub , complemented by pedestrian-friendly pathways and cycling routes.
Community-Centric Approach: Central to the plan is a vibrant "village green" fostering social interaction and community engagement, creating a cohesive and inclusive atmosphere.
Refined Vision for "Village @James Creek": Aligned with council suggestions, the project focuses on creating a 'Village @James Creek', emphasizing a captivating village green, mixed residential-use zoning, and diverse housing options.
Core Elements: The residential product types include low-scale standalone or attached buildings complying with local council regulations. The layout prioritizes traditional street setbacks and ensures adequate on-street parking spaces.
Distinctive Character and Place Making: The village is designed to blend with surroundings while integrating rural elements through thoughtful landscaping, adding value and fostering a unique identity.
Aim for Harmony: Sensitive design considerations mitigate adverse impacts on neighboring developments, ensuring a positive contribution to the area's overall quality.

In summary, the vision for "Village @James Creek" aims to create a distinctive and harmonious settlement, prioritizing aesthetics, functionality, and a strong community identity that blends seamlessly with the surrounding environment, reminiscent of a charming village settlement.

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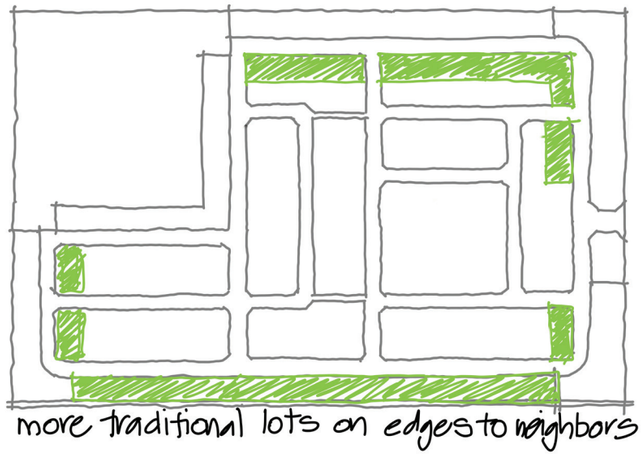
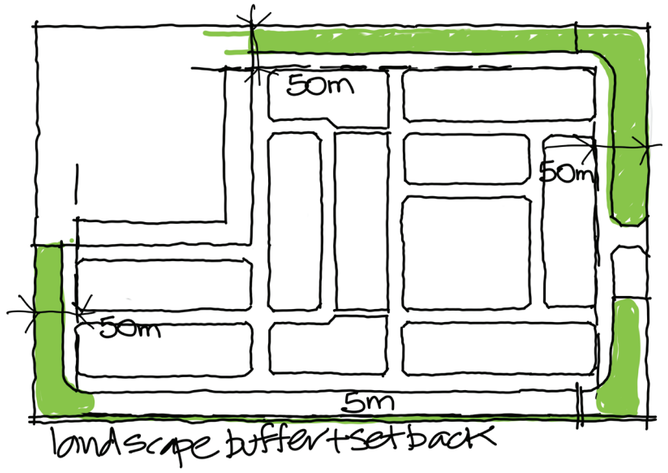
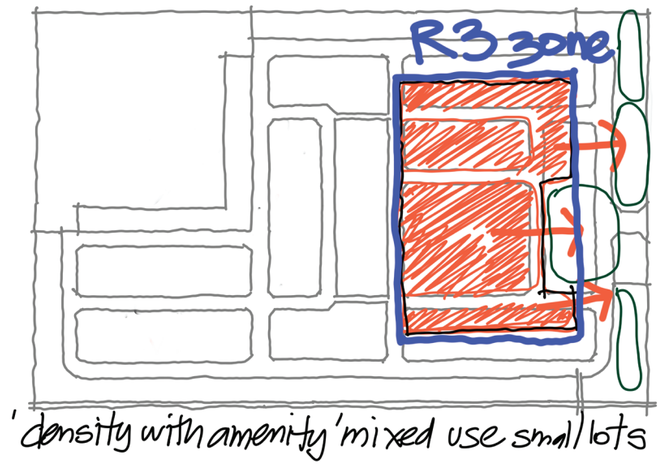
AMENDMENT:	PROJECT: village@ james creek	SCALE: AS SHOWN	
	TITLE: 1-CONCEPT MASTER PLAN AND TYPOLOGY 1-EXECUTIVE SUMMARY	ISSUE: CONCEPT	
		DRAWING NO: 3	rad







In response to the Clarence Valley Council's comments regarding the proposed development's design potential impact on the surrounding rural and semi-rural setting, significant design adaptations have been introduced to facilitate a more harmonious integration of a "village" style settlement.

The response outlines design principles integral to the proposal's context as a response to the Councils comments:

Preserving Landscape Identity:
The revised proposal prioritizes the preservation of the natural setting by incorporating a substantial landscaping within a 50 meters wide setback zone , between each residential lot and neighboring properties on three boundaries. This buffer serves as a clear visual and spatial separation, effectively distinguishing the new development from the surrounding rural and semi-rural landscapes.

Transitional Lot Planning:
A deliberate approach has been taken in arranging residential lots to ensure a gradual transition. Larger, traditionally sized lots (600m2) have been strategically positioned adjacent to the landscape buffer, facilitating a gradual shift from open landscapes to smaller lots deeper within the development within the R3 zone envelope.

Critically, smaller lots are intentionally located away from the perimeter and are designated within the higher density zone, maintaining a harmonious interface with the rural and semi-rural boundaries.
These design refinements directly address concerns about the compatibility of the new urban development with the existing natural environment and character of the surrounding areas. The objective is to create a cohesive visual settlement and uphold harmony between the new development and its surroundings.

Topographical Considerations :
Taking into account apprehensions regarding the proposed urban development's harmony with the area's topography and surrounding landscape, sensitive land form design principles have been carefully incorporated: Detailed study by the Civil Engineer provides a suitable outcome and improvement on the original application.

Respectful Topography Integration:
The design respects the land's natural slope, which descends from a central crest towards the outer perimeter. This natural slope has been thoughtfully incorporated into the development master plan.

KEY PRINCIPLES INCORPORATED INTO THE REDESIGNED MASTER PLAN AS A RESPONSE TO THE CLARENCE VALLEY COUNCIL COMMENTS

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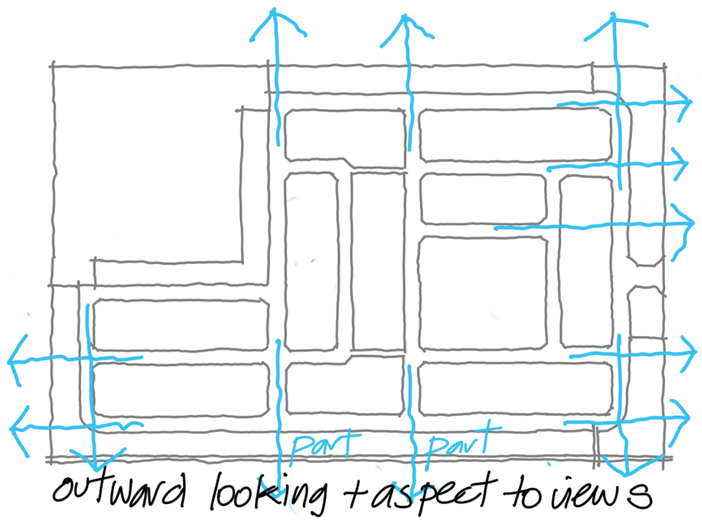
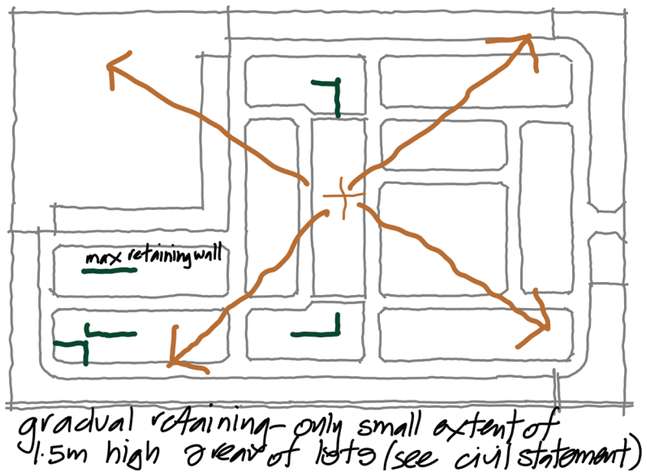
	TITLE: 1-CONCEPT MASTER PLAN AND TYPOLOGY 2.1-KEY PRINCIPLES OF MASTER PLAN	ISSUE: CONCEPT	
		DRAWING NO: 4	





KEY PRINCIPLES INCORPORATED INTO THE REDESIGNED MASTER PLAN AS A RESPONSE TO THE CLARENCE VALLEY COUNCIL COMMENTS

In response to the Clarence Valley Council's comments regarding the proposed development's design potential impact on the surrounding rural and semi-rural setting, significant design adaptations have been introduced to facilitate a more harmonious integration of a "village" style settlement.

The response outlines design principles integral to the proposal's context as a response to the Councils comments:

Strategic Retaining Wall Placement:
A comprehensive civil engineering study guided the placement of retaining walls. They are purposefully situated at the rear of the lots, minimizing their visual impact from public views and ensuring a smooth transition from higher central points to lower perimeters.

Leveraging Landscaping Opportunities:
Placing retaining walls at the rear of the lots offers opportunities for enhanced landscaping, softening their appearance and contributing to an aesthetically pleasing environment.

Cut and fill- Height Limits and Design Consistency:
To maintain openness and visual continuity, strict height limits for cut and fill and retaining walls have been adhered to. Additionally, a recognized system for retaining wall design ensures structural integrity while blending seamlessly with the overall development.

The utilization of retaining walls to create level residential lots accommodates traditional housing types, optimizing land use, ensuring aesthetic consistency, and aligning with market preferences for low-cost affordable housing.

These meticulous design principles have sensitively integrated suburban development within the existing topography, ensuring a balanced outcome that respects the natural contours of the land.

Strategic Connectivity:
The proposal introduces an opportunity for enhanced community integration by potentially re-routing the local bus route into the development pending successful future negotiation. The internal road widths are meticulously designed to seamlessly incorporate the bus route.
Moreover, pedestrian links within the development are strategically placed to provide convenient access to bus stops.

Compact Design for Accessibility:
A key feature of the proposal is its compact layout, complemented by the inclusion of a transport node.
This layout aims to improve access to essential services such as childcare, retail outlets, and the village park, all conveniently situated within the site. The design aims to ensure that necessary services are easily reachable for residents..

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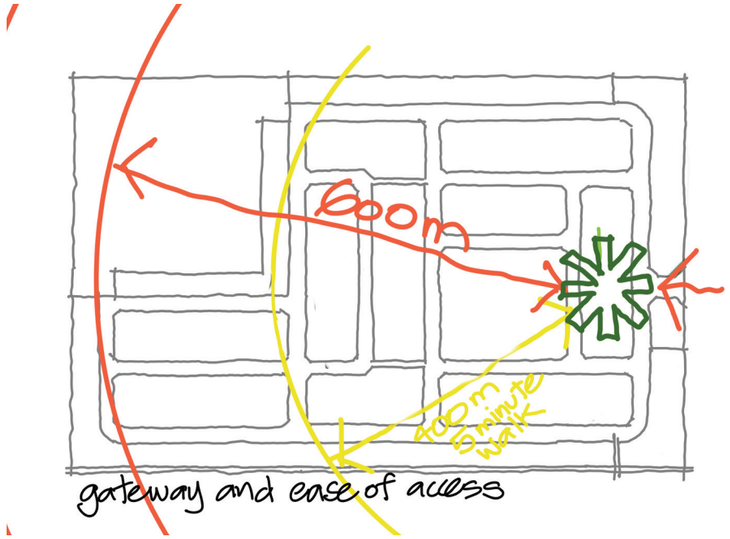
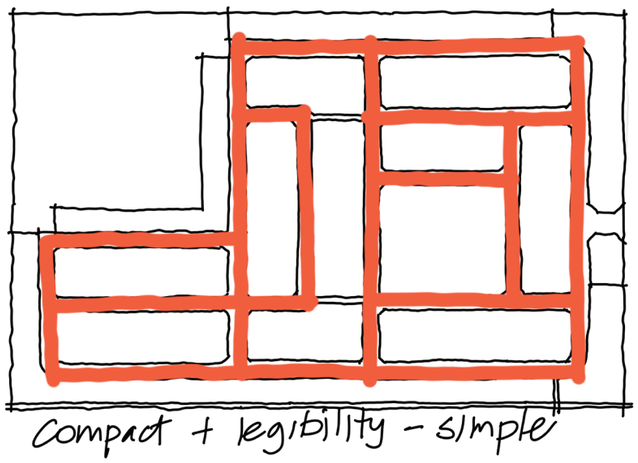
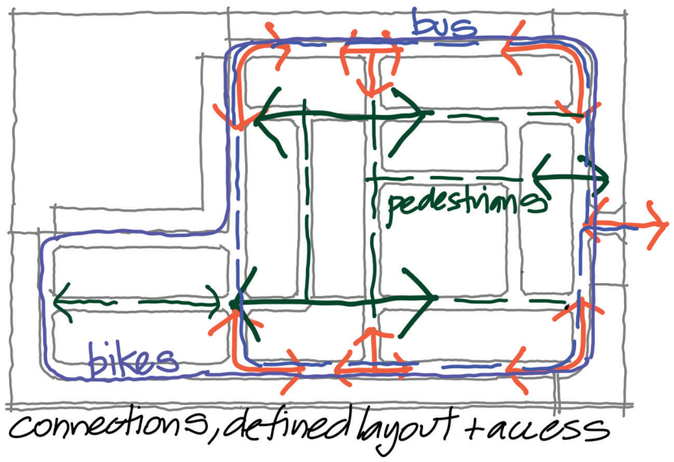
JOB NUMBER: 2842	CLIENT: MPD INVESTMENTS	DATE: NOV 23	
AMENDMENT:	PROJECT: village@ james creek	SCALE: AS SHOWN	
	TITLE: 1-CONCEPT MASTER PLAN AND TYPOLOGY 2.2 -KEY PRINCIPLES OF MASTER PLAN	ISSUE: CONCEPT	
		DRAWING NO: 5	rad







KEY PRINCIPLES INCORPORATED INTO THE REDESIGNED MASTER PLAN AS A RESPONSE TO THE CLARENCE VALLEY COUNCIL COMMENTS

In response to the Clarence Valley Council's comments regarding the proposed development's design potential impact on the surrounding rural and semi-rural setting, significant design adaptations have been introduced to facilitate a more harmonious integration of a "village" style settlement.

The response outlines design principles integral to the proposal's context as a response to the Councils comments:

Emphasis on Walking and Cycling:
The proposal emphasizes a well-designed network of pedestrian and cycle paths intricately woven around a clear and easily navigable road layout. This deliberate arrangement, coupled with communal green spaces, encourages walking and cycling by offering safe and convenient routes for residents to traverse within the neighborhood.

Community-Centric Approach:
Central to the proposal is the inclusion of a central "village green" acting as a focal point catering to the needs and activities of the community. This communal space is purposefully designed to promote social interaction and foster a sense of belonging among residents.

In summary, these design principles concentrate on strategic connectivity through potential bus route alterations, a compact layout enhancing accessibility to services, walking and cycling infrastructure, and the creation of a community-centric "village green."

Collectively, these aspects aim to cultivate a vibrant and well-connected neighborhood, fostering a sense of community and enhancing residents' quality of life.

In response to the council's suggestions to potentially create a development more reminiscent of a 'village' style and to address other issues, the design principles refine the vision for the suburban development, to be known as "Village @James Creek"

This project is anchored on creating a village green at the "front door" captivating public spaces, a blend of land-use, and a diverse array of suburban housing options.

Product Typologies:
The residential product types are "the more traditional "stand alone or attached low scale buildings. Product layout complies to the requirements of the Clarence Valley Council DCP. Scale is generally one or two levels with traditional 6m street setback. It was imperative that the lot width was 12.5m to ensure on street car parking spaces between driveways.
Some typology examples have been included to reflect significant design response and lifestyle solution on smaller lots, maintaining a suburban character with "pavilion" courtyard houses as a series of buildings creating a residential "village".

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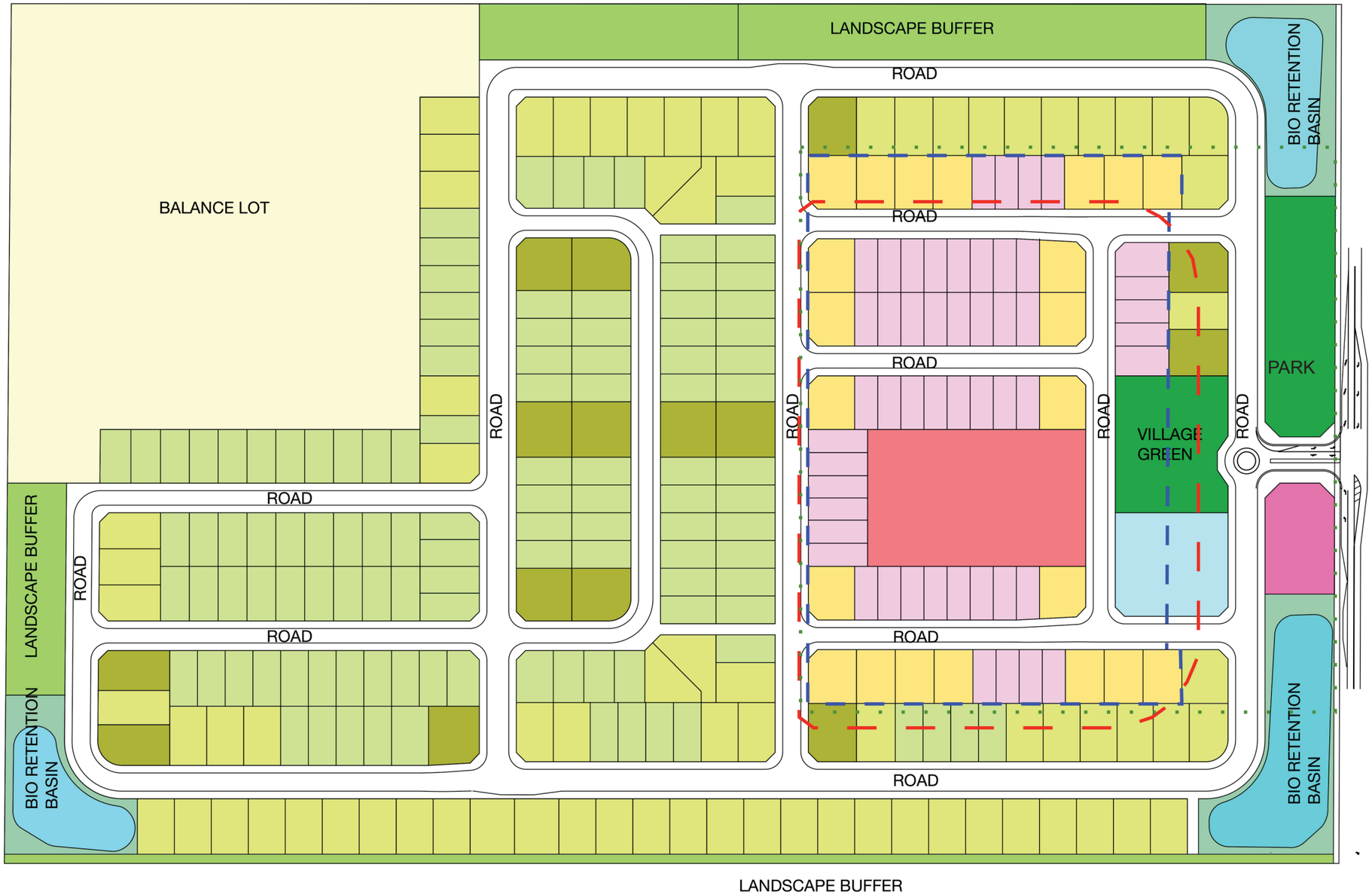
JOB NUMBER: 2842	CLIENT: MPD INVESTMENTS	DATE: NOV 23	rad
AMENDMENT:	PROJECT: village@ james creek	SCALE: AS SHOWN	
	TITLE: 1-CONCEPT MASTER PLAN AND TYPOLOGY 2.3-KEY PRINCIPLES OF MASTER PLAN	ISSUE: CONCEPT	
		DRAWING NO: 6	



LEGEND

RESIDENTIAL R1 ZONE AREA- LOTS		LOTS	YIELD
	RESIDENTIAL >450M2	113	113
	RESIDENTIAL >600M2	78	78
	RESIDENTIAL >800M2 DUPLEX	15	30
		206	221

RESIDENTIAL R3 ZONE AREA- LOTS			
	RESIDENTIAL >350M2	51	51
	RESIDENTIAL >600M2 DUPLEX	22	44
	RESIDENTIAL MULTI DWELLING	01	38
		74	133

TOTAL	280	354

OTHER

- PUPLIC OPEN SPACE-PARK- MIN 9264M2
- COMMERCIAL- 2194 M2 APPROX
- CHILD CARE- 3391M2 APPROX
- BALANCE LOT- 56300 M2 APPROX (Yellow shade)
- LANDSCAPE BUFFER
- BIO RETENTION BASIN AREA

BOUNDARY

- EXISTING R3 ZONING BOUNDARY LOCATION
- PROPOSED R3 ZONING BOUNDARY LOCATION
- the village @James Creek

R3 ZONE AREA
EXISTING APPROX 61000M2
(NOTIONAL)

0 50 100 150 200

PLAN- UPDATED CONCEPT MASTER PLAN- the village @ James creek

SCALE- 1:2500 AT A3

REF TO CIVIL ENGINEER FOR ALL DETAILS

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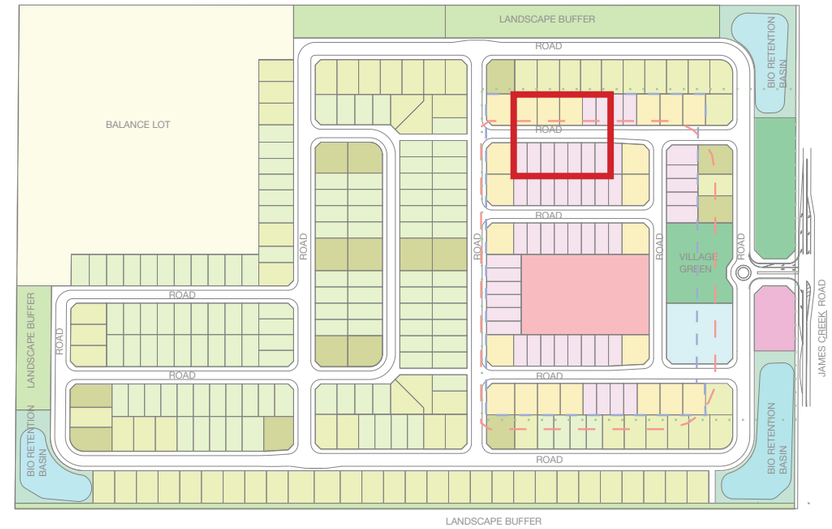
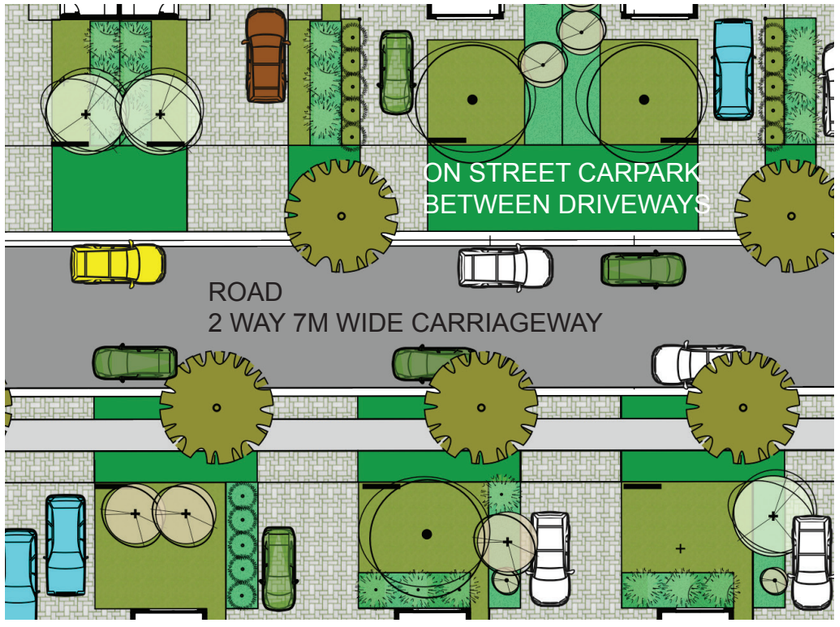
JOB NUMBER:	2842	CLIENT:	MPD INVESTMENTS	DATE:	NOV 23
AMENDMENT:	rev F 27 nov 23	PROJECT:	village@ james creek	SCALE:	AS SHOWN
		TITLE:	1-CONCEPT MASTER PLAN 3-MASTER PLAN (rev e) ILLUSTRATION	ISSUE:	CONCEPT
				DRAWING NO:	7

rad

PLAN- CONCEPT LAYOUT OF ROAD 4 16M WIDE
INDICATING MIX, STREET SCAPE CHARACTER, CAR PARKING (ON SITE AND ON STREET) AND LANDSCAPE OPPORTUNITIES
REFER TO LANDSCAPE ARCHITECT FOR LANDSCAPE DESIGN INTENT
REFER TO CIVIL ENGINEER FOR ALL DETAILS



PLAN- LOCATION AND CONTEXT OF STUDY
TYPICAL STREET IN R3 RESIDENTIAL ZONE ILLUSTRATING TYPOLOGIES ARRANGEMENT ALONG TYPICAL STREET



PLAN- CONCEPT LAYOUT OF ROAD 4 16M WIDE
ENLARGED DETAIL OF ON STREET CAR PARKING BETWEEN DUPLEX TYPOLOGIES -DRIVEWAYS/CROSS OVERS
REFER TO LANDSCAPE ARCHITECT FOR LANDSCAPE DESIGN INTENT
REFER TO CIVIL ENGINEER FOR ALL DETAILS

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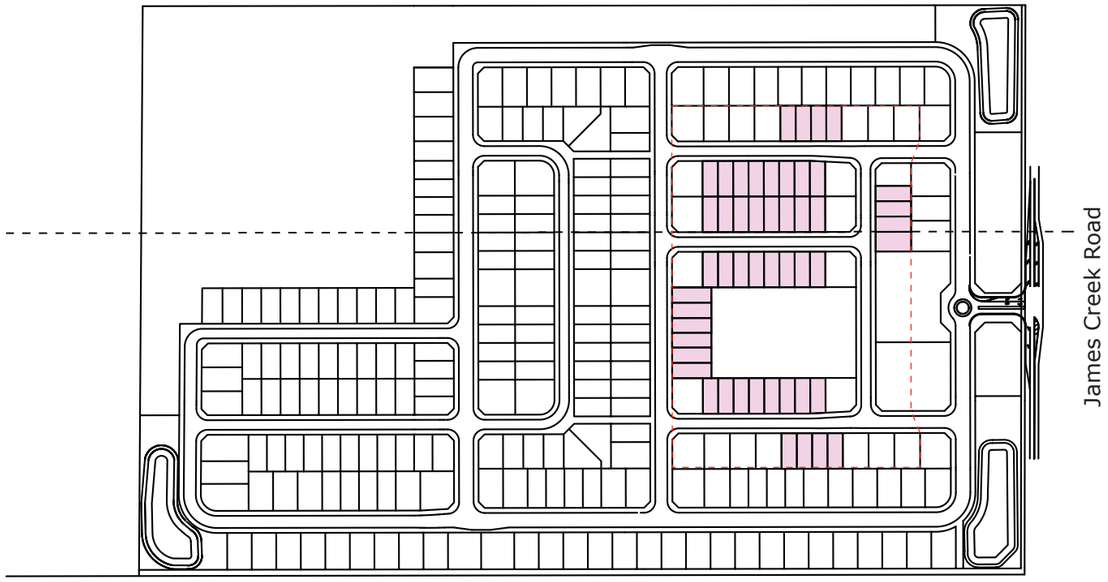
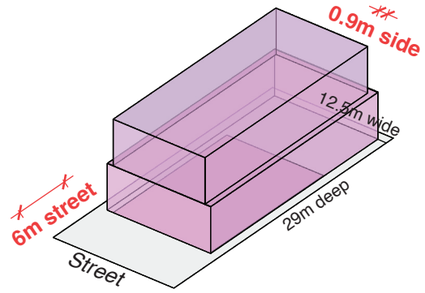
JOB NUMBER: 2842	CLIENT: MPD INVESTMENTS	DATE: NOV 23	
AMENDMENT:	PROJECT: village@ james creek	SCALE: AS SHOWN	
	TITLE: 1-CONCEPT MASTER PLAN 4-MASTERPLAN DESIGN PRINCIPLES- STREETSCAPE CONCEPT	ISSUE: CONCEPT	
		DRAWING NO: 8	rad

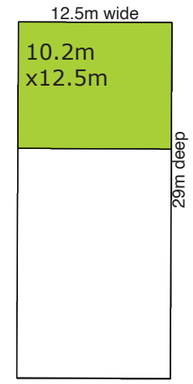


R3 zone

R3 zone- 350m2 lots

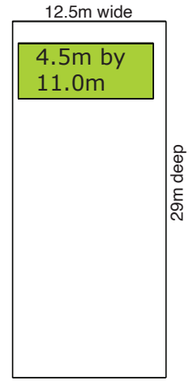


6.0m- street
0.9m- side and rear boundary (single level)



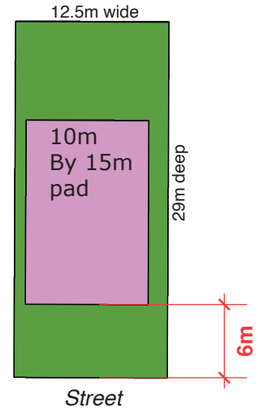
35% of 362.5m2 lot=126.88m2

35% LANDSCAPE REQUIREMENTS



4.5m min by 11.0m

50M2 PRIVATE OPEN SPACE REQUIREMENTS



6m setback for pad test

10M BY 15M PAD TEST REQUIREMENTS

PLAN- LOCATION

SCALE 1:5000

CVC DCP RULES

SCALE 1:500

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JOB NUMBER: 2842

AMENDMENT:

CLIENT: MPD INVESTMENTS

PROJECT: village@ james creek

TITLE: 2-RESIDENTIAL TYPOLOGY 350M2 LOT
1-SINGLE LEVEL HOUSE- CVC DCP CRITERIA

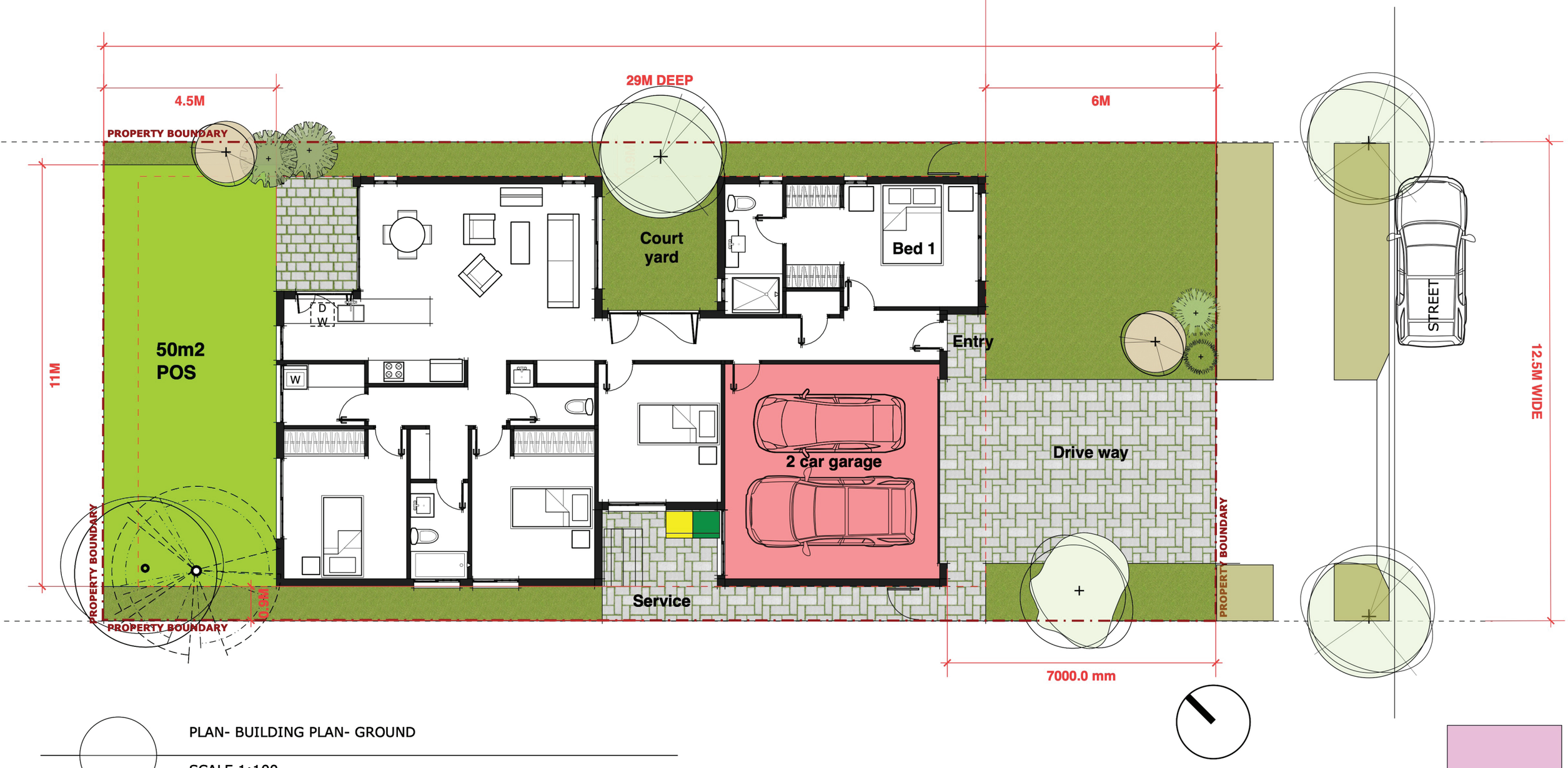
DATE: NOV 23

SCALE: AS SHOWN

ISSUE: CONCEPT

DRAWING NO: 9

rad



PLAN- BUILDING PLAN- GROUND

SCALE 1:100

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JOB NUMBER: 2842	CLIENT: MPD INVESTMENTS	DATE: NOV 23	rad
AMENDMENT:	PROJECT: village@ james creek	SCALE: AS SHOWN	
	TITLE: 2-RESIDENTIAL TYPOLOGY 350M2 LOT 1-SINGLE LEVEL HOUSE-PLAN-GROUND	ISSUE: CONCEPT	
		DRAWING NO: 10	

DESCRIPTION

TYPE
- 350M2 MIN R3 LOT
- AREA=12.5X29M OR 362.5

LEVEL
- SINGLE

STYLE
- COURTYARD
- DESIGNER LIVING

ACCOMMODATION
- 4 (3+1) BEDROOM
- 2+ BATHROOM
- 2 CAR GARAGE OR CARPO
- VISITOR CARPARK
- ONE LIVE/ MPR as Bed4

AREA
- ENCLOSED
  - LIVE 140M2
  - GARAGE 33M2
- OTHER
  - PORCH 2M2
  - DECK. 6M2

LANDSCAPE AREA
- MIN AREA= 137M2
- POS. = 50M2

	village @ james creek			
	R3 small lot nom 21m wide single storey duplex	lot area	600m2	
residential typology review under the Clarance Valley Council DCP residential				
criteria		required	proposed	compliance
generally part C				
c1	objectives	principles	key vision	achieved
c2	plication of part	principles		achieved
c3	site assessment requirements	principles		achieved
c4	streetscape	principles		achieved
c5	building design	principles		achieved
c6	coastal policy	principles		achieved
c7	coastal views	principles		achieved
c8	different development types	dwelling house	dwelling house	achieved
c9	min site area R1,R2,R3	400m2	600m2	
	building rectangular test-15m by 10m beyond BLDG line)	10X15M	12x 23M	achieved
c10	min site area for flat,attached R3	Na	Na	Na
c11	dual occupancy R5 zone	Na	Na	Na
c12	min site area for flat, attached, multi	Na	Na	Na
c13	building height-external wall	9m	<9.0m	achieved
	building height- top plate	6.5m	<6.5m	achieved
c14	height control internal lots	TP4.5 W6.5	<	achieved
c15	variation to max height	for flood<6.5m	Na	achieved
c16	setbacks- street	6m	6m to entry porch MIN	achieved
	setbacks- side/ rear- single level (H<6.5m)	0.9m	0.9m	achieved
	setbacks- side/rear- two storey (6.5<H<9m)	1.5m	Na	Na
	setbacks- secondary frontage R1,R2,R3	3.5m	Na	Na
	setbacks- other (serives/canals/levee walls)	>1.5m	Na	Na
	setbacks- lanes	4.5m	Na	Na
c17	variation to front setback (merit based)		Na	Na
c18	zero setback (subdivision merits)	integrated subdivision		achieved
c19	landscape requirement R1,R2-(45%), R3_(35%)	210M2	260M2	achieved
c20	private open space m2-dwelling=50m2	50m2	50m2	achieved
	private open space dimension 4.5m	4.5m	5.0m	achieved
c21	private open space flat buildings	Na	Na	Na
c22	landscaping plan	see pain		achieved
c23	secondary dwelling	Na	Na	Na
c24	essential services	provided	provided	achieved
c25	development on flood prone land	Na	Na	Na
c26	controls for Bush Fire land	Na	Na	Na
c27	Development on acid sulfate soil	principles	comply	achieved
c28	land slip/ geotechnical hazard	Na	Na	Na
c29	waste management	provided	provided	achieved
c30	sheds/ caravans	Na	Na	Na
c31	fences and walls	Na	Na	Na
				Na
generally part G				
g1	carpark objectives	principles	principles	achieved
g2	number of carpark spacesspaces			
	attached-1 covered	Na	Na	NA
	dwelling house- 1 covered	provided	2 spaces	achieved
	dual-1 covered space per dwelling behind	Na	Na	NA
	mulit dwelling- 1per 1&2B, 1.5 per 3B,	Na	Na	NA
	plus 1 per 2 for visitor	Na	Na	NA
	number of service vehicles	Na	Na	NA
	1/50up to 200 units	Na	Na	NA
g3	varaitions to numbers	Na	Na	NA
g4	carpark dimensions AUST stand.	Na	Na	NA
g5	manoeuvring	Na	Na	NA
g6	site access	Na	Na	NA
g7	carpark design	Na	Na	NA
g8	paving	Na	Na	NA
g9	parking on flood	Na	Na	NA
g10	large scale development	Na	Na	NA

PLAN- ORIENTATION AND COMPLIANCE CHECK

SCALE 1:500

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JOB NUMBER: 2842

AMENDMENT:

CLIENT: MPD INVESTMENTS

PROJECT: village@ james creek

TITLE: 2-RESIDENTIAL TYPOLOGY 350M2 LOT
1-SINGLE LEVEL HOUSE
COMPLIANCE CHECK

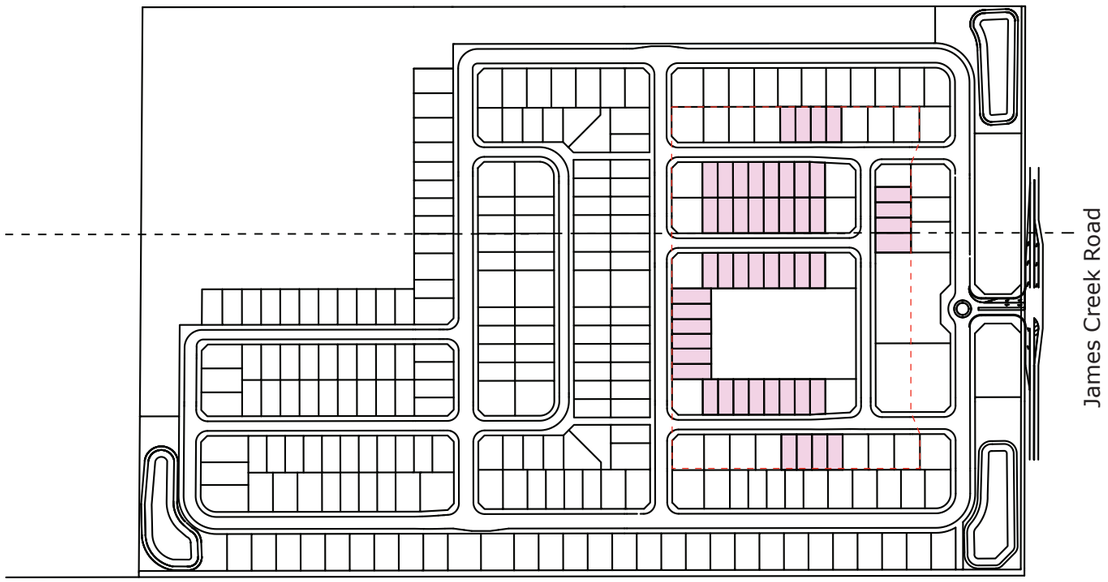
DATE: NOV 23

SCALE: AS SHOWN

ISSUE: CONCEPT

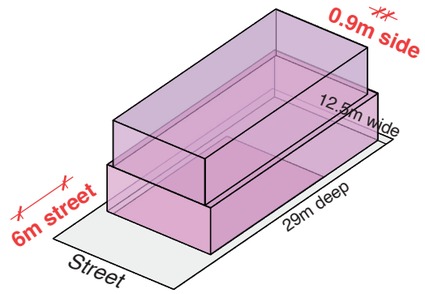
DRAWING NO: 11

rad

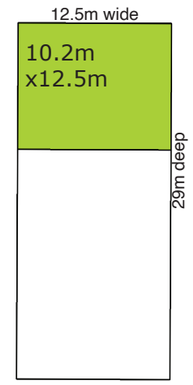


R3 zone

R3 zone- 350m2 lots

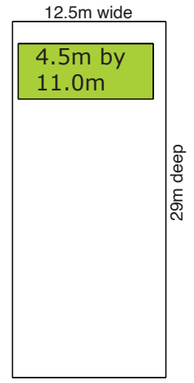


6.0m- street
0.9m- side and rear boundary (single level)



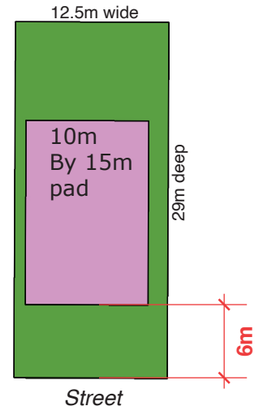
35% of 362.5m2 lot=126.88m2

35% LANDSCAPE REQUIREMENTS



4.5m min by 11.0m

50M2 PRIVATE OPEN SPACE REQUIREMENTS



6m setback for pad test

10M BY 15M PAD TEST REQUIREMENTS

PLAN- LOCATION

SCALE 1:5000

CVC DCP RULES

SCALE 1:500

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JOB NUMBER: 2842

AMENDMENT:

CLIENT: MPD INVESTMENTS

PROJECT: village@ james creek

TITLE: 3-RESIDENTIAL TYPOLOGY 350M2 LOT
1-TWO LEVEL HOUSE- CVC DCP CRITERIA

DATE: NOV 23

SCALE: AS SHOWN

ISSUE: CONCEPT

DRAWING NO: 12

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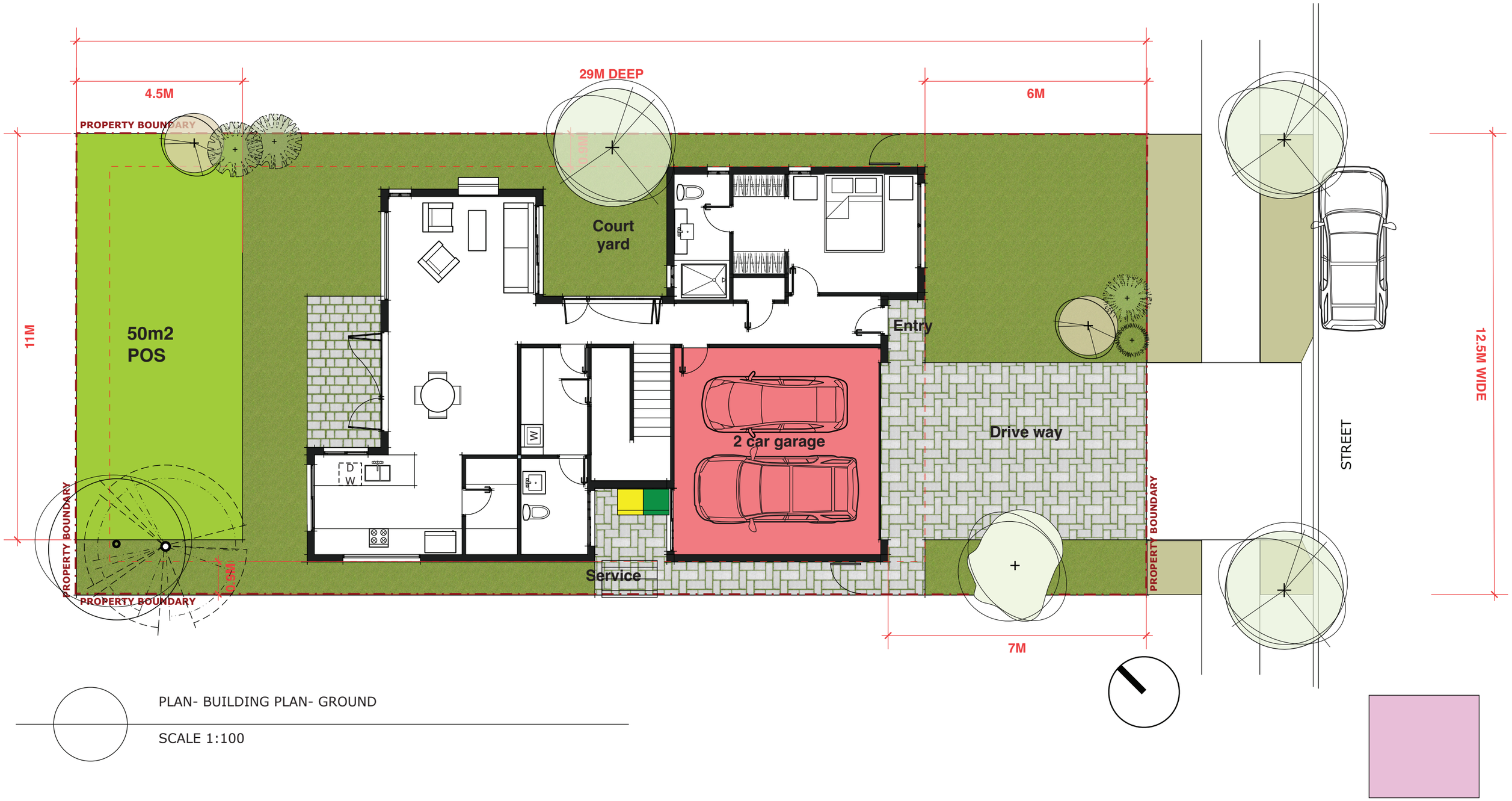

PLAN- BUILDING PLAN- GROUND

SCALE 1:100

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JOB NUMBER: 2842

AMENDMENT:

CLIENT: MPD INVESTMENTS

PROJECT: village@ james creek

TITLE: 3-RESIDENTIAL TYPOLOGY 350M2 LOT
2-TWO LEVEL HOUSE-PLAN-GROUND

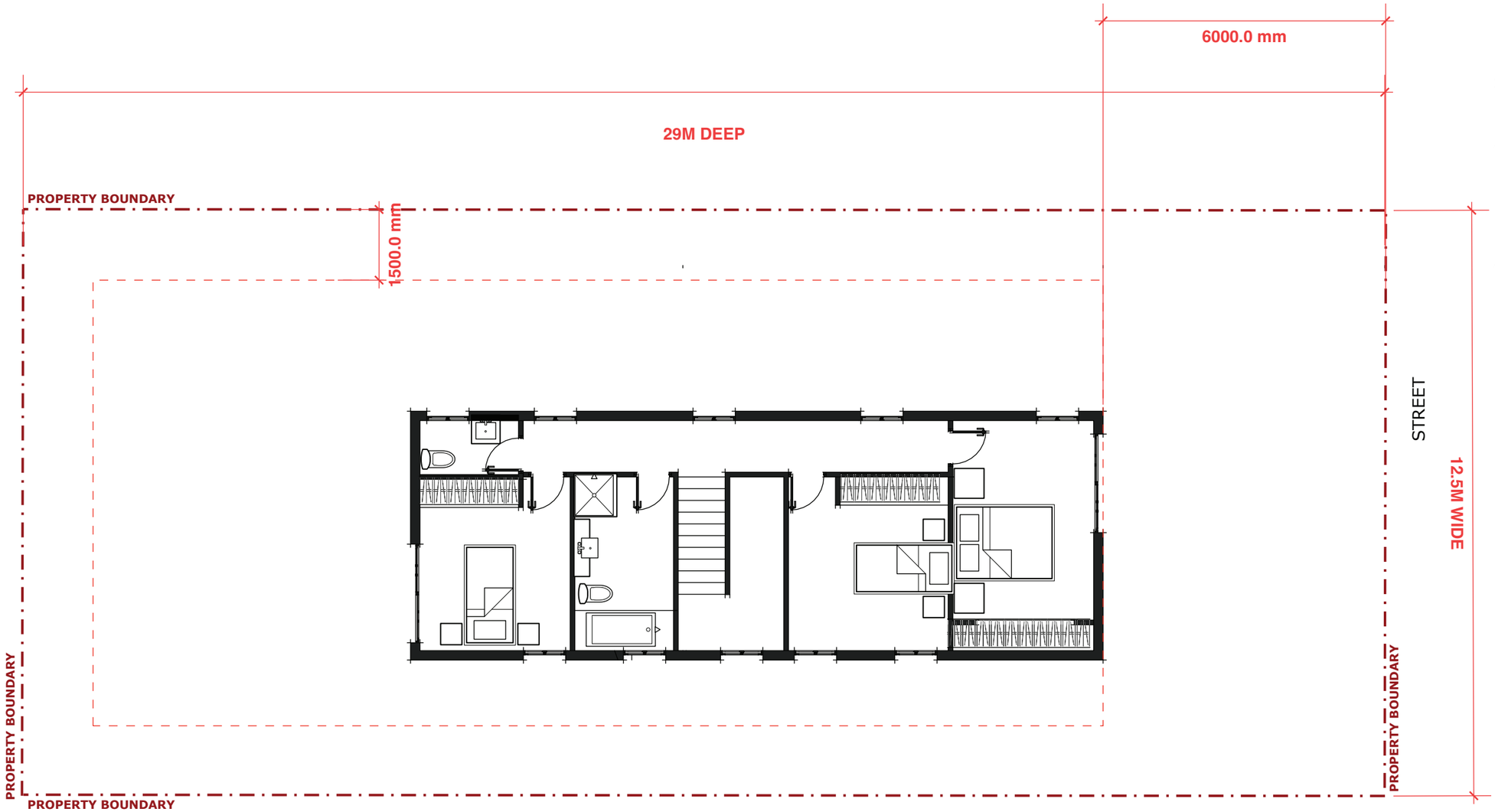
DATE: NOV 23

SCALE: AS SHOWN

ISSUE: CONCEPT

DRAWING NO: 13

rad



DESCRIPTION

TYPE
- 350M2 MIN R3 LOT
- AREA=12.5X29M OR 362.5M2

LEVEL
- DOUBLE

STYLE
- COURTYARD
- DESIGNER LIVING

ACCOMMODATION
- 4 (3+1) BEDROOM
- 2+ BATHROOM
- 2 CAR GARAGE OR CARPORT
- VISITOR CARPARK
- ONE LIVE/ MPR as Bed4

AREA
- ENCLOSED
  - LIVE 140M2
  - GARAGE 33M2
- OTHER
  - PORCH 2M2
  - DECK. 6M2

LANDSCAPE AREA
- MIN AREA= 137M2
- POS. = 50M2

SCALE 1:100

rust architecture design
po box 353
mermaid beach
queensland
tel (07) 55 54 6798
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office@rad.net.au

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JOB NUMBER: 2842

AMENDMENT:

CLIENT: MPD INVESTMENTS

PROJECT: village@ james creek

TITLE: 3-RESIDENTIAL TYPOLOGY 350M2 LOT
3-TWO LEVEL HOUSE-PLAN- FIRST

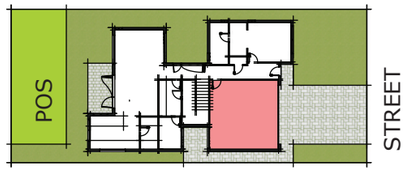
DATE: NOV 23

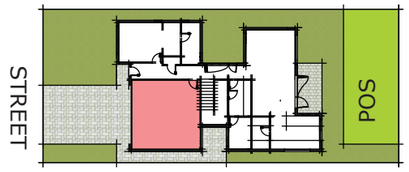
SCALE: AS SHOWN

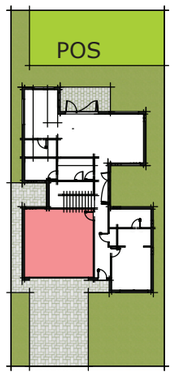
ISSUE: CONCEPT

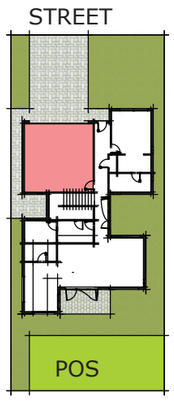
DRAWING NO: 14

rad









	village @ james creek			
	R3 small lot nom 12.5m wide two storey house	lot area	362.5m2	
residential typology review under the Clarence Valley Council DCP residential				
criteria		required	proposed	compliance
generally part C				
c1	objectives	principles	key vision	achieved
c2	pllication of part	principles		achieved
c3	site assessment requirements	principles		achieved
c4	streetscape	principles		achieved
c5	building design	principles		achieved
c6	coastal policy	principles		achieved
c7	coastal views	principles		achieved
c8	different development types	dwelling house	dwelling house	achieved
c9	min site area R1,R2,R3	400m2	362.5m2	
	building rectangular test-15m by 10m beyond BLDG line)	10X15M	12x 23M	achieved
c10	min site area for flat,attached R3	Na	Na	Na
c11	dual occupancy R5 zone	Na	Na	Na
c12	min site area for flat, attached, multi	Na	Na	Na
c13	building height-external wall	9m	<9.0m	achieved
	building height- top plate	6.5m	<6.5m	achieved
c14	height control internal lots	TP4.5 W6.5	<	achieved
c15	variation to max height	for flood<6.5m	Na	achieved
c16	setbacks- street	6m	6m to entry porch MIN	achieved
	setbacks- side/ rear- single level (H<6.5m)	0.9m	0.9m	achieved
	setbacks- side/rear- two storey (6.5<H<9m)	1.5m	Na	Na
	setbacks- secondary frontage R1,R2,R3	3.5m	Na	Na
	setbacks- other (serives/canals/levee walls)	>1.5m	Na	Na
	setbacks- lanes	4.5m	Na	Na
c17	variation to front setback (merit based)		Na	Na
c18	zero setback (subdivision merits)	integrated subdivision		achieved
c19	landscape requirement R1,R2-(45%), R3_(35%)	126.88m2	167m2	achieved
c20	private open space m2-dwelling=5om2	50m2	50m2	achieved
	private open space dimension 4.5m	4.5m	5.0m	achieved
c21	private open space flat buildings	Na	Na	Na
c22	landscaping plan	see pain		achieved
c23	secondary dwelling	Na	Na	Na
c24	essential services	provided	provided	achieved
c25	development on flood prone land	Na	Na	Na
c26	controls for Bush Fire land	Na	Na	Na
c27	Development on acid sulfate soil	principles	comply	achieved
c28	land slip/ geotechnical hazard	Na	Na	Na
c29	waste management	provided	provided	achieved
c30	sheds/ caravans	Na	Na	Na
c31	fences and walls	Na	Na	Na
				Na
generally part G				
g1	carpark objectives	principles	principles	achieved
g2	number of carpark spacesspaces			
	attached-1 covered	Na	Na	NA
	dwelling house- 1 covered	provided	2 spaces	achieved
	dual-1 covered space per dwelling behind	Na	Na	NA
	mult dwelling- 1per 1&2B, 1.5 per 3B,	Na	Na	NA
	plus 1 per 2 for visitor	Na	Na	NA
	number of service vehicles	Na	Na	NA
	1/500up to 200 units	Na	Na	NA
g3	varaitions to numbers	Na	Na	NA
g4	carpark dimensions AUST stand.	Na	Na	NA
g5	manoeuvring	Na	Na	NA
g6	site access	Na	Na	NA
g7	carpark design	Na	Na	NA
g8	paving	Na	Na	NA
g9	parking on flood	Na	Na	NA
g10	large scale development	Na	Na	NA

PLAN- ORIENTATION AND COMPLIANCE CHECK

SCALE 1:500

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JOB NUMBER: 2842

AMENDMENT:

CLIENT: MPD INVESTMENTS

PROJECT: village@ james creek

TITLE: 3-RESIDENTIAL TYPOLOGY 350M2 LOT 4-TWO LEVEL HOUSE- COMPLIANCE CHECK

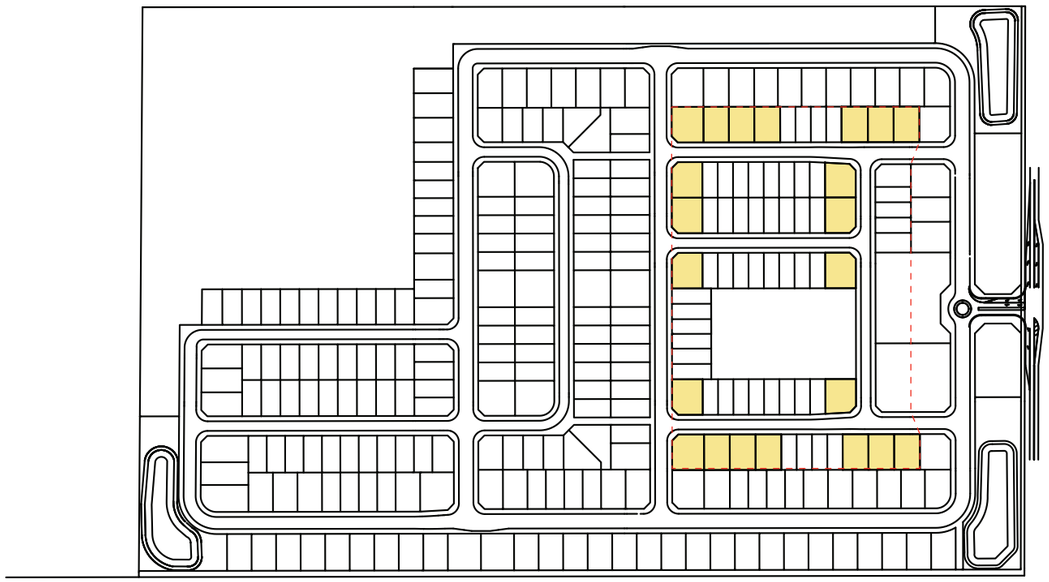
DATE: NOV 23

SCALE: AS SHOWN

ISSUE: CONCEPT

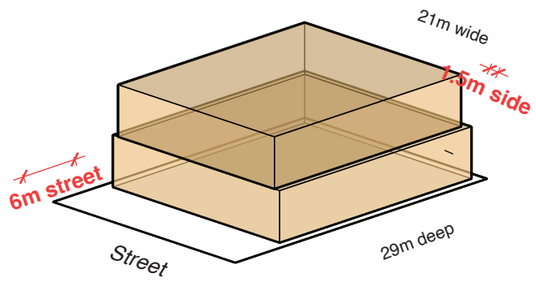
DRAWING NO: 15

rad

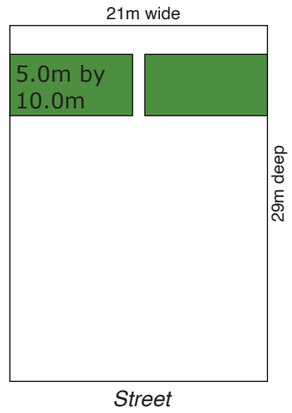


James Creek Road

R3 zone

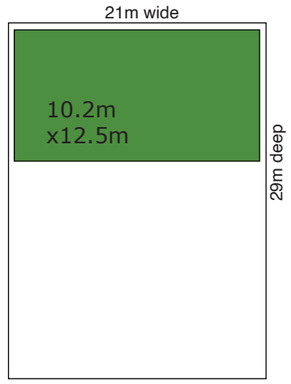


6.0m- street
0.9m- side and rear boundary (single level)
1.5m- side and rear boundary (two level)
BUILDING ENVELOPE REQUIREMENTS



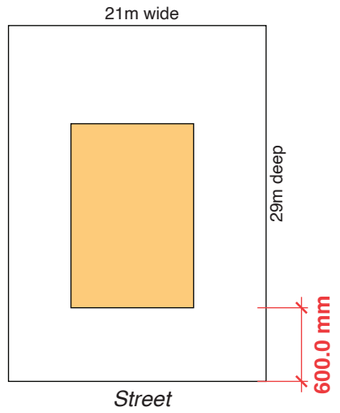
4.5m min by 11.0m

50M2 PRIVATE OPEN SPACE REQUIREMENTS



35% of 609m2 lot=213.15m2 m2

35% LANDSCAPE REQUIREMENTS



6m setback for pad test

10M BY 15M PAD TEST REQUIREMENTS

PLAN- LOCATION

SCALE 1:5000

CVC DCP RULES

SCALE 1:500

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JOB NUMBER: 2842

AMENDMENT:

CLIENT: MPD INVESTMENTS

PROJECT: village@ james creek

TITLE: 4-RESIDENTIAL TYPOLOGIES-SINGLE LEVEL DUPLEX 600M2 LOT 1-COMPLIANCE CHECK

DATE: NOV 23

SCALE: AS SHOWN

ISSUE: CONCEPT

DRAWING NO: 16

rad

PLAN- BUILDING PLAN- GROUND

SCALE 1:100

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JOB NUMBER: 2842

AMENDMENT:

CLIENT: MPD INVESTMENTS

PROJECT: village@ james creek

TITLE: 4-RESIDENTIAL TYPOLOGIES-SINGLE LEVEL DUPLEX 600M2 LOT
2- FLOOR PLAN- GROUND

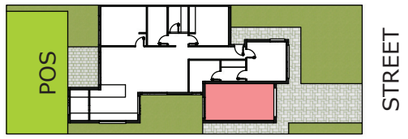
DATE: NOV 23

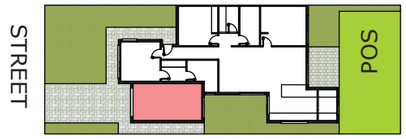
SCALE: AS SHOWN

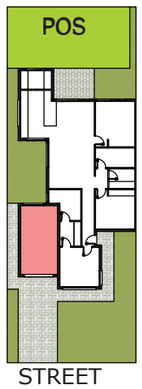
ISSUE: CONCEPT

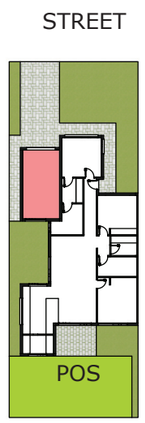
DRAWING NO: 17

rad









DESCRIPTION

TYPE
- 600M2 MIN R3 LOT
- AREA=21MX29M OR 609M2
- Each side 303m2

LEVEL
- TWO LEVEL

STYLE
- COURTYARD
- DESIGNER LIVING

ACCOMMODATION
- 3 (2+1) BEDROOM
- 2 + BATHROOM
- 2 CAR GARAGE OR CARPORT
- VISITOR CARPARK
- TWO LIVE/

AREA
- ENCLOSED
  - LIVE 199M2
  - GARAGE 33M2
- OTHER
  - PORCH 2M2
  - DECK. 12M2

LANDSCAPE AREA
- MIN AREA= 127M2
- POS. = 50M2

	village @ james creek			
	R3 small lot nom 12.5m wide single storey house	lot area	362.5m2	
residential typology review under the Clarance Valley Council DCP residential				
criteria		required	proposed	compliance
generally part C				
c1	objectives	principles	key vision	achieved
c2	pllication of part	principles		achieved
c3	site assessment requirements	principles		achieved
c4	streetscape	principles		achieved
c5	building design	principles		achieved
c6	coastal policy	principles		achieved
c7	coastal views	principles		achieved
c8	different development types	dwelling house	dwelling house	achieved
c9	min site area R1,R2,R3	400m2	362.5m2	
	building rectangular test-15m by 10m beyond BLDG line)	10X15M	12x 23M	achieved
c10	min site area for flat,attached R3	Na	Na	Na
c11	dual occupancy R5 zone	Na	Na	Na
c12	min site area for flat, attached, multi	Na	Na	Na
c13	building height-external wall	9m	<9.0m	achieved
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c14	height control internal lots	TP4.5 W6.5	<	achieved
c15	variation to max height	for flood<6.5m	Na	achieved
c16	setbacks- street	6m	6m to entry porch MIN	achieved
	setbacks- side/ rear- single level (H<6.5m)	0.9m	0.9m	achieved
	setbacks- side/rear- two storey (6.5<H<9m)	1.5m	Na	Na
	setbacks- secondary frontage R1,R2,R3	3.5m	Na	Na
	setbacks- other (serives/canals/levee walls)	>1.5m	Na	Na
	setbacks- lanes	4.5m	Na	Na
c17	variation to front setback (merit based)		Na	Na
c18	zero setback (subdivision merits)	integrated subdivision		achieved
c19	landscape requirement R1,R2-(45%), R3_(35%)	126.88m2	137m2	achieved
c20	private open space m2-dwelling=50m2	50m2	50m2	achieved
	private open space dimension 4.5m	4.5m	5.0m	achieved
c21	private open space flat buildings	Na	Na	Na
c22	landscaping plan	see pain		achieved
c23	secondary dwelling	Na	Na	Na
c24	essential services	provided	provided	achieved
c25	development on flood prone land	Na	Na	Na
c26	controls for Bush Fire land	Na	Na	Na
c27	Development on acid sulfate soil	principles	comply	achieved
c28	land slip/ geotechnical hazard	Na	Na	Na
c29	waste management	provided	provided	achieved
c30	sheds/ caravans	Na	Na	Na
c31	fences and walls	Na	Na	Na
				Na
generally part G				
g1	carpark objectives	principles	principles	achieved
g2	number of carpark spacesspaces			
	attached-1 covered	Na	Na	NA
	dwelling house- 1 covered	provided	2 spaces	achieved
	dual-1 covered space per dwelling behind	Na	Na	NA
	mulit dwelling- 1per 1&2B, 1.5 per 3B,	Na	Na	NA
	plus 1 per 2 for visitor	Na	Na	NA
	number of service vehicles	Na	Na	NA
	1/500p to 200 units	Na	Na	NA
g3	varaitions to numbers	Na	Na	NA
g4	carpark dimensions AUS1 stand.	Na	Na	NA
g5	manoeuvring	Na	Na	NA
g6	site access	Na	Na	NA
g7	carpark design	Na	Na	NA
g8	paving	Na	Na	NA
g9	parking on flood	Na	Na	NA
g10	large scale development	Na	Na	NA

PLAN- ORIENTATION AND COMPLIANCE CHECK

SCALE 1:500

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JOB NUMBER: 2842

AMENDMENT:

CLIENT: MPD INVESTMENTS

PROJECT: village@ james creek

TITLE: 4-RESIDENTIAL TYPOLOGIES-SINGLE LEVEL DUPLEX 600M2 3-COMPLIANCE CHECK

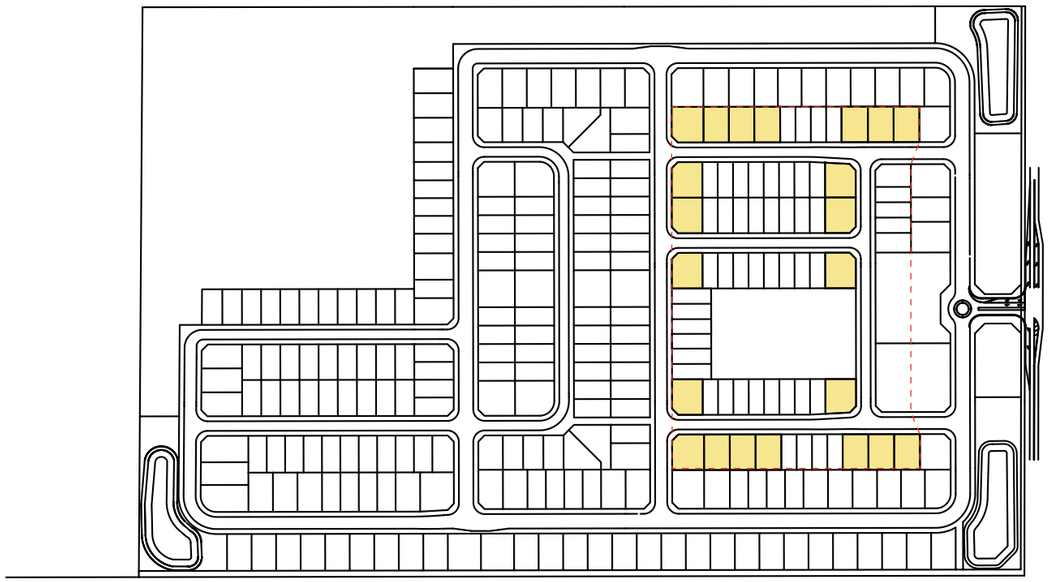
DATE: NOV 23

SCALE: AS SHOWN

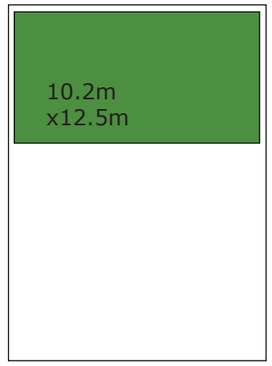
ISSUE: CONCEPT

DRAWING NO: 18

rad

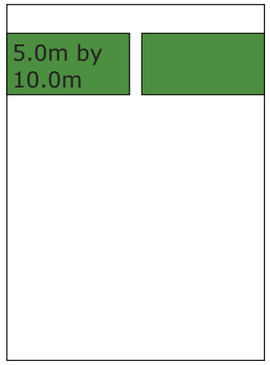


R3 zone



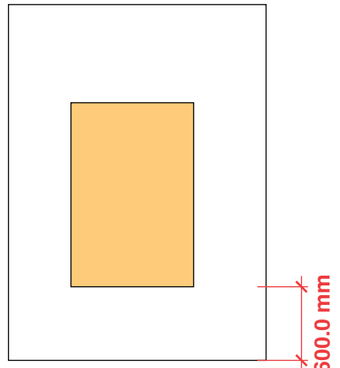
35% of 609m2 lot=213.15m2 m2

6.0m- street
0.9m- side and rear boundary (single level)
1.5m- side and rear boundary (two level)



4.5m min by 11.0m

50M2 PRIVATE OPEN SPACE REQUIREMENTS



6m setback for pad test

10M BY 15M PAD TEST REQUIREMENTS

PLAN- LOCATION

SCALE 1:5000

CVC DCP RULES

SCALE 1:500

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JOB NUMBER: 2842

AMENDMENT:

CLIENT: MPD INVESTMENTS

PROJECT: village@ james creek

TITLE: 5-RESIDENTIAL TYPOLOGIES-TWO LEVEL DUPLEX 600M2 LOT
1-CVC DCP CRITERIA

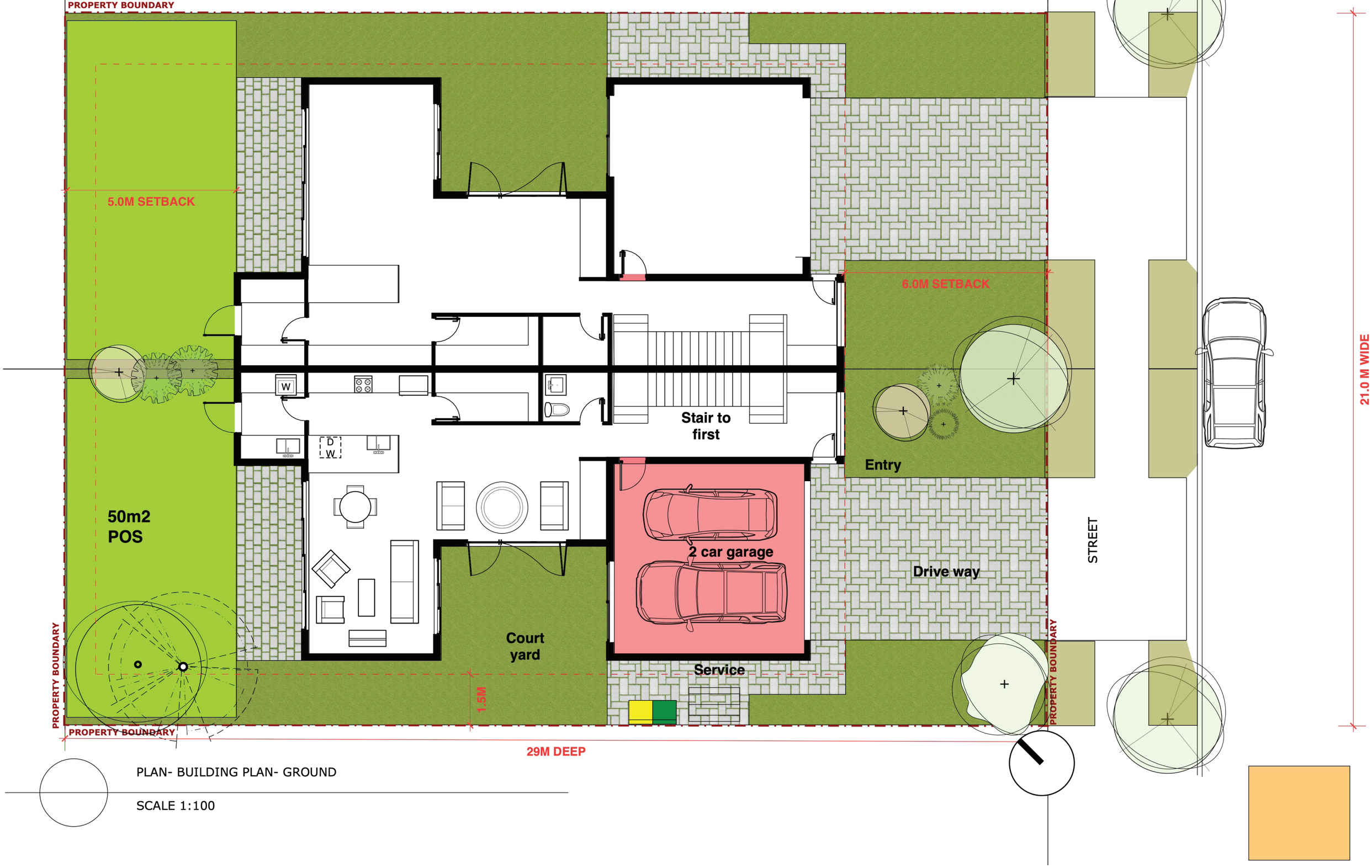
DATE: NOV 23

SCALE: AS SHOWN

ISSUE: CONCEPT

DRAWING NO: 19

rad



PLAN- BUILDING PLAN- GROUND

SCALE 1:100

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JOB NUMBER: 2842

AMENDMENT:

CLIENT: MPD INVESTMENTS

PROJECT: village@ james creek

TITLE: 5-RESIDENTIAL TYPOLOGIES-TWO LEVEL DUPLEX 600M2 LOT
2- FLOOR PLAN- GROUND

DATE: NOV 23

SCALE: AS SHOWN

ISSUE: CONCEPT

DRAWING NO: 20

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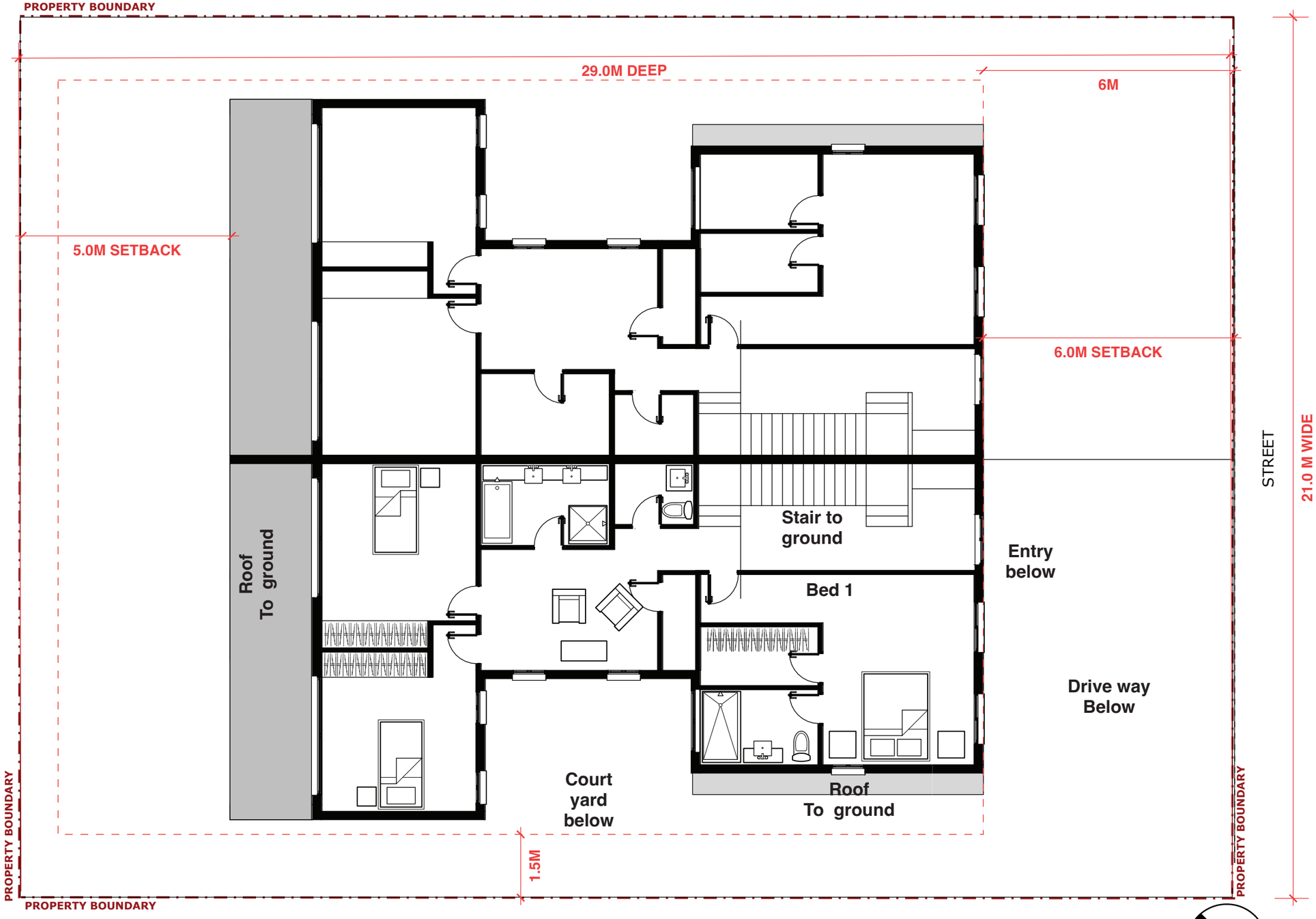

DESCRIPTION

TYPE
- 600M2 MIN R3 LOT
- AREA=21MX29M OR 609M2 total
- Each side 303m2

LEVEL
- TWO LEVEL

STYLE
- COURTYARD
- DESIGNER LIVING

ACCOMMODATION
- 4 (3+1) BEDROOM
- 2+ BATHROOM
- 2 CAR GARAGE OR CARPORT
- VISITOR CARPARK
- TWO LIVE/

AREA
- ENCLOSED
  - LIVE 199M2
  - GARAGE 33M2
- OTHER
  - PORCH 2M2
  - DECK. 12M2

LANDSCAPE AREA
- MIN AREA= 127M2
- POS. = 50M2

PLAN- BUILDING PLAN- FIRST FLOOR

SCALE 1:100

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JOB NUMBER: 2842	CLIENT: MPD INVESTMENTS
AMENDMENT:	PROJECT: village@ james creek
	TITLE: 5-RESIDENTIAL TYPOLOGIES-TWO LEVEL DUPLEX 600M2 LOT 3- FLOOR PLAN- FIRST
	DATE: NOV 23
	SCALE: AS SHOWN
	ISSUE: CONCEPT
	DRAWING NO: 21

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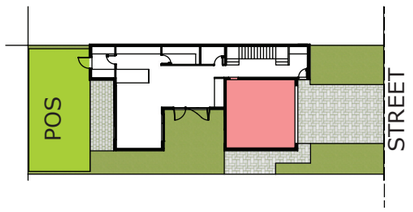

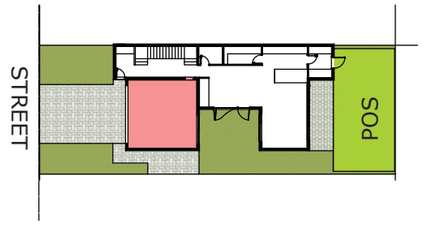

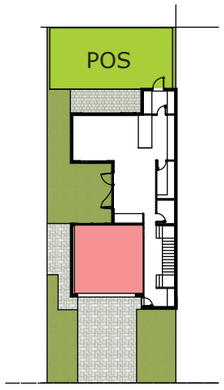

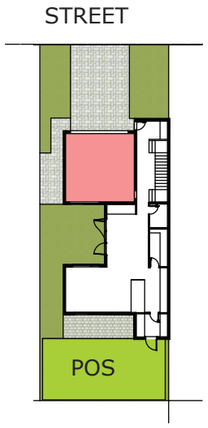

	village @ james creek			
	R3 small lot nom 21m wide single two level duplex	lot area	600m2	
residential typology review under the Clarance Valley Council DCP residential				
criteria		required	proposed	compliance
generally part C				
c1	objectives	principles	key vision	achieved
c2	plication of part	principles		achieved
c3	site assessment requirements	principles		achieved
c4	streetscape	principles		achieved
c5	building design	principles		achieved
c6	coastal policy	principles		achieved
c7	coastal views	principles		achieved
c8	different development types	dwelling house	dwelling house	achieved
c9	min site area R1,R2,R3	400m2	600m2	
	building rectangular test-15m by 10m beyond BLDG line)	10X15M	10.5X29m	achieved
c10	min site area for flat,attached R3	Na	Na	Na
c11	dual occupancy R5 zone	Na	Na	Na
c12	min site area for flat, attached, multi	Na	Na	Na
c13	building height-external wall	9m	<9.0m	achieved
	building height- top plate	6.5m	<6.5m	achieved
c14	height control internal lots	TP4.5 W6.5	<	achieved
c15	variation to max height	for flood<6.5m	Na	achieved
c16	setbacks- street	6m	6m to entry porch MIN	achieved
	setbacks- side/ rear- single level (H<6.5m)	0.9m	0.9m	achieved
	setbacks- side/rear- two storey (6.5<H<9m)	1.5m	Na	Na
	setbacks- secondary frontage R1,R2,R3	3.5m	Na	Na
	setbacks- other (serives/canals/levee walls)	>1.5m	Na	Na
	setbacks- lanes	4.5m	Na	Na
c17	variation to front setback (merit based)		Na	Na
c18	zero setback (subdivision merits)	integrated subdivision		achieved
c19	landscape requirement R1,R2-(45%), R3_(35%)	210m2	265m2	achieved
c20	private open space m2-dwelling=50m2	50m2	50m2	achieved
	private open space dimension 4.5m	4.5m	5.0m	achieved
c21	private open space flat buildings	Na	Na	Na
c22	landscaping plan	see pain		achieved
c23	secondary dwelling	Na	Na	Na
c24	essential services	provided	provided	achieved
c25	development on flood prone land	Na	Na	Na
c26	controls for Bush Fire land	Na	Na	Na
c27	Development on acid sulfate soil	principles	comply	achieved
c28	land slip/ geotechnical hazard	Na	Na	Na
c29	waste management	provided	provided	achieved
c30	sheds/ caravans	Na	Na	Na
c31	fences and walls	Na	Na	Na
				Na
generally part G				
g1	carpark objectives	principles	principles	achieved
g2	number of carpark spacesspaces			
	attached-1 covered	Na	Na	NA
	dwelling house- 1 covered	provided	2 spaces	achieved
	dual-1 covered space per dwelling behind	Na	Na	NA
	mulit dwelling- 1per 1&2B, 1.5 per 3B,	Na	Na	NA
	plus 1 per 2 for visitor	Na	Na	NA
	number of service vehicles	Na	Na	NA
	1/50up to 200 units	Na	Na	NA
g3	varaitions to numbers	Na	Na	NA
g4	carpark dimensions AUS1 stand.	Na	Na	NA
g5	manoeuvring	Na	Na	NA
g6	site access	Na	Na	NA
g7	carpark design	Na	Na	NA
g8	paving	Na	Na	NA
g9	parking on flood	Na	Na	NA
g10	large scale development	Na	Na	NA

PLAN- ORIENTATION AND COMPLIANCE CHECK

SCALE 1:500

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JOB NUMBER: 2842

AMENDMENT:

CLIENT: MPD INVESTMENTS

PROJECT: village@ james creek

TITLE: 5-RESIDENTIAL TYPOLOGIES-TWO LEVEL DUPLEX 600M2 LOT
4- FLOOR PLAN- COMPLIANCE CHECK

DATE: NOV 23

SCALE: AS SHOWN

ISSUE: CONCEPT

DRAWING NO: 22

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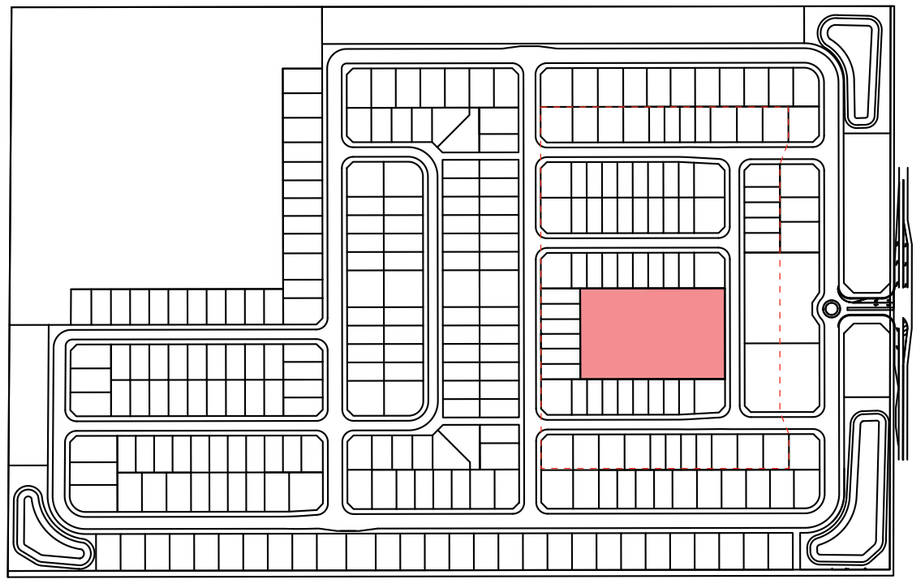
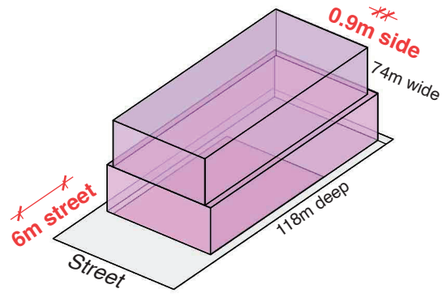


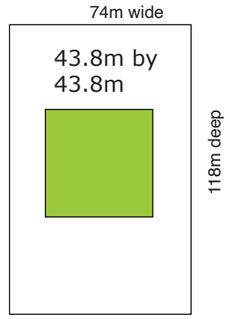
James Creek Road

R3 zone

R3 zone- 8732m2 lot (multi residential site)

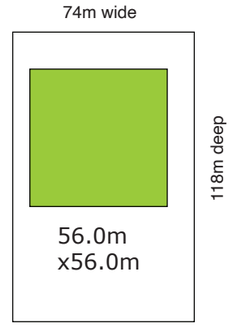


6.0m- street
0.9m- side and rear boundary (single level)
1.5m- side and rear boundary (two level)
BUILDING ENVELOPE REQUIREMENTS



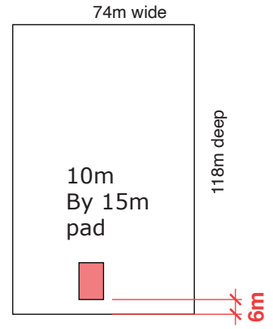
6.8m by 7.4m per duplex or
38 by 50m2 = 1913m2

50M2 PRIVATE OPEN SPACE REQUIREMENTS



35% of 8732m2 lot=3056m2

35% LANDSCAPE REQUIREMENTS



6m setback for pad test

10M BY 15M PAD TEST REQUIREMENTS

PLAN- LOCATION

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CVC DCP RULES

SCALE 1:2500

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JOB NUMBER: 2842

AMENDMENT:

CLIENT: MPD INVESTMENTS

PROJECT: village@ james creek

TITLE: 6-RESIDENTIAL TYPOLOGIES-MULTI RESIDENTIAL LOT
1- CVC DCP CRITERIA

DATE: NOV 23

SCALE: AS SHOWN

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DRAWING NO: 23

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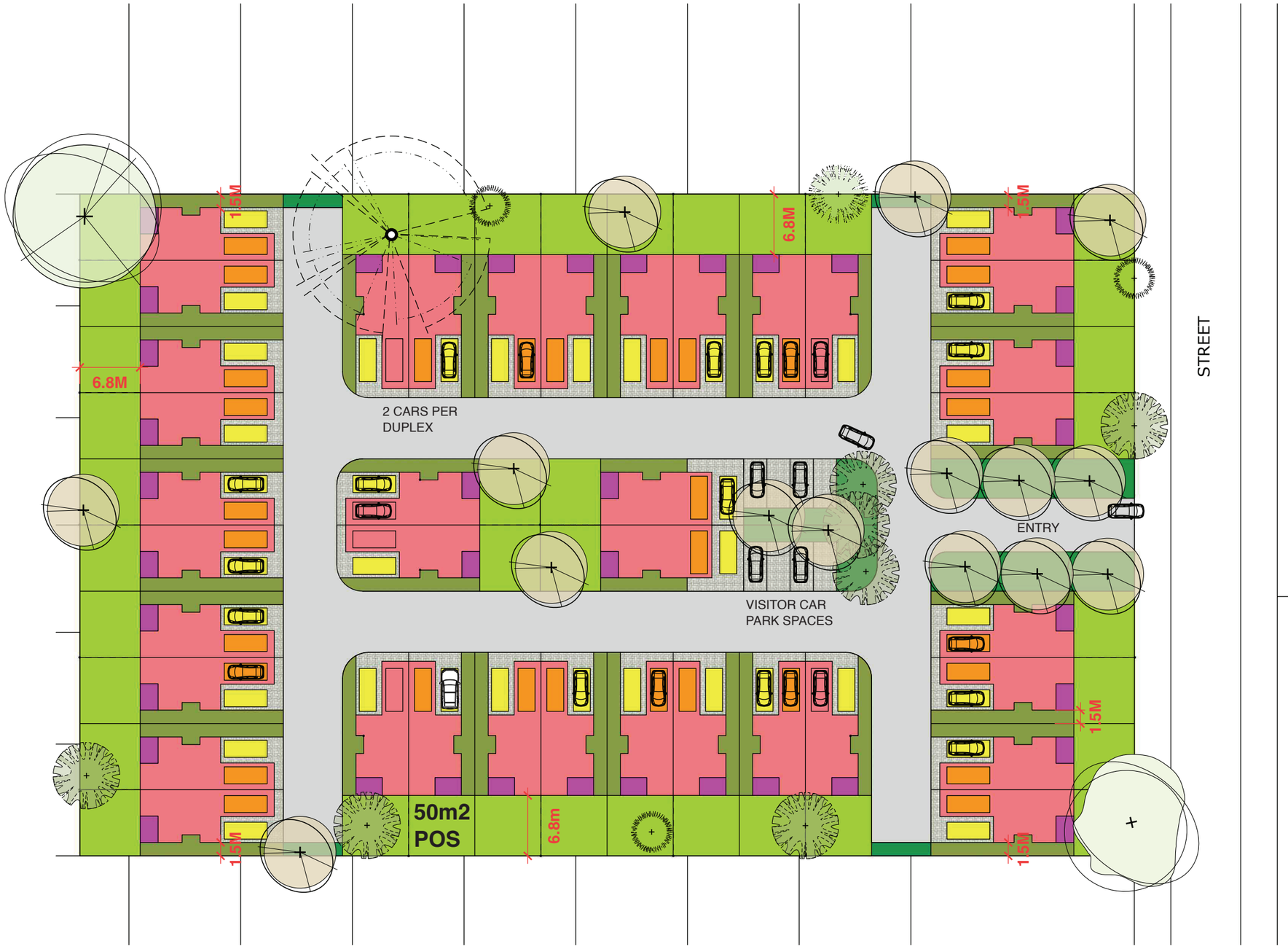

DESCRIPTION

TYPE
- MULTI RESIDENTIAL SITE
- AREA=118M BY 74M OR 8732M2

LEVEL
- TWO LEVEL DUPLEX
- 1,2 OR 3 BEDROOM

YIELD
- 38 PRODUCT
- 2 CARS PER PRODUCT
- NOM 66 CARPARK SPACES
- PLUS 8 VISITOR

STYLE
- COURTYARD
- DESIGNER LIVING

ACCOMMODATION
- BEDROOM AS DETERMINED
- (TWO OR THREE BEDROOMS)
- 2+ BATHROOM
- 2 CAR GARAGE OR CARPORT
- VISITOR CARPARK IF REQUIRED

PLAN- SITE PLAN- GROUND

SCALE 1:500

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JOB NUMBER: 2842

AMENDMENT:

CLIENT: MPD INVESTMENTS

PROJECT: village@ james creek

TITLE: 6-RESIDENTIAL TYPOLOGIES-MULTI RESIDENTIAL LOT
2-FLOOR PLAN- SITE LAYOUT

DATE: NOV 23

SCALE: AS SHOWN

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DRAWING NO: 24

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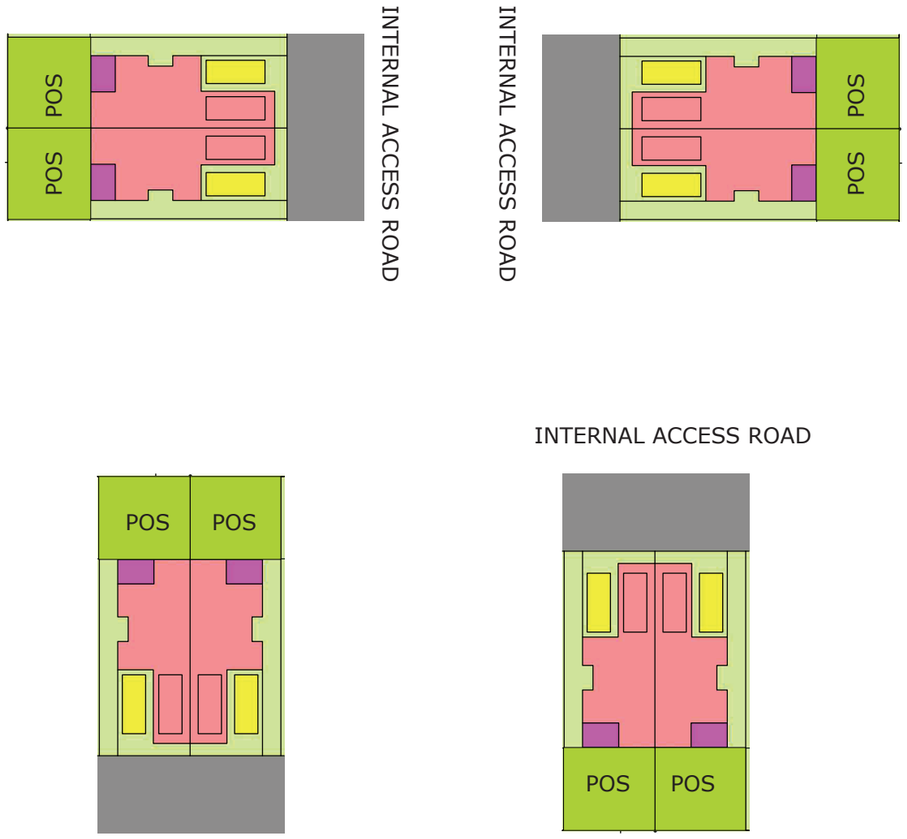

	village @ james creek			
	R3 MULTI RESIDENTIAL SITE	lot area	8732M2	
residential typology review under the Clarance Valley Council DCP residential				
criteria		required	proposed	compliance
generally part C				
c1	objectives	principles	key vision	achieved
c2	plication of part	principles		achieved
c3	site assessment requirements	principles		achieved
c4	streetscape	principles		achieved
c5	building design	principles		achieved
c6	coastal policy	principles		achieved
c7	coastal views	principles		achieved
c8	different development types	dwelling house	dwelling house	achieved
c9	min site area R1,R2,R3	400m2	8732M2	
	building rectangular test-15m by 10m beyond BLDG line)	10X15M		achieved
c10	min site area for flat,attached R3	Na	Na	Na
c11	dual occupancy R5 zone	Na	Na	Na
c12	min site area for flat, attached, multi	Na	Na	Na
c13	building height-external wall	9m	<9.0m	achieved
	building height- top plate	6.5m	<6.5m	achieved
c14	height control internal lots	TP4.5 W6.5	<	achieved
c15	variation to max height	for flood<6.5m	Na	achieved
c16	setbacks- street	6m	6m to entry porch MIN	achieved
	setbacks- side/ rear- single level (H<6.5m)	0.9m	6.8m	achieved
	setbacks- side/rear- two storey (6.5<H<9m)	1.5m	Na	Na
	setbacks- secondary frontage R1,R2,R3	3.5m	Na	Na
	setbacks- other (serives/canals/levee walls)	>1.5m	Na	Na
	setbacks- lanes	4.5m	Na	Na
c17	variation to front setback (merit based)		Na	Na
c18	zero setback (subdivision merits)	integrated subdivision		achieved
c19	landscape requirement R1,R2-(45%), R3_(35%)	3056.2M2	3100M2	achieved
c20	private open space m2-dwelling=50m2	50m2	50m2	achieved
	private open space dimension 4.5m	4.5m	6.8M	achieved
c21	private open space flat buildings	Na	Na	Na
c22	landscaping plan	see pain		achieved
c23	secondary dwelling	Na	Na	Na
c24	essential services	provided	provided	achieved
c25	development on flood prone land	Na	Na	Na
c26	controls for Bush Fire land	Na	Na	Na
c27	Development on acid sulfate soil	principles	comply	achieved
c28	land slip/ geotechnical hazard	Na	Na	Na
c29	waste management	provided	provided	achieved
c30	sheds/ caravans	Na	Na	Na
c31	fences and walls	Na	Na	Na
				Na
generally part G				
g1	carpark objectives	principles	principles	achieved
g2	number of carpark spacesspaces			
	attached-1 covered	Na	Na	NA
	dwelling house- 1 covered	provided	78 spaces	achieved
	dual-1 covered space per dwelling behind	Na	Na	NA
	mulit dwelling- 1per 1&2B, 1.5 per 3B,	Na	Na	NA
	plus 1 per 2 for visitor	Na	Na	NA
	number of service vehicles	Na	Na	NA
	1/50up to 200 units	Na	Na	NA
g3	varaitions to numbers	Na	Na	NA
g4	carpark dimensions AUST stand.	Na	Na	NA
g5	manoeuvring	Na	Na	NA
g6	site access	Na	Na	NA
g7	carpark design	Na	Na	NA
g8	paving	Na	Na	NA
g9	parking on flood	Na	Na	NA
g10	large scale development	Na	Na	NA

PLAN- ORIENTATION AND COMPLIANCE CHECK

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JOB NUMBER: 2842

AMENDMENT:

CLIENT: MPD INVESTMENTS

PROJECT: village@ james creek

TITLE: 6-RESIDENTIAL TYPOLOGIES-MULTI RESIDENTIAL LOT
3-COMPLIANCE CHECK

DATE: NOV 23

SCALE: AS SHOWN

ISSUE: CONCEPT

DRAWING NO: 25

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Enclosure 13

Childcare centre architectural package prepared by RAD Architects dated 21 November 2023

DEVELOPMENT APPLICATION
PROPOSED CHILDCARE

LOCATION
LOT 103 DP751388, JAMES CREEK ROAD, JAMES CREEK

PROPOSED NEW LOT 69

john rust
qld 2053

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architecture
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JOB NUMBER: 2842	CLIENT: MPD INVESTMENTS PTY LTD	DATE: NOV23	rad
AMENDMENT: ISSUE A-21 NOV 23	PROJECT: VILLAGE@JAMES CREEK-CHILDCARE	SCALE: AS SHOWN	
	TITLE: COVER PAGE	ISSUE: DA	
		DRAWING NO: 1	

COVER 1

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JOB NUMBER: 2842
AMENDMENT: ISSUE A-21 NOV 23
CLIENT: MPD INVESTMENTS PTY LTD
PROJECT: VILLAGE@JAMES CREEK-CHILDCARE
TITLE: CONTENTS
DATE: NOV23
SCALE: AS SHOWN
ISSUE: DA
DRAWING NO: 2

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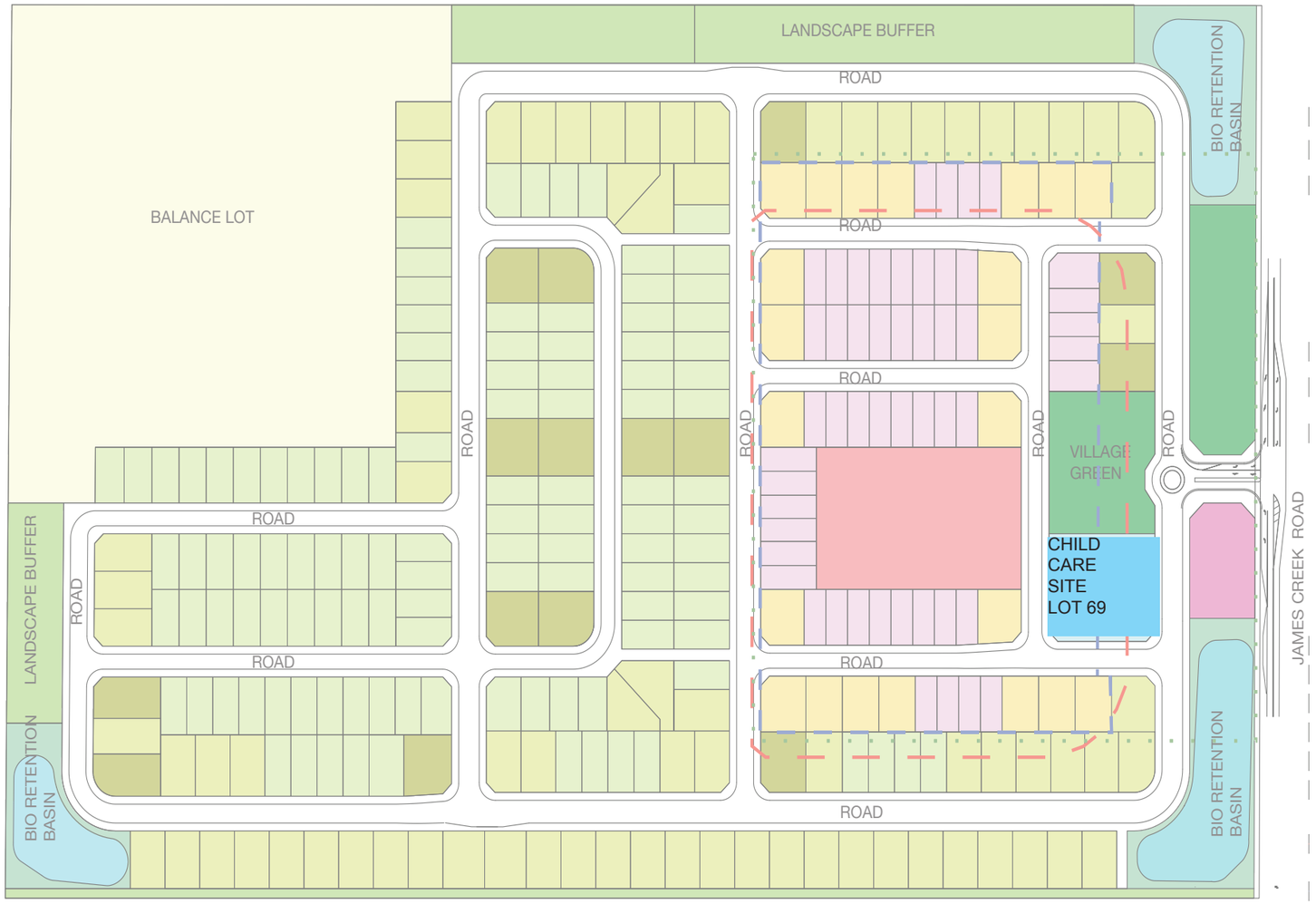

SITE LOCATION IN PROPOSED
“VILLAGE ON JAMES CREEK” SUBDIVISION
REF TO SUBDIVISION APPLICATION FOR FULL DETAILS
SITE PLAN NTS REFERENCE ONLY

LOCATION
LOT 103 DP751388, JAMES CREEK ROAD, JAMES CREEK

PROPOSED NEW LOT 69
INDICATIVE SITE (SUBDIVISION)
LOCATION SHOWN

LOCATION PLAN NTS REFERENCE ONLY

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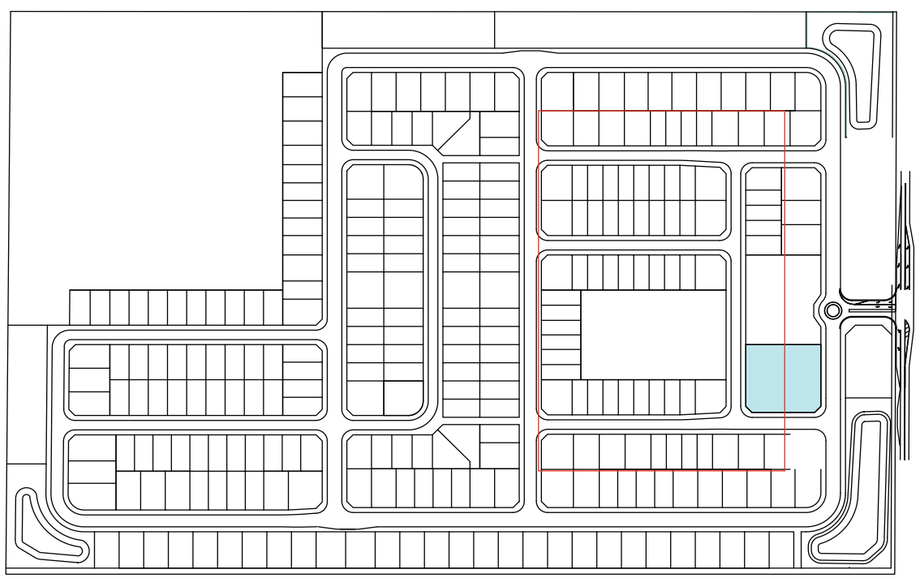
JOB NUMBER: 2842	CLIENT: MPD INVESTMENTS PTY LTD	DATE: NOV23	rad
AMENDMENT: ISSUE A-21 NOV 23	PROJECT: VILLAGE@JAMES CREEK-CHILDCARE	SCALE: AS SHOWN	
	TITLE: 1-PLANNING INSTRUMENTS REVIEW- CVC 1-LOCATION BACKGROUND	ISSUE: DA	
		DRAWING NO: 3	

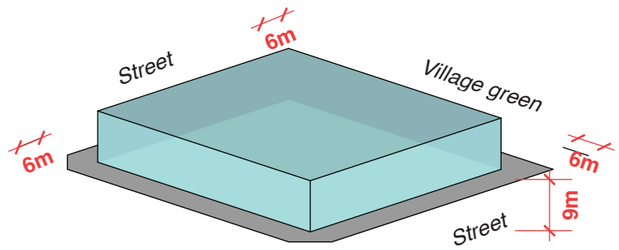


R3 zone

R3 zone- child care lot 69

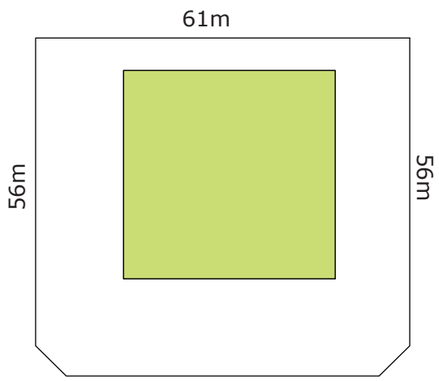
PLAN- LOCATION

SCALE 1:5000



6.0m- street- (all frontages including Village Green)

BUILDING ENVELOPE REQUIREMENTS



35% LANDSCAPE REQUIREMENTS

CVC DCP RULES

SCALE 1:NTS

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JOB NUMBER: 2842

AMENDMENT: ISSUE A-21 NOV 23

CLIENT: MPD INVESTMENTS PTY L

PROJECT: VILLAGE@JAMES CREEK-CHILDCARE

TITLE: 1-PLANNING INSTRUMENTS REVIEW- CVC
2-DCP REQUIREMENTS

DATE: NOV23

SCALE: AS SHOWN

ISSUE: DA

DRAWING NO: 4

rad

TYPE	R3 CHILD CARE SITE		area	3391m2	
	Clarance Valley Council DCP residential				
	criteria	required		proposed	comply
	generally part C				
c1	objectives	principles		key vision	achieved
c2	pllication of part	principles			achieved
c3	site assessment requirements	principles			achieved
c4	streetscape	principles			achieved
c5	building design	principles			achieved
c6	coastal policy	principles			achieved
c7	coastal views	principles			achieved
c8	different development types	house		child care	
c9	min site area R1,R2,R3	400m2	R3	NA	
	building rectangular test-15m by 10m beyond BLDG line	10X15M		12x 23M	achieved
c10	min site area for flat,attached R3	Na		3391m2	
c11	dual occupancy R5 zone	Na		NA	
c12	min site area for flat, attached, multi	Na		NA	
c13	building height-external wall	9m		<9.0m	achieved
	building height- top plate	6.5m		<6.5m	achieved
c14	height control internal lots	TP4.5 W6.5		<	achieved
c15	variation to max height	flood		NA	
c16	setbacks- street	6m		6m to entry porch MIN	achieved
	setbacks- side/ rear- single level (H<6.5m)	0.9m		0.9m	achieved
	setbacks- side/rear- two storey (6.5<H<9m)	1.5m		NA	
	setbacks- secondary frontage R!,R2,R3	3.5m		NA	
	setbacks- other (serives/canals/levee walls)	>1.5m		NA	
	setbacks- lanes	4.5m		NA	
c17	variation to front setback (merit based)			see plan	achieved
c18	zero setback (subdivision merits)	merits			achieved
c19	landscape requirement R1,R2-(45%), R3_(35%)	1186m2		1350m2	achieved
c20	private open space m2-dwelling=5om2	50m2		NA	
	private open space dimension 4.5m	4.5m		NA	
c21	private open space flat buildings	Na		NA	
c22	landscaping plan	see paln			achieved
c23	secondary dwelling	Na		NA	
c24	essential services	provided		provided	achieved
c25	development on flood prone land	Na		NA	
c26	controls for Bush Fire land	Na		NA	
c27	Development on acid sulfate soil				achieved
c28	land slip/ geotechnical hazard	Na		NA	
c29	waste management	provided		provided	achieved
c30	sheds/ caravans	setback/height		provided	achieved
c31	fences and walls	setback/height		provided	achieved
		style		provided	achieved
	generally part G				
g1	carpark objectives	principles		principles	achieved
g2	number of carpark spacesspaces				
	table G1				
	child care				
	1 space per employee	staff	26		
	1 space per 10 children	children	11		
	table G2	total	37	provided 37	achieved
	service vehicles- NA			loading bay	achieved
g3	varaitions to numbers	Na		NA	
g4	carpark dimensions AUST stand.	Na		NA	
g5	manoeuvring/ loading bays	CVC to determine		provided	achieved
		3.5m by 7.5m bay (small)			achieved
g6	site access	>6m to cornern		NA	achieved
g7	carpark design	design guidelines		provided	achieved
g8	paving	design guidelines		provided	achieved
g9	parking on flood	Na		NA	
g10	large scale development	Na		NA	

NOTE
REFER TO TOWN PLANNING REPORT FOR FULL DETAILS

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JOB NUMBER: 2842
AMENDMENT: ISSUE A-21 NOV 23

CLIENT: MPD INVESTMENTS PTY LTD
PROJECT: VILLAGE@JAMES CREEK-CHILDCARE
TITLE: 1-PLANNING INSTRUMENTS REVIEW- CVC 3-DCP ANALYSIS SCHEDULE

DATE: NOV23
SCALE: AS SHOWN
ISSUE: DA
DRAWING NO: 5

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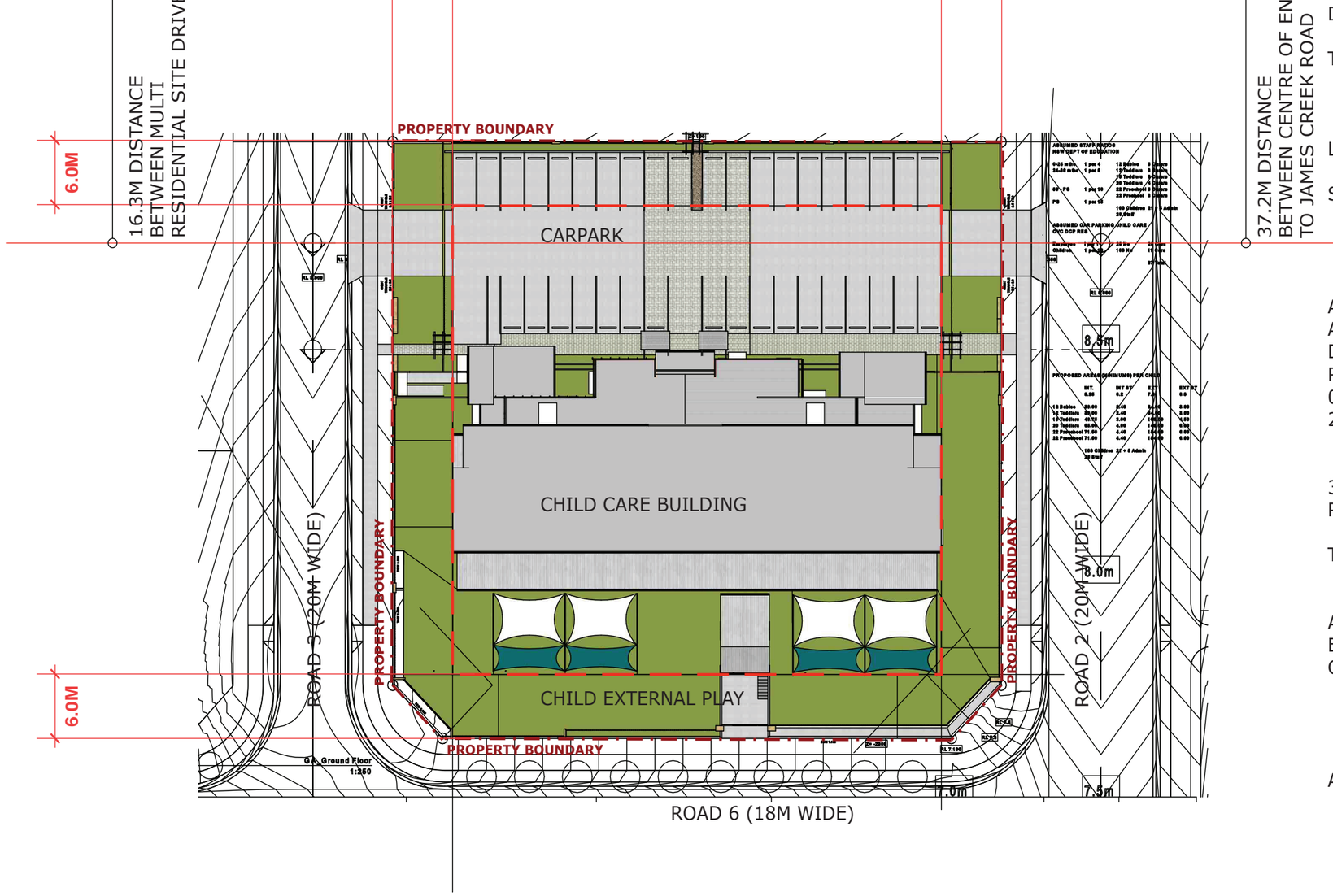

DESCRIPTION

TYPE
- 3391M2 R3 LOT
- NOM 61M WIDE
- 56M DEEP

LEVEL
- SINGLE

STYLE
- "VILLAGE" CHILD CARE
- MAIN INTERNAL "STREET"
- SEPARATE PODS/ MODULES

ACCOMMODATION
ASSUMED STAFF RATIOS AS PER NSW
DEPT OF EDUCATION
REGULATION 123-CENTRE BASED SERVICES

0-24 MONTHS	12 BABIES	1/4	3 CARERS
24-36 MONTHS	12 TODDLERS	1/5	3 CARERS
	15 TODDLERS	1/5	3 CARERS
	20 TODDLERS	1/5	4 CARERS
36-PS	22 PRESCHOOL	1/10	3 CARERS
PS	22 PRESCHOOL	1/15	3 CARERS
TOTAL	103 CHILDEREN		21+5 ADMIN 26 STAFF

ASSUMED CARPARK CHILD CARE CENTRE AS PER CVC DCP

EMPLOYEE 1 PER 1	26 NO	26 SPACES
CHILDREN 1/10	103 NO	11 spaces
	TOTAL	37 SPACES

AREA
- ENCLOSED
  - CHILD CARE BUILDING 526M2
  - PORCH 94M2
  - GARAGE 18M2

LANDSCAPE AREA
- MIN AREA= 1350M2 (40%)

NOTE
REFER TO
1-TOWN PLANNING REPORT FOR FULL DETAILS
2-LANDSCAPE ARCHITECT FOR LANDSCAPE DESIGN INTENT STATEMENT
3-CIVIL ENGINEER FOR LEVELS, TRAFFIC

PLAN- BUILDING PLAN- GROUND/ SITE

SCALE 1:500

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JOB NUMBER:	2842
AMENDMENT:	ISSUE A-21 NOV 23
CLIENT:	MPD INVESTMENTS PTY LTD
PROJECT:	VILLAGE@JAMES CREEK-CHILDCARE
TITLE:	1-PLANNING INSTRUMENTS REVIEW- CVC 4-DCP ANALYSIS PLAN
DATE:	NOV23
SCALE:	AS SHOWN
ISSUE:	DA
DRAWING NO:	6

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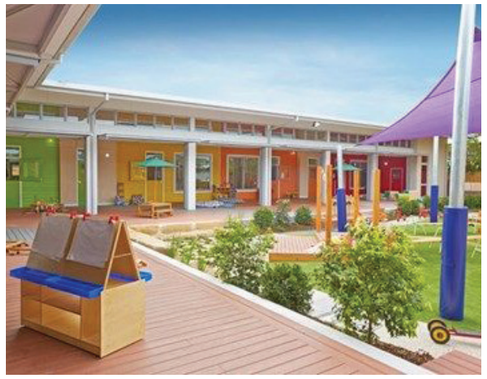

INSPIRATIONAL IMAGES- DESIGN DIRECTION-ATTRIBUTION AS REQUIRED

Project Overview

- o The architectural design process for the childcare center involved a comprehensive analysis of multiple factors aimed at creating a space that not only serves its functional purpose but also delights visually and integrates seamlessly with in its surroundings.
- o The strategic positioning of the center, close to the vibrant VILLAGE GREEN and adjacent to the main entry, was central to the design concept. This placement was not just about proximity but about fostering a meaningful connection with the communal space and ensuring convenient access for visitors and occupants.
- o Emphasis was placed on ensuring a balance between privacy, accessibility, sustainability, and security, underpinning every decision in the design process.

- ***Design Factors***
- o Proximity to VILLAGE GREEN: The intent was to not just be near but to weave the essence of this communal area into the design, maximizing both visual and spatial connections.
- o Integration with Main Entry: The careful placement next to the primary entrance wasn't just about convenience; it was a conscious decision to facilitate a smooth and conflict-free passage for vehicular and pedestrian traffic.
- o Privacy and Screening: The design aimed to respect the neighboring residential community by meticulously integrating visual and acoustic screening methods, ensuring privacy without compromising aesthetics.
- o Sunshine and Shade Provision: A crucial aspect considered was the harnessing of natural light and providing adequate shaded areas to create a comfortable and inviting atmosphere for children and staff alike.
- o Safety and Environmental Standards: The integration of sustainable environmental design principles and security measures was imperative to contribute positively to the public realm while ensuring a safe and eco-friendly environment for the center's occupants.

- ***Internal Layout***
- o The concept of an internal "main street" acted as the backbone of the design, offering a unique and functional approach. This central axis interconnected various functional areas or "pods," fostering a sense of community while providing distinct zones for different activities.
- o The deliberate breakdown in the building's mass and form wasn't just for aesthetics but primarily to allow ample natural light and ventilation, creating a pleasant and breathable environment within the facility. This design choice also ensured visual diversity and interest throughout the space.
- o While the "street" design served to separate functions, it also acted as a unifying element, ensuring connectivity and direct sightliness for efficient management and supervision.
- o The selection of materials was a thoughtful process, focusing on utilizing low-maintenance, natural materials inspired by the architectural forms of the surrounding agricultural buildings. (child like interpretation) The use of high-light colors, achieved through pre finished materials like red brick for accent walls, added vibrancy and warmth to the space.

- ***Conclusion***
- o In conclusion, the architectural design intent was centered around not just meeting functional requirements but elevating the space to a level where it seamlessly integrates with the environment and fosters a sense of belonging and well-being. The meticulous consideration of site-specific factors and the integration of innovative design elements ensure that the childcare center not only meets but exceeds the needs and expectations of its occupants and community.

"THE PROJECT WILL BENCHMARK THE ARCHITECTURAL DIRECTION FOR THE REMAINING DEVELOPMENT"

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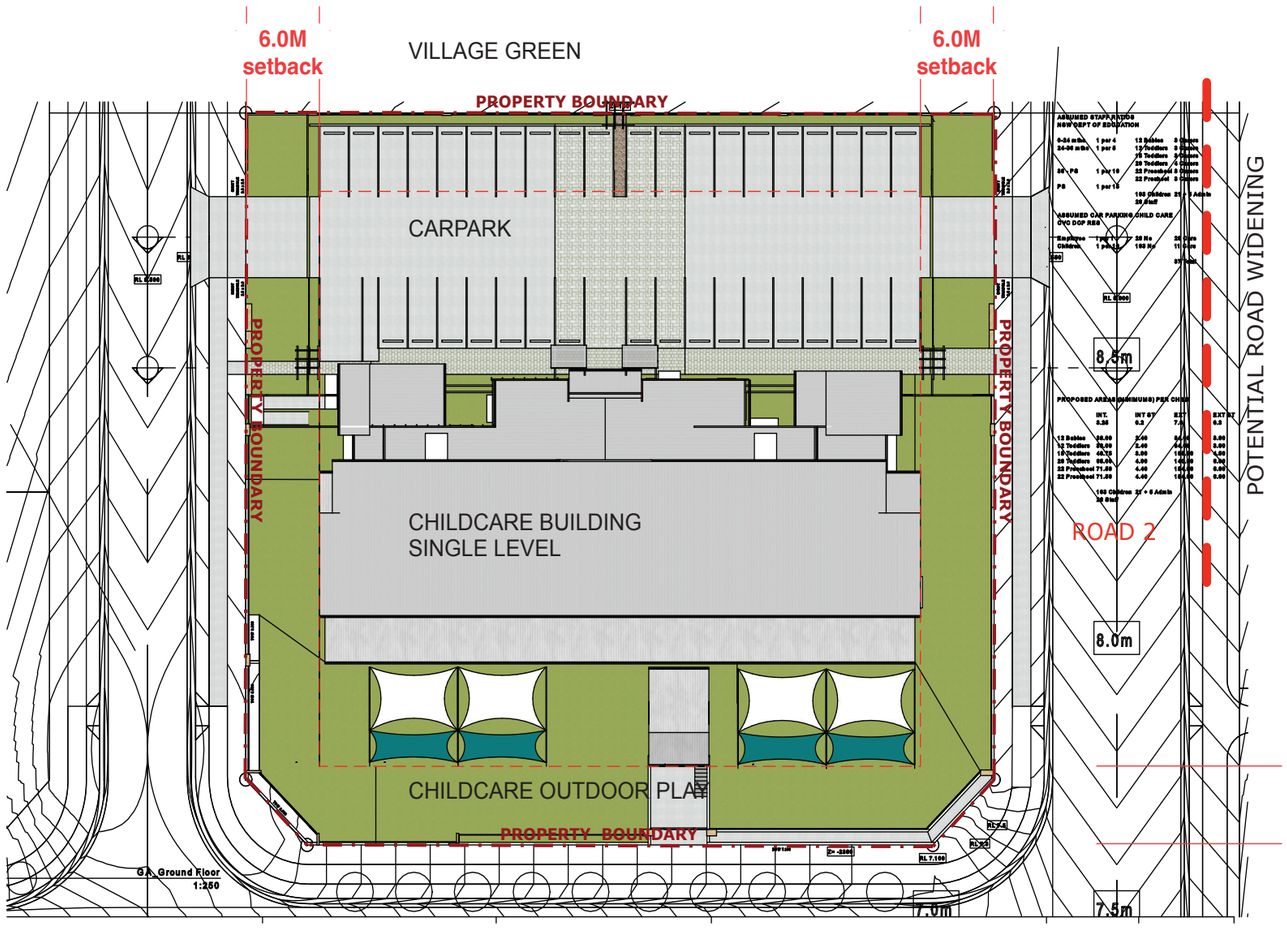
JOB NUMBER: 2842	CLIENT: MPD INVESTMENTS PTY LTD	DATE: NOV23	rad
AMENDMENT: ISSUE A-21 NOV 23	PROJECT: VILLAGE@JAMES CREEK-CHILDCARE	SCALE: AS SHOWN	
	TITLE: 2- ARCHITECTURAL DRAWINGS 1-ARCHITECTURAL DESIGN INTENT STATEMENT	ISSUE: DA	
		DRAWING NO: 7	



NOTES

1- REFER TO LANDSCAPE ARCHITECTS PLANS FOR LANDSCAPE DESIGN INTENT STATEMENT

2- REF TO TRAFFIC ENGINEER FOR CARPARK LAYOUT AND SIZES

3- NOTE
The southbound lane of ‘Road 2’ opposite the proposed driveway
“Potential for road widening to provide a short auxiliary right turn lane opposite proposed driveway entry to allow for southbound through traffic to pass turning vehicles, subject to detailed design”.

PLAN -SITE PLAN

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JOB NUMBER: 2842	CLIENT: MPD INVESTMENTS PTY LTD	DATE: NOV23	rad
AMENDMENT: ISSUE A-21 NOV 23	PROJECT: VILLAGE@JAMES CREEK-CHILDCARE	SCALE: AS SHOWN	
	TITLE: 2- ARCHITECTURAL DRAWINGS 2-PLAN-SITE	ISSUE: DA	
		DRAWING NO: 8	

ASSUMED STAFF RATIOS
NSW DEPT OF EDUCATION

0-24 mths	1 per 4	12 Babies	3 Carers
24-36 mths	1 per 5	12 Toddlers	3 Carers
		15 Toddlers	3 Carers
		20 Toddlers	4 Carers
36 - PS	1 per 10	22 Preschool	3 Carers
		22 Preshool	3 Carers
PS	1 per 15		
		103 Children	21 + 5 Admin
		26 Staff	

ASSUMED CAR PARKING CHILD CARE
CVC DCP RES

Employee	1 per 1	26 No	26 Cars
Children	1 per 10	103 No	11 Cars
			37 Total

PROPOSED AREAS (MINIMUMS) PER CHILD

	INT. 3.25	INT ST 0.2	EXT 7.0	EXT ST 0.3
12 Babies	39.00	2.40	84.00	3.60
12 Toddlers	39.00	2.40	84.00	3.60
15 Toddlers	48.75	3.00	105.00	4.50
20 Toddlers	65.00	4.00	140.00	6.00
22 Preschool	71.50	4.40	154.00	6.60
22 Preschool	71.50	4.40	154.00	6.60
	103 Children	21 + 5 Admin		
	26 Staff			

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JOB NUMBER: 2842
AMENDMENT: ISSUE A-21 NOV 23

CLIENT: MPD INVESTMENTS PTY LTD
PROJECT: VILLAGE@JAMES CREEK-CHILDCARE
TITLE: 2- ARCHITECTURAL DRAWINGS
3-PLAN- EXTERNAL LAYOUT

DATE: NOV23
SCALE: AS SHOWN
ISSUE: DA
DRAWING NO: 9

rad

ASSUMED STAFF RATIOS
NSW DEPT OF EDUCATION

0-24 mths	1 per 4	12 Babies	3 Carers
24-36 mths	1 per 5	12 Toddlers	3 Carers
		15 Toddlers	3 Carers
		20 Toddlers	4 Carers
36 - PS	1 per 10	22 Preschool	3 Carers
		22 Preshool	3 Carers
PS	1 per 15		
		103 Children	21 + 5 Admin
		26 Staff	

ASSUMED CAR PARKING CHILD CARE
CVC DCP RES

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Children	1 per	103 No	11 Cars
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12 Toddlers	39.00	2.40	84.00	3.60
15 Toddlers	48.75	3.00	105.00	4.50
20 Toddlers	65.00	4.00	140.00	6.00
22 Preschool	71.50	4.40	154.00	6.60
22 Preschool	71.50	4.40	154.00	6.60
	103 Children	21 + 5 Admin		
	26 Staff			

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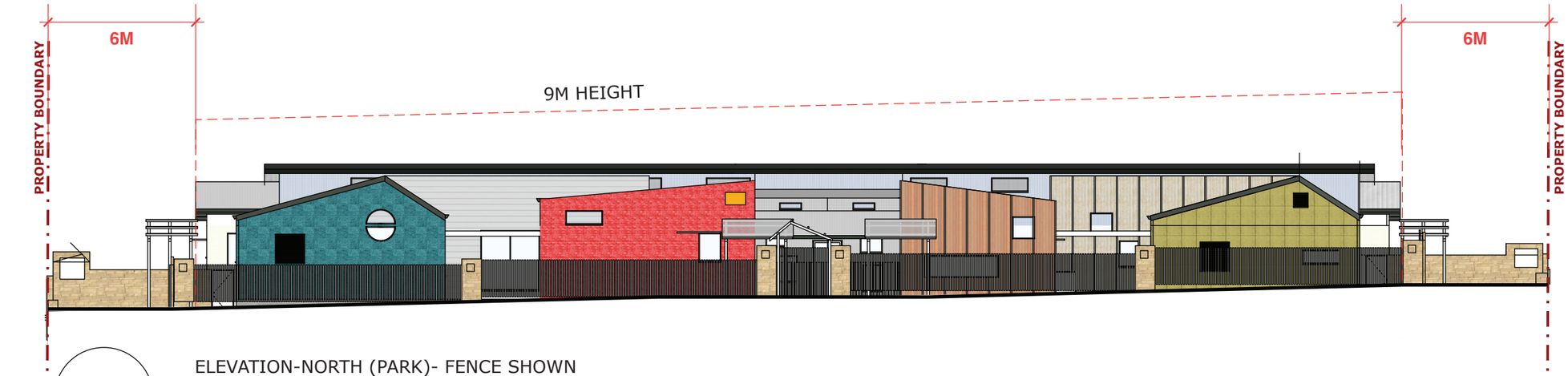
AMENDMENT: ISSUE A-21 NOV 23

CLIENT: MPD INVESTMENTS PTY LTD
PROJECT: VILLAGE@JAMES CREEK-CHILDCARE
TITLE: 2- ARCHITECTURAL DRAWINGS
4-PLAN- INTERNAL LAYOUT

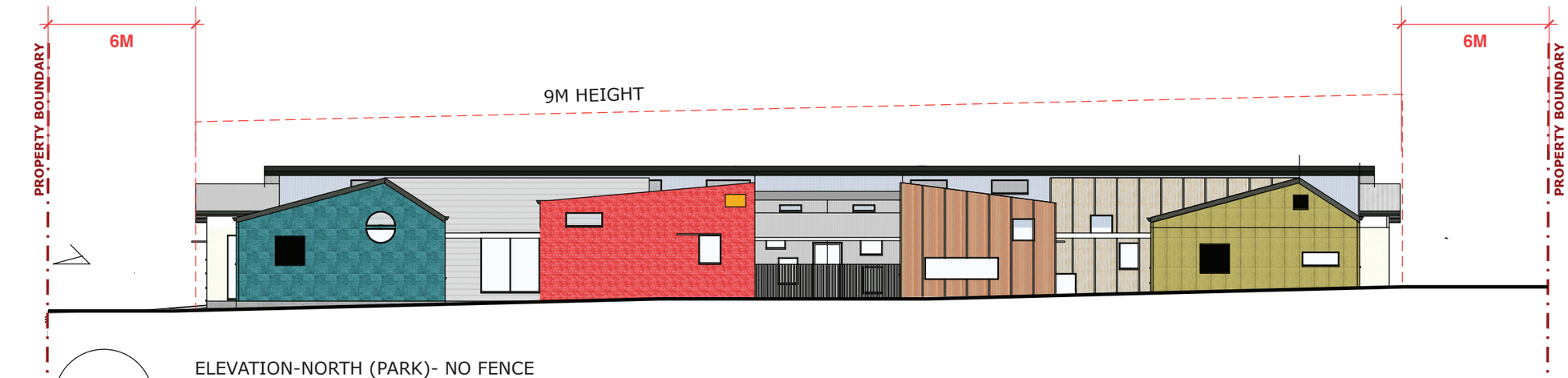
DATE: NOV23
SCALE: AS SHOWN
ISSUE: DA
DRAWING NO: 10

rad



ELEVATION-NORTH (PARK)- FENCE SHOWN

SCALE 1:200 @A3



ELEVATION-NORTH (PARK)- NO FENCE

SCALE 1:200 @A3

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JOB NUMBER: 2842

AMENDMENT: ISSUE A-21 NOV 23

CLIENT: MPD INVESTMENTS PTY LTD

PROJECT: VILLAGE@JAMES CREEK-CHILDCARE

TITLE: 2- ARCHITECTURAL DRAWINGS
5-ELEVATION -NORTH

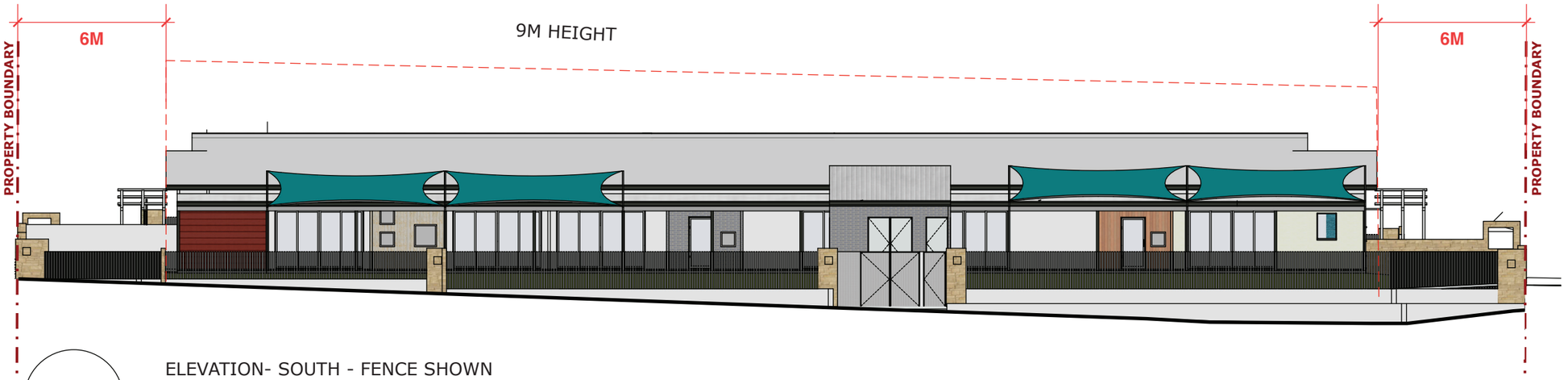
DATE: NOV23

SCALE: AS SHOWN

ISSUE: DA

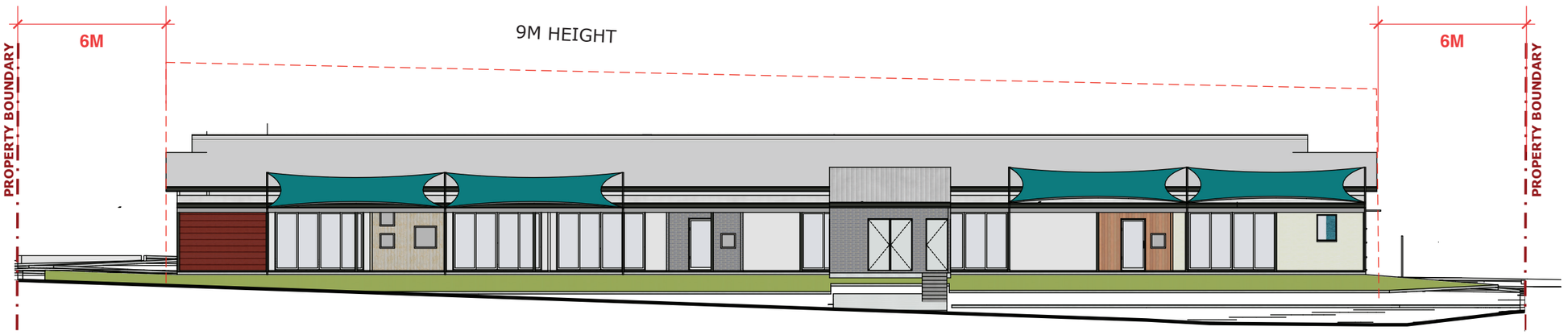
DRAWING NO: 11

rad



ELEVATION- SOUTH - FENCE SHOWN

SCALE 1:200 @A3



ELEVATION- SOUTH - NO FENCE

SCALE 1:200 @A3

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JOB NUMBER: 2842

AMENDMENT: ISSUE A-21 NOV 23

CLIENT: MPD INVESTMENTS PTY LDT

PROJECT: VILLAGE@JAMES CREEK-CHILDCARE

TITLE: 2- ARCHITECTURAL DRAWINGS
6-ELEVATION -SOUTH

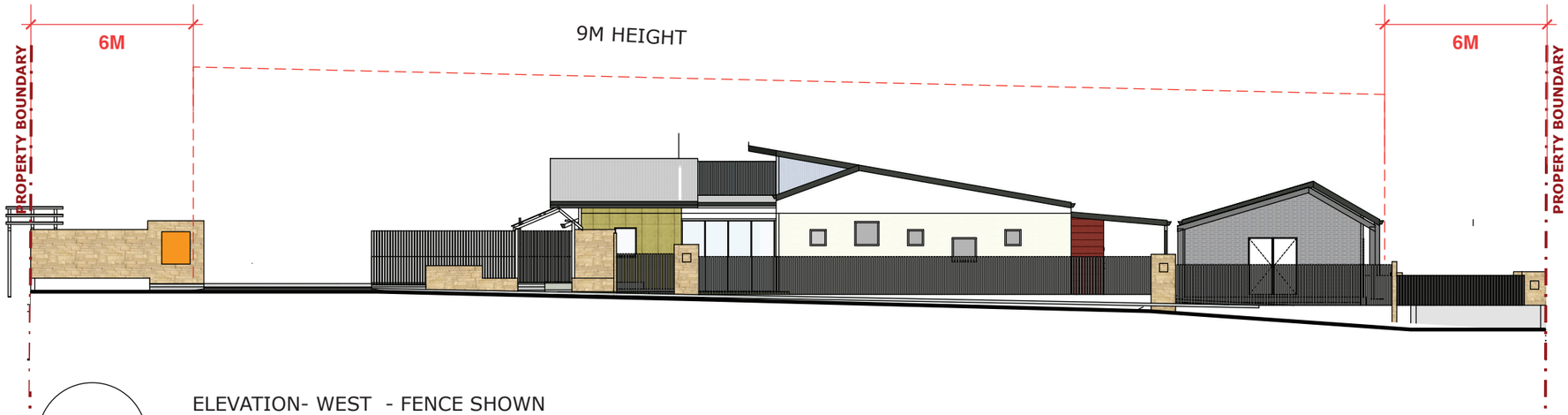
DATE: NOV23

SCALE: AS SHOWN

ISSUE: DA

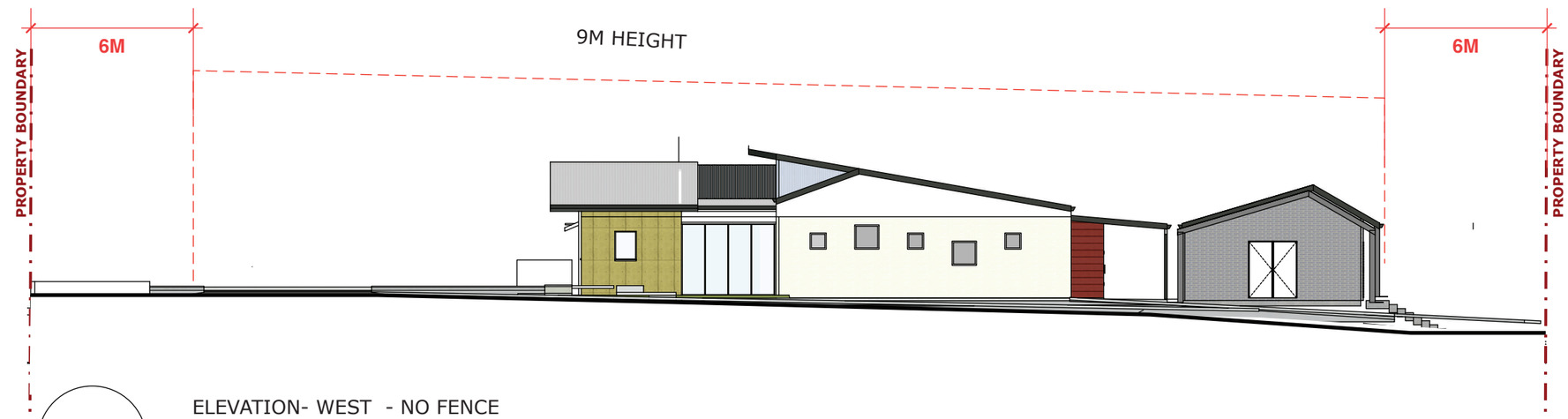
DRAWING NO: 12

rad



ELEVATION- WEST - FENCE SHOWN

SCALE 1:200 @A3



ELEVATION- WEST - NO FENCE

SCALE 1:200 @A3

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JOB NUMBER: 2842

AMENDMENT: ISSUE A-21 NOV 23

CLIENT: MPD INVESTMENTS PTY LTD

PROJECT: VILLAGE@JAMES CREEK-CHILDCARE

TITLE: 2- ARCHITECTURAL DRAWINGS
7-ELEVATION -WEST

DATE: NOV23

SCALE: AS SHOWN

ISSUE: DA

DRAWING NO: 13

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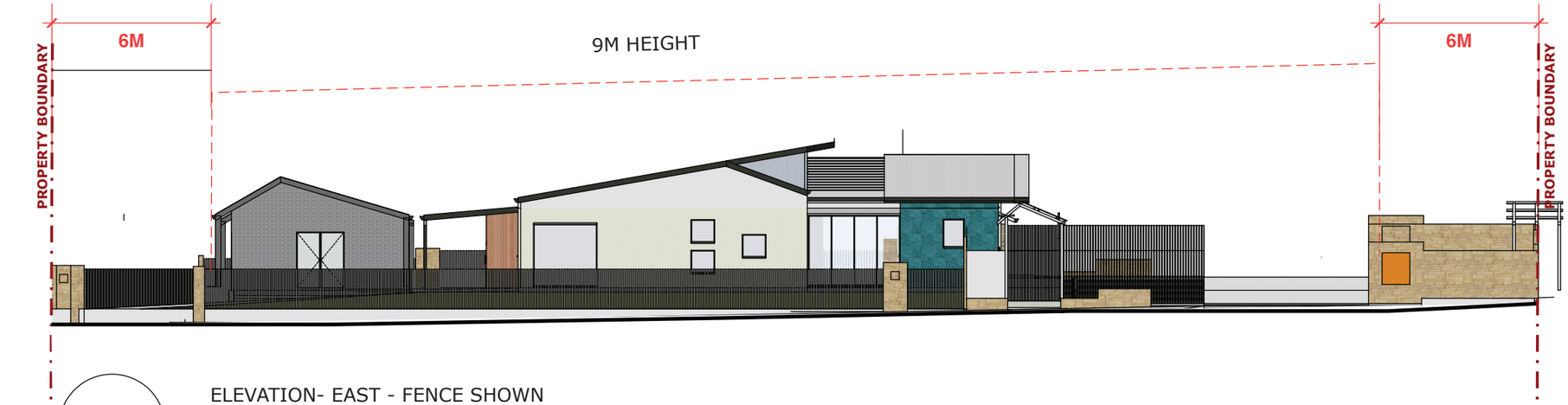
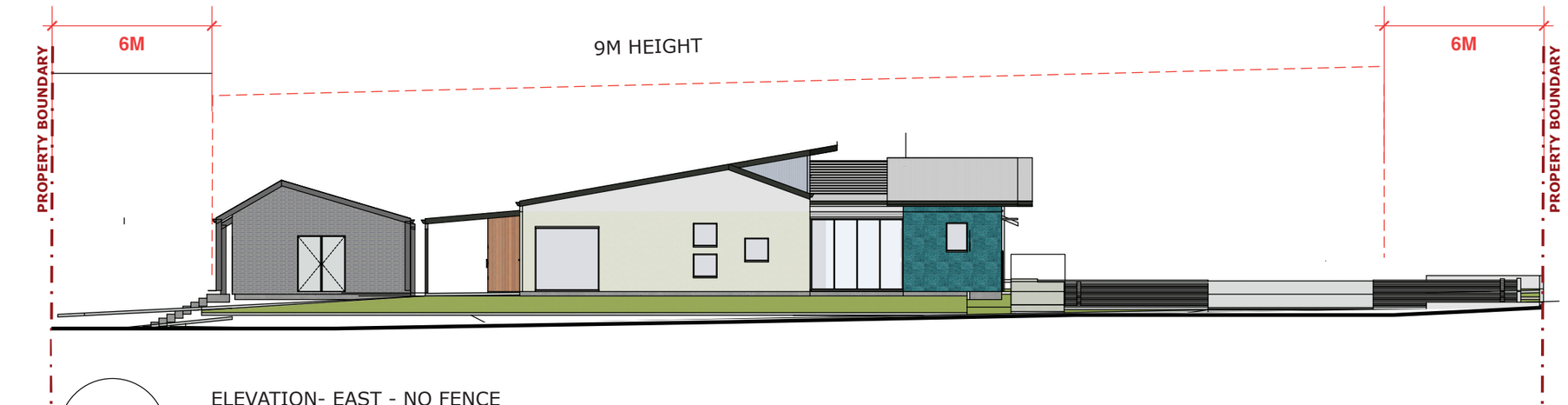


ELEVATION- EAST - FENCE SHOWN

SCALE 1:200 @A3



ELEVATION- EAST - NO FENCE

SCALE 1:200 @A3

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JOB NUMBER: 2842

AMENDMENT: ISSUE A-21 NOV 23

CLIENT: MPD INVESTMENTS PTY LTD

PROJECT: VILLAGE@JAMES CREEK-CHILDCARE

TITLE: 2- ARCHITECTURAL DRAWINGS
8-ELEVATION -EAST

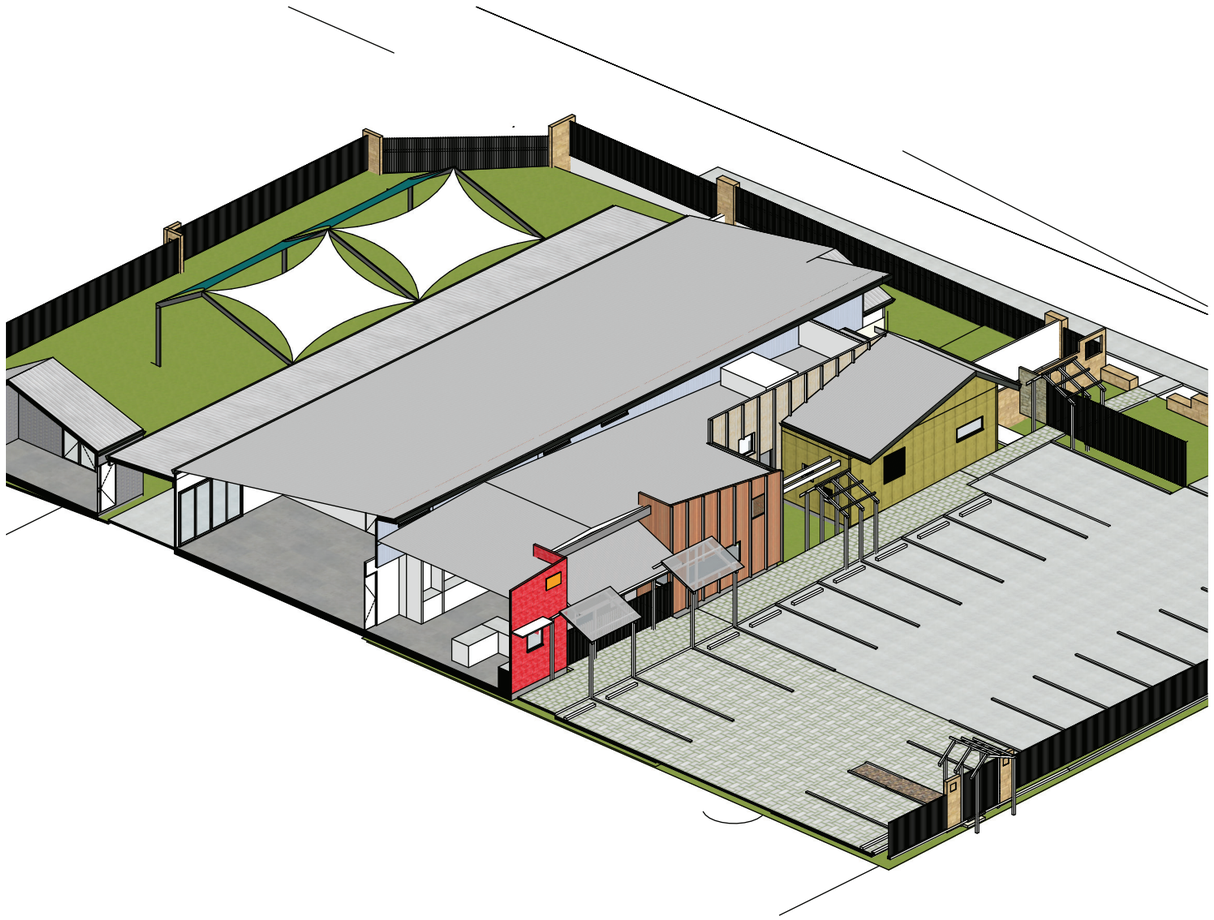
DATE: NOV23

SCALE: AS SHOWN

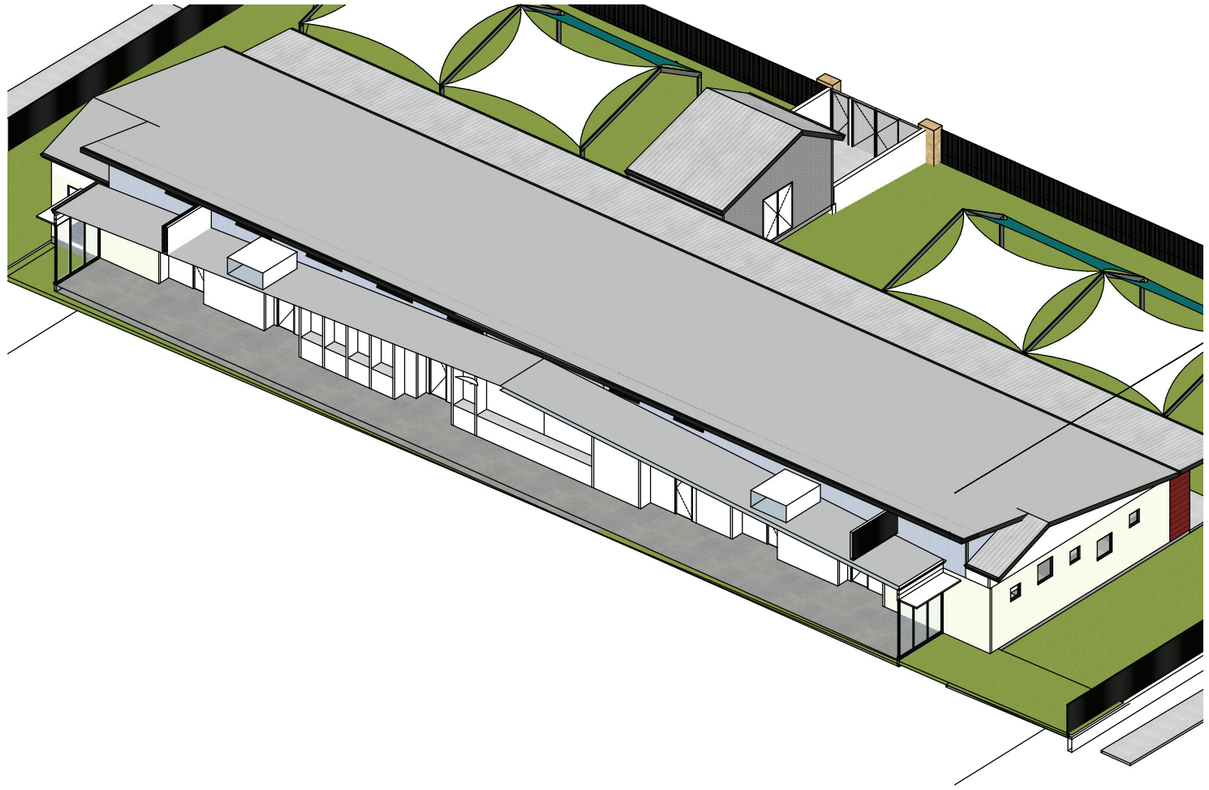
ISSUE: DA

DRAWING NO: 14

rad



NORTH SOUTH SECTION ISO VIEW



EAST WEST SECTION ISO VIEW

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JOB NUMBER: 2842

AMENDMENT: ISSUE A-21 NOV 23

CLIENT: MPD INVESTMENTS PTY LTD

PROJECT: VILLAGE@JAMES CREEK-CHILDCARE

TITLE: 2- ARCHITECTURAL DRAWINGS
9-SECTIONS

DATE: NOV23

SCALE: AS SHOWN

ISSUE: DA

DRAWING NO: 15

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VIEW- FROM ROAD 2 ENTRY

VIEW- FROM ROAD 2 PEDESTRIAN ENTRY

VIEW- FROM ROAD 3 ENTRY

VIEW- FROM ROAD 2 AND ROAD 6 INTERSECTION

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JOB NUMBER: 2842

AMENDMENT: ISSUE A-21 NOV 23

CLIENT: MPD INVESTMENTS PTY LTD

PROJECT: VILLAGE@JAMES CREEK-CHILDCARE

TITLE: 2- ARCHITECTURAL DRAWINGS
10-PERSPECTIVE VIEWS

DATE: NOV23

SCALE: AS SHOWN

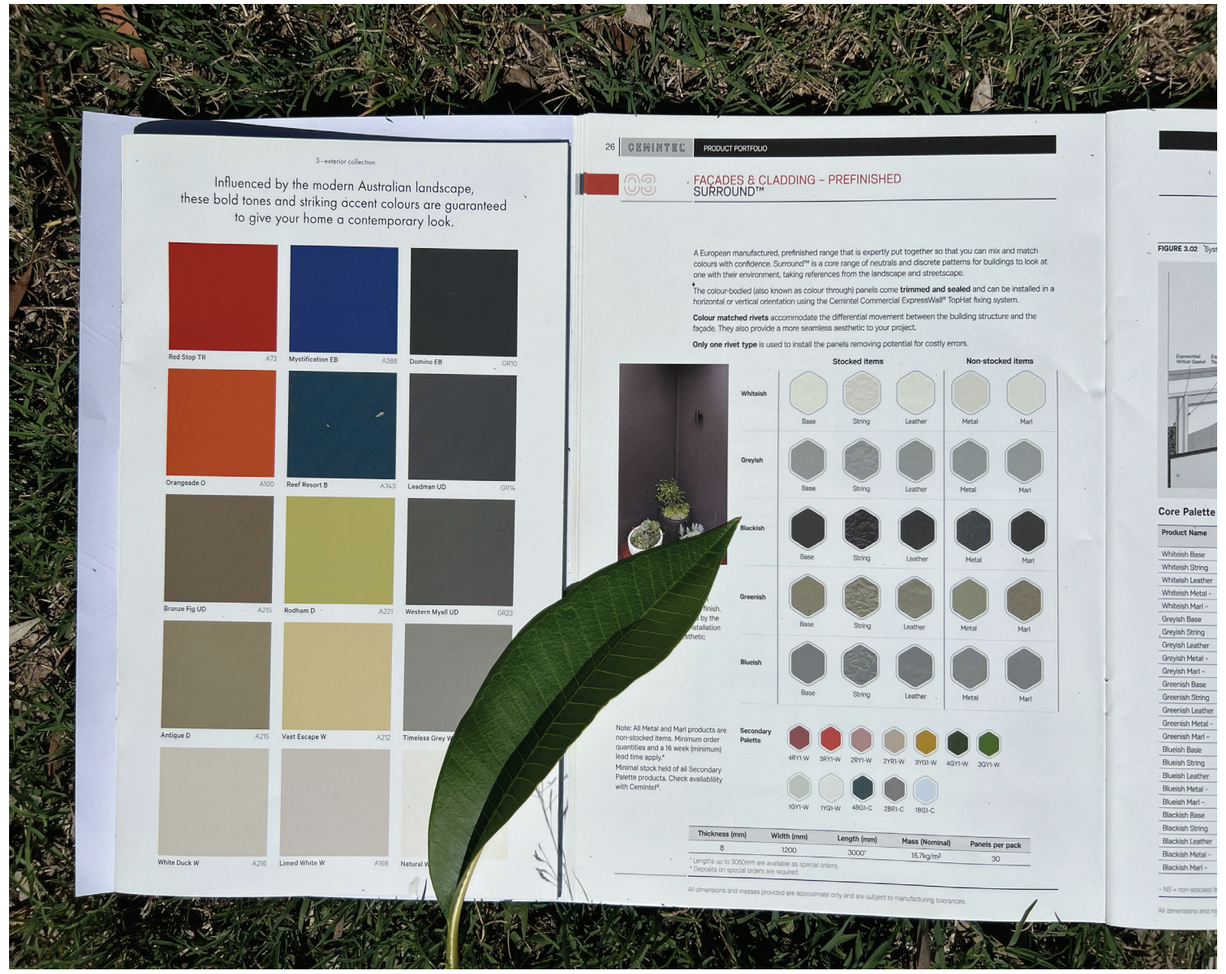
ISSUE: DA

DRAWING NO: 16

rad

MATERIALS-NATURAL

MATERIALS-HIGH LIGHT AND PRE COLOURED FC SHEET PANELS



5—exterior collection

Influenced by the modern Australian landscape, these bold tones and striking accent colours are guaranteed to give your home a contemporary look.

Red Stop TR A73
Mystification EB A388
Domino EB GR10
Orangeade O A100
Reef Resort B A343
Leadman UD GR14
Bronze Fig UD A215
Rodham D A221
Western Myall UD GR23
Antique D A215
Vast Escape W A212
Timeless Grey W
White Duck W A216
Limed White W A168
Natural W

26 CEMINTEL PRODUCT PORTFOLIO

03 FAÇADES & CLADDING – PREFINISHED SURROUND™

A European manufactured, prefinished range that is expertly put together so that you can mix and match colours with confidence. Surround™ is a core range of neutrals and discrete patterns for buildings to look at one with their environment, taking references from the landscape and streetscape.

The colour-bodied (also known as colour through) panels come **trimmed and sealed** and can be installed in a horizontal or vertical orientation using the Cemintel Commercial ExpressWall® TopHat fixing system.

Colour matched rivets accommodate the differential movement between the building structure and the façade. They also provide a more seamless aesthetic to your project.

Only one rivet type is used to install the panels removing potential for costly errors.

	Stocked items			Non-stocked items	
Whiteish	Base	String	Leather	Metal	Marl
Greyish	Base	String	Leather	Metal	Marl
Blackish	Base	String	Leather	Metal	Marl
Greenish	Base	String	Leather	Metal	Marl
Blueish	Base	String	Leather	Metal	Marl

Note: All Metal and Marl products are non-stocked items. Minimum order quantities and a 16 week (minimum) lead time apply.*

Minimal stock held of all Secondary Palette products. Check availability with Cemintel*.

Secondary Palette: 4RY1-W, 3RY1-W, 2RY1-W, 2YR1-W, 3YG1-W, 4GY1-W, 3GY1-W, 10Y1-W, 1YG1-W, 4BG1-C, 2BR1-C, 1BG1-C

Thickness (mm)	Width (mm)	Length (mm)	Mass (Nominal)	Panels per pack
8	1200	3000*	15.7kg/m²	30

* Lengths up to 3050mm are available as special orders.
† Deposits on special orders are required.

All dimensions and masses provided are approximate only and are subject to manufacturing tolerances.

FIGURE 3.02

Core Palette

Product Name
Whiteish Base
Whiteish String
Whiteish Leather
Whiteish Metal –
Whiteish Marl –
Greyish Base
Greyish String
Greyish Leather
Greyish Metal –
Greyish Marl –
Greenish Base
Greenish String
Greenish Leather
Greenish Metal –
Greenish Marl –
Blueish Base
Blueish String
Blueish Leather
Blueish Metal –
Blueish Marl –
Blackish Base
Blackish String
Blackish Leather
Blackish Metal –
Blackish Marl –

– NS = non-stocked

All dimensions and m

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JOB NUMBER: 2842

AMENDMENT: ISSUE A-21 NOV 23

CLIENT: MPD INVESTMENTS PTY LTD

PROJECT: VILLAGE@JAMES CREEK-CHILDCARE

TITLE: 2- ARCHITECTURAL DRAWINGS
11-MATERIALS

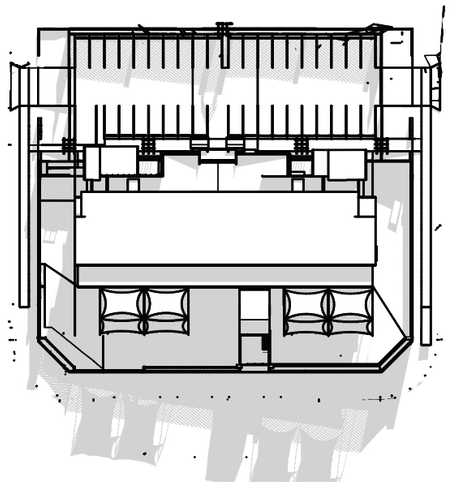
DATE: NOV23

SCALE: AS SHOWN

ISSUE: DA

DRAWING NO: 17

rad



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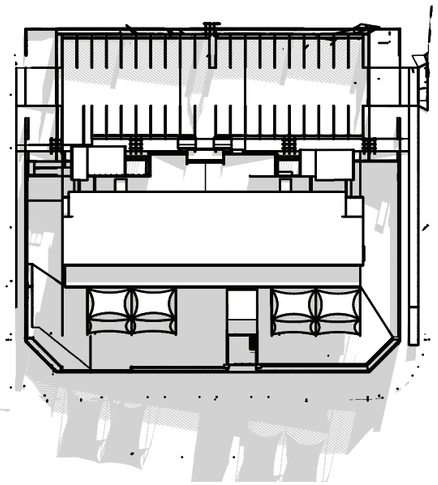

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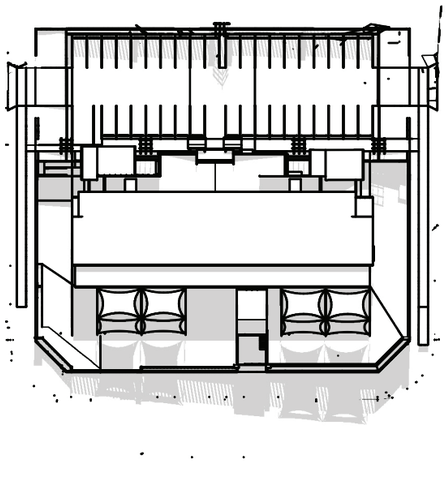

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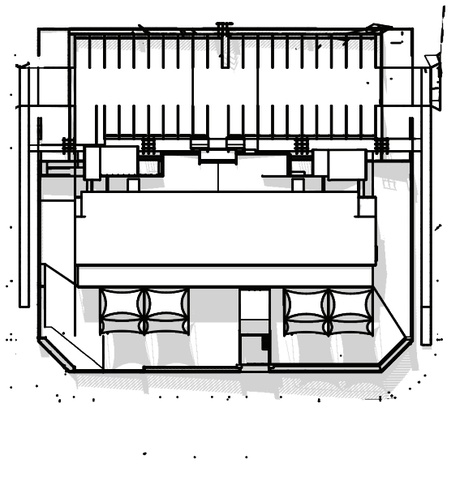

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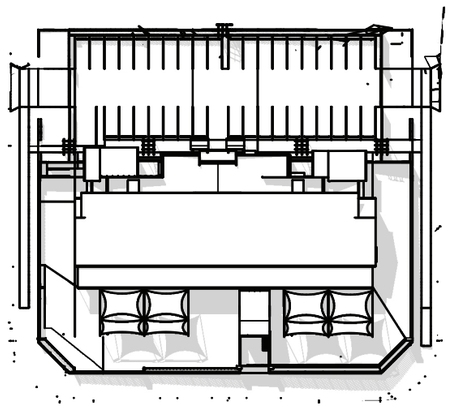

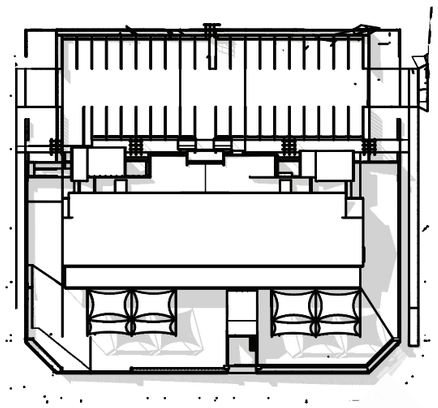

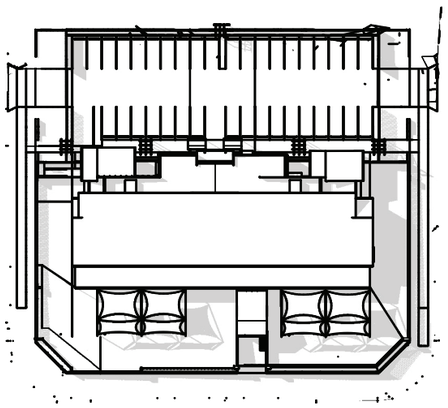

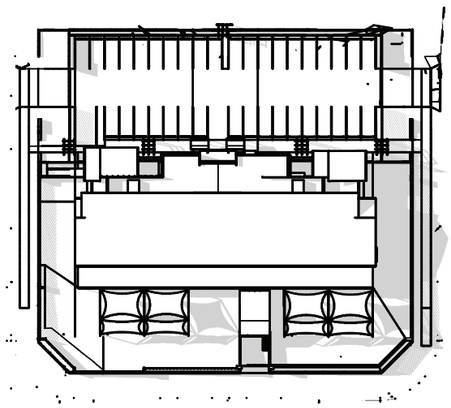

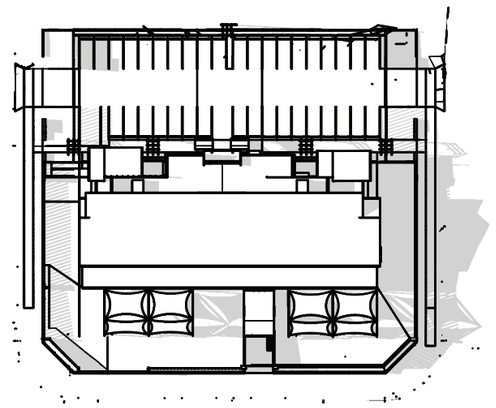

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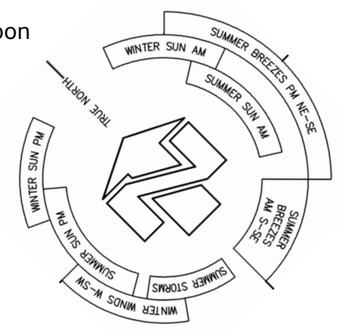

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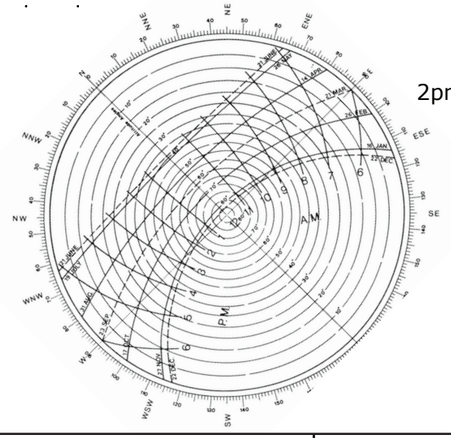

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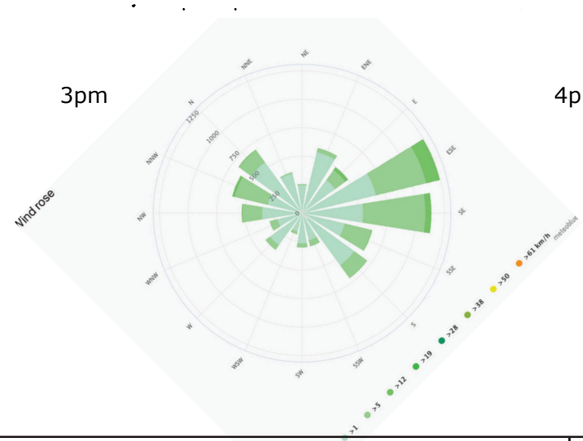

4pm

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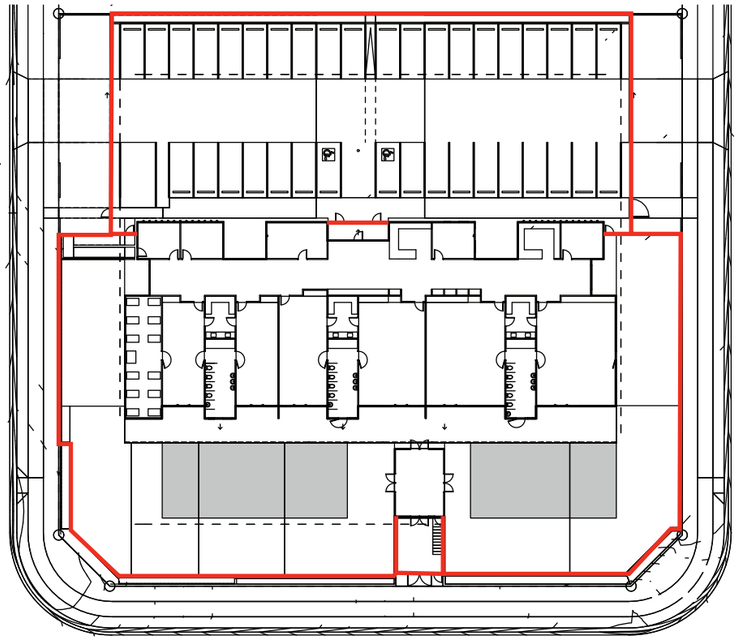
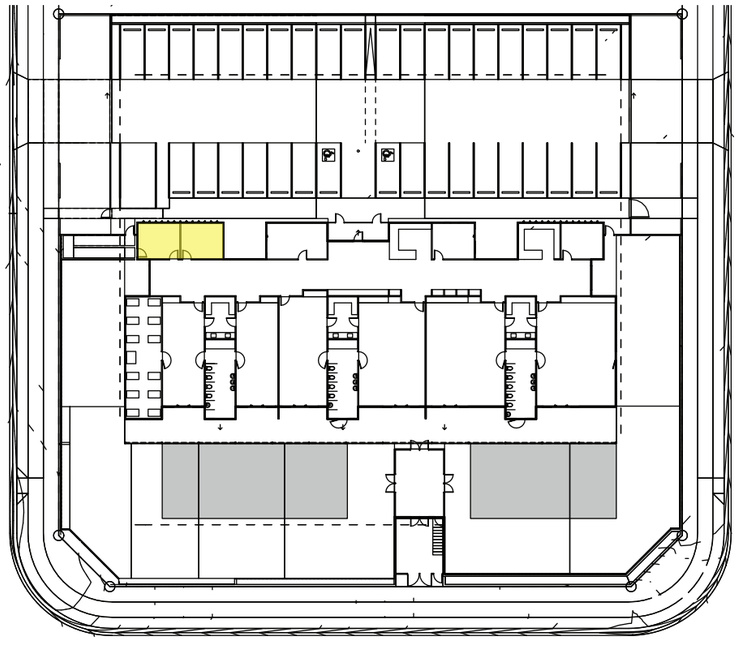
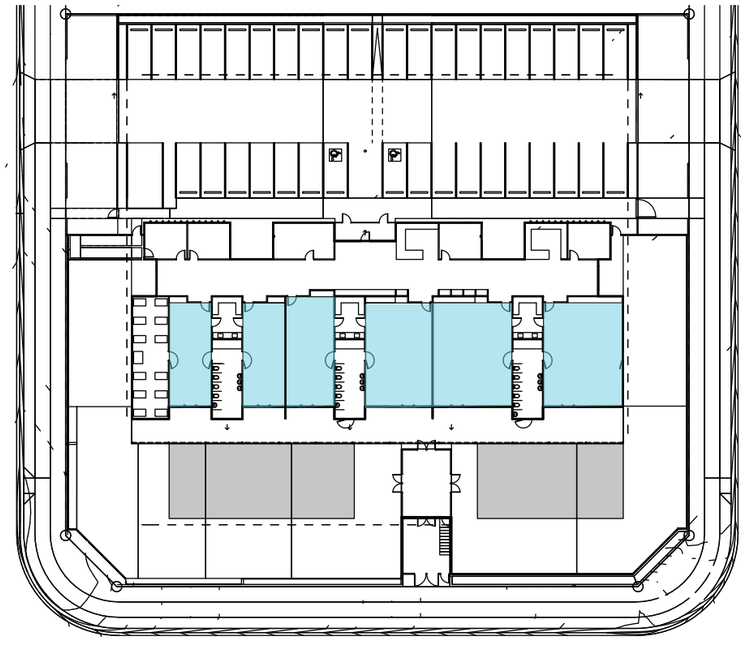


PLAN- 104 FENCING OR BARRIER (SHOWN RED)

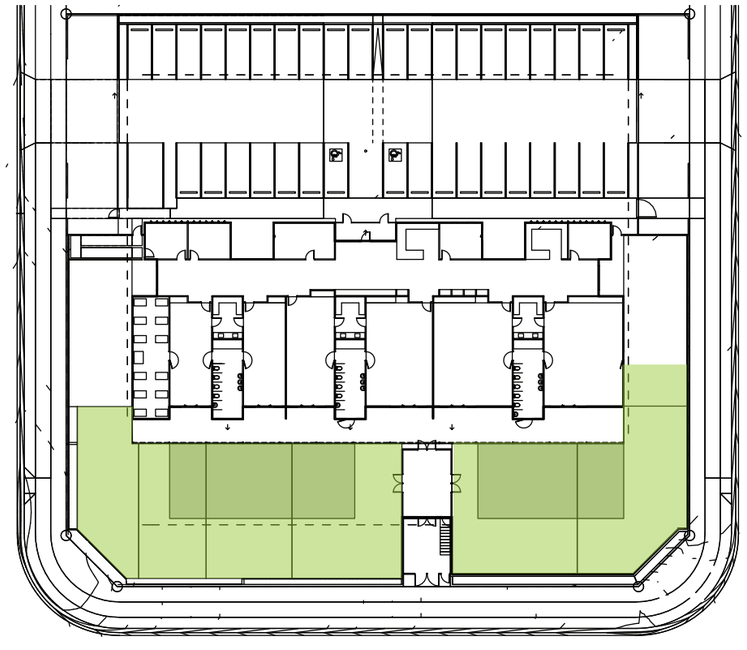
	NSW CHILD CARE DESIGN GUIDE			
	Education SEPP provisions			
	Clause	required	proposed	comply
	National Quality Framework			
	Assessment checklist			
	TABLE 2			
D		NATIONAL QUALITY FRAMEWORK ASSESSMENT CHECKLIST		
104	Fencing or barrier enclosurer	indicate	shown	achieved
		height/material/ style		
106	Laundry/ Hygine facilities	provide solution in safe location	shown	achieved
107	unencumbered indoor space	3.25m2 per child	provided	
		required 103 children or 334.75m2	354.3m2	achieved
108	unencumbered outdoor space	7.0m2 per child	provided	
		required 103 children or 721m2	736.92m2	achieved
109	toilet and hygiene facilities	adequate facilities	> NCC req	
		location and design		achieved
110	ventilation and natural light	ventilation/ natural lighting/temperature	indicated	achieved
111	adminstration space	adequate area	indicated	achieved
112	nappy change facilities	adequate area appropriate hygienic facilities	indicated	achieved
113	outdoor space- natural environment	explore and experience natural environment	indicated	achieved
114	outdoor space -shade	protection from sun		
		30% of play area	indicated	achieved
115	design for supervision	supervision of children at all times	indicated	achieved



PLAN- 106 LAUNDRY AND HYGINE FACILITIES (SHOWN YELLOW)



PLAN- 107 UNENCUMBERED INDOOR SPACE (SHOWN BLUE)



PLAN- 108 UNENCUMBERED OUTDOOR SPACE (SHOWN GREEN)

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JOB NUMBER: 2842

AMENDMENT: ISSUE A-21 NOV 23

CLIENT: MPD INVESTMENTS PTY LTD

PROJECT: VILLAGE@JAMES CREEK-CHILDCARE

TITLE: 3- REVIEW OF NSW GUIDELINE
1-TABLE 2 ILLUSTRATION PART A

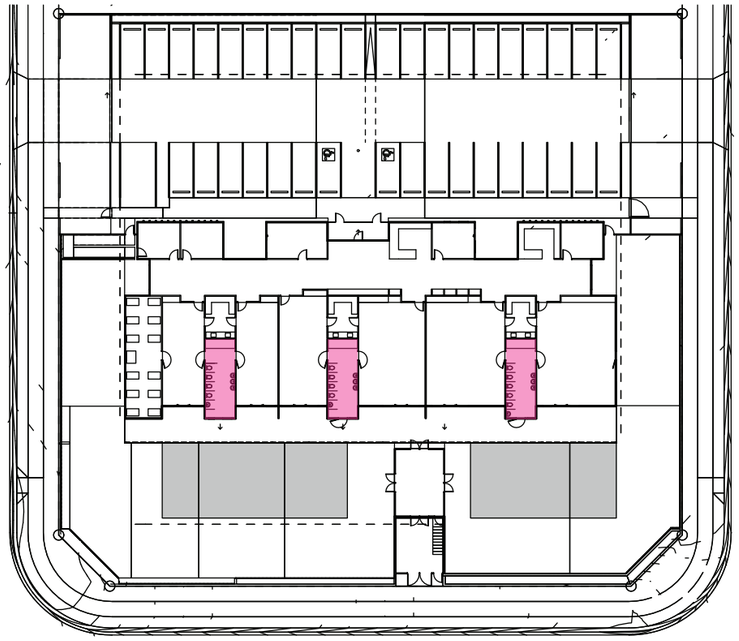
DATE: NOV23

SCALE: AS SHOWN

ISSUE: DA

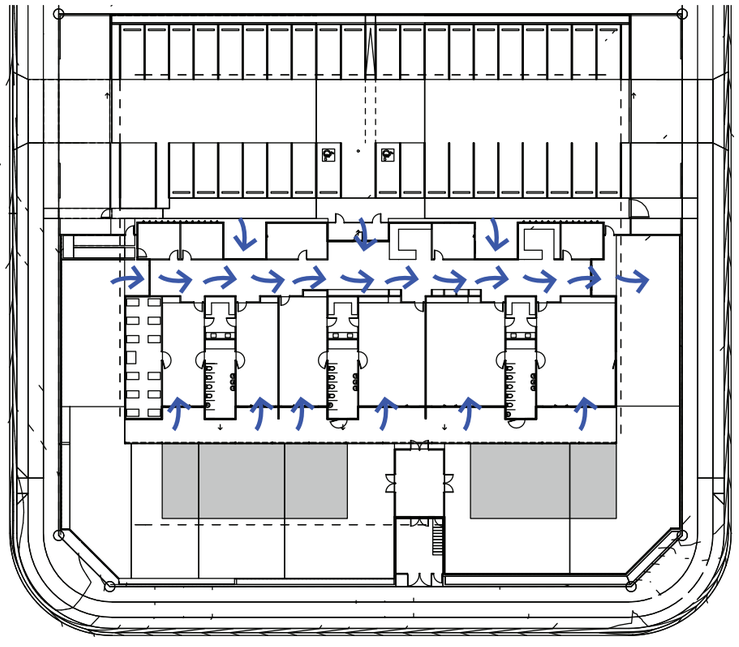
DRAWING NO: 19

rad

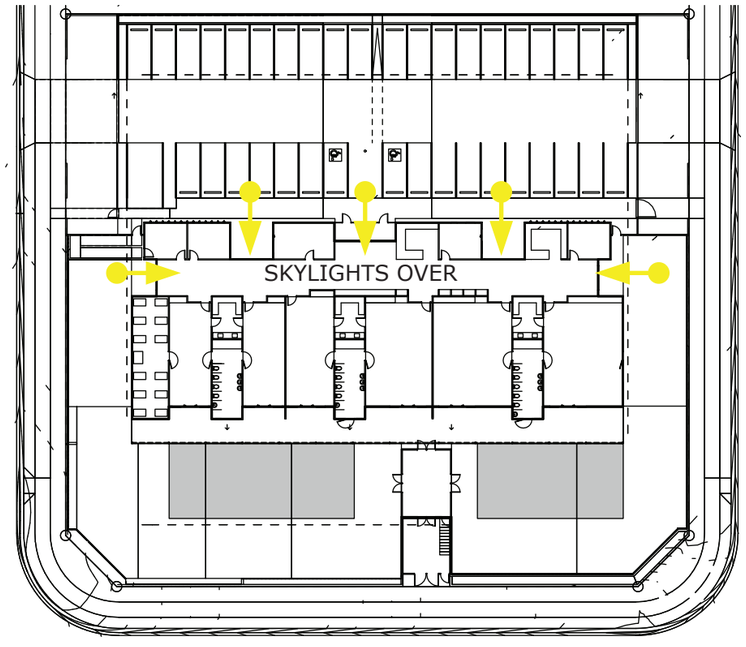


PLAN- 109 TOILET AND HYGIENE FACILITIES (SHOWN PINK)

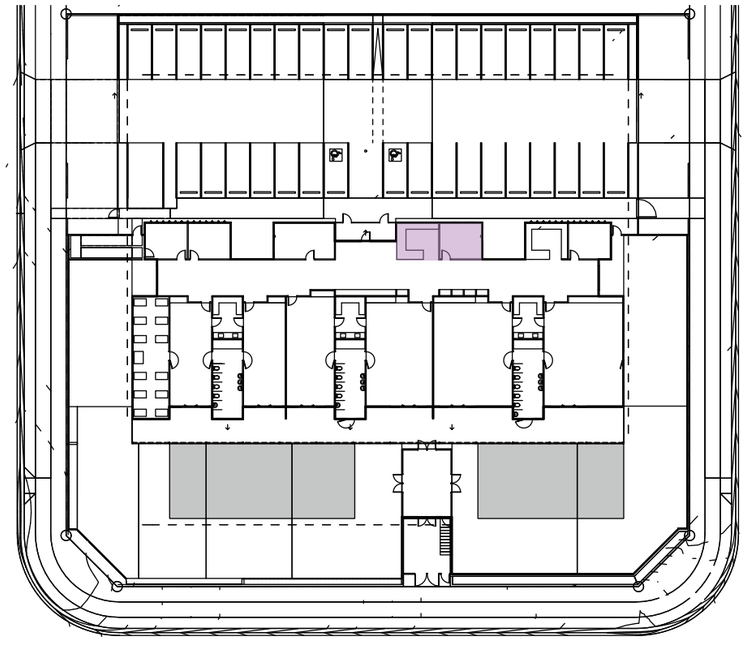
	NSW CHILD CARE DESIGN GUIDE			
	Education SEPP provisions			
	Clause	required	proposed	comply
	National Quality Framework			
	Assessment checklist			
	TABLE 2			
D		NATIONAL QUALITY FRAMEWORK ASSESSMENT CHECKLIST		
104	Fencing or barrier enclosurer	indicate	shown	achieved
		height/material/ style		
106	Laundry/ Hygine facilities	provide solution in safe location	shown	achieved
107	unencumbered indoor space	3.25m2 per child	provided	
		required 103 children or 334.75m2	354.3m2	achieved
108	unencumbered outdoor space	7.0m2 per child	provided	
		required 103 children or 721m2	736.92m2	achieved
109	toilet and hygiene facilities	adequate facilities	> NCC req	
		location and design		achieved
110	ventilation and natural light	ventilation/ natural lighting/temperature	indicated	achieved
111	adminstration space	adequate area	indicated	achieved
112	nappy change facilities	adequate area appropriate hygienic facilities	indicated	achieved
113	outdoor space- natural environment	explore and experience natural environment	indicated	achieved
114	outdoor space -shade	protection from sun		
		30% of play area	indicated	achieved
115	design for supervision	supervision of children at all times	indicated	achieved



PLAN- 110 VENTILATION (SHOWN BLUE)



PLAN- 110 NATURAL LIGHT (SHOWN YELLOW)



PLAN- 111 ADMINSTRATION SPACE (SHOWN PURPLE)

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JOB NUMBER: 2842

AMENDMENT: ISSUE A-21 NOV 23

CLIENT: MPD INVESTMENTS PTY LDT

PROJECT: VILLAGE@JAMES CREEK-CHILDCARE

TITLE: 3- REVIEW OF NSW GUIDELINE
1-TABLE 2 ILLUSTRATION PART B

DATE: NOV23

SCALE: AS SHOWN

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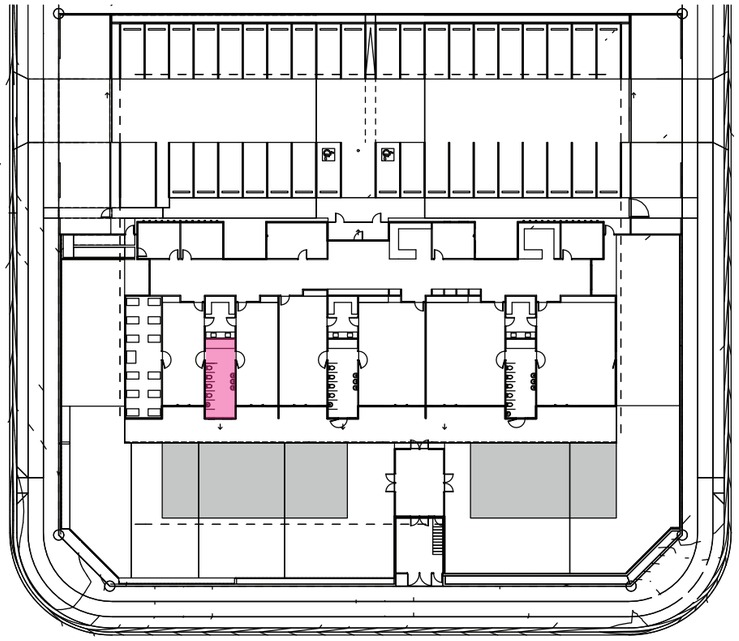
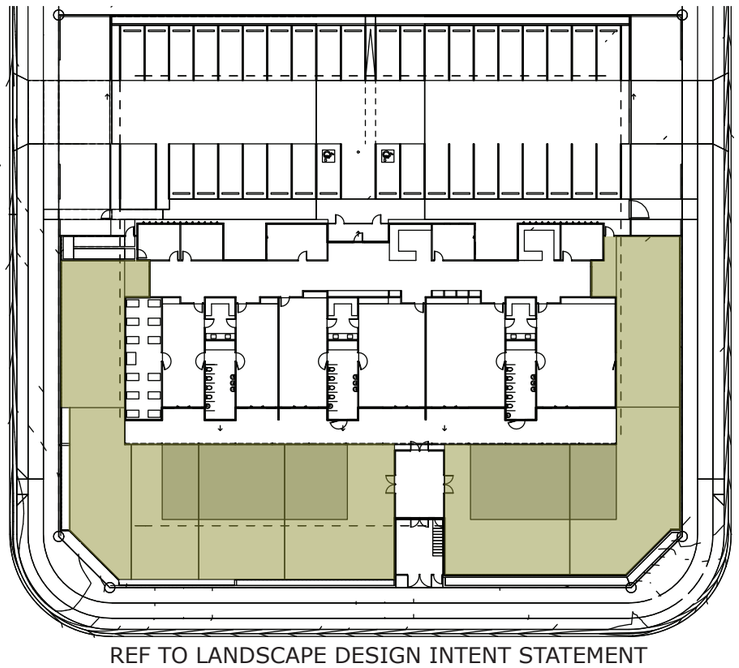


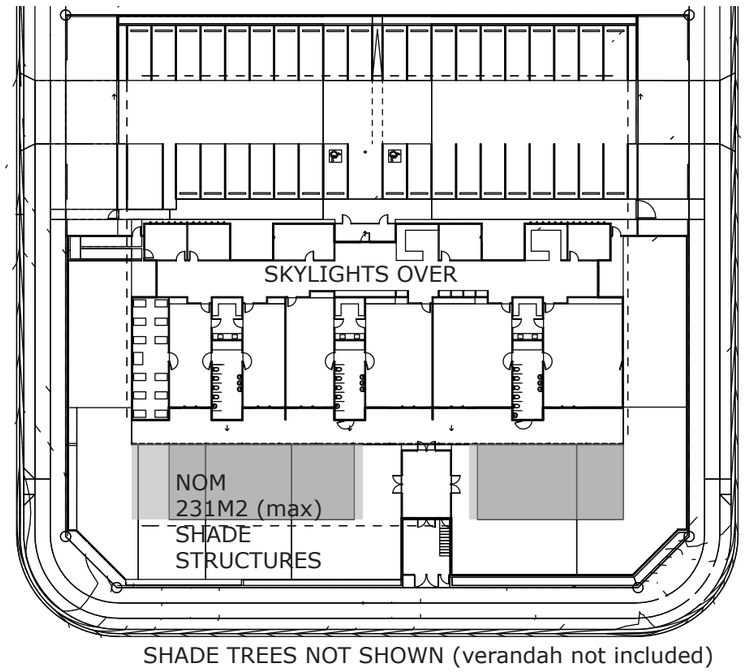
PLAN- 112 NAPPY CHANGE FACILITIES (SHOWN PINK)

	NSW CHILD CARE DESIGN GUIDE			
	Education SEPP provisions			
	Clause	required	proposed	comply
	National Quality Framework			
	Assessment checklist			
	TABLE 2			
D		NATIONAL QUALITY FRAMEWORK ASSESSMENT CHECKLIST		
104	Fencing or barrier enclosurer	indicate	shown	achieved
		height/material/ style		
106	Laundry/ Hygine facilities	provide solution in safe location	shown	achieved
107	unencumbered indoor space	3.25m2 per child	provided	
		required 103 children or 334.75m2	354.3m2	achieved
108	unencumbered outdoor space	7.0m2 per child	provided	
		required 103 children or 721m2	736.92m2	achieved
109	toilet and hygiene facilities	adequate facilities	> NCC req	
		location and design		achieved
110	ventilation and natural light	ventilation/ natural lighting/temperature	indicated	achieved
111	adminstration space	adequate area	indicated	achieved
112	nappy change facilities	adequate area appropriate hygienic facilities	indicated	achieved
113	outdoor space- natural environment	explore and experience natural environment	indicated	achieved
114	outdoor space -shade	protection from sun		
		30% of play area	indicated	achieved
115	design for supervision	supervision of children at all times	indicated	achieved



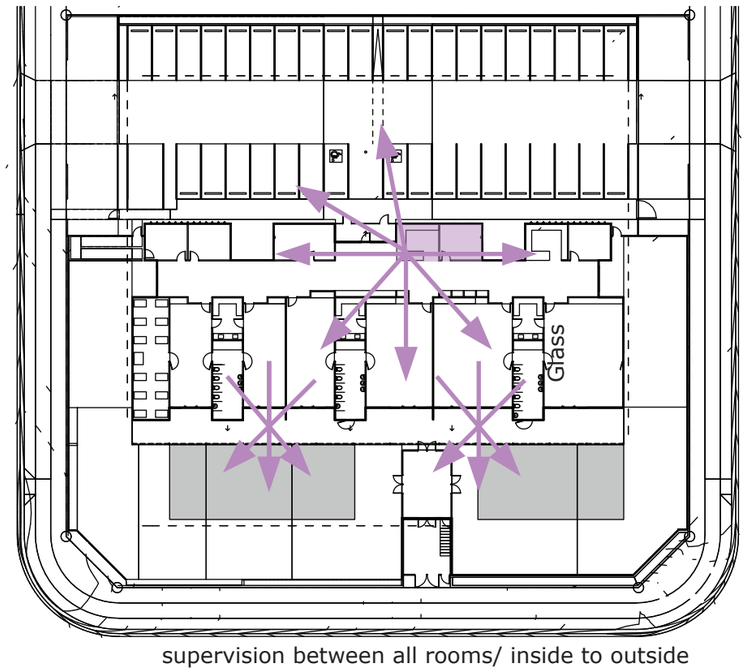
REF TO LANDSCAPE DESIGN INTENT STATEMENT

PLAN- 113 OUTDOOR SPACE NATURAL ENVIRONMENT (SHOWN GREEN)



SHADE TREES NOT SHOWN (verandah not included)

PLAN- 114 OUTDOOR SPACE- SHADE (SHOWN GREY)



supervision between all rooms/ inside to outside

PLAN- 115 DESIGN FOR SUPERVISION (SHOWN PURPLE)RLL

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JOB NUMBER: 2842

AMENDMENT: ISSUE A-21 NOV 23

CLIENT: MPD INVESTMENTS PTY LTD

PROJECT: VILLAGE@JAMES CREEK-CHILDCARE

TITLE: 3- REVIEW OF NSW GUIDELINE
1-TABLE 2 ILLUSTRATION PART C

DATE: NOV23

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	NSW CHILD CARE DESIGN GUIDE			
	Education SEPP provisions			
	Clause	required	proposed	comply
	National Quality Framework			
	Assessment checklist			
	TABLE 1			
	Education SEPP provisions			
	guideline use in preparing application	parts 2,3,4		
		part 4 check list		
		National Quality Framework assessment Checklist		
	Controls in the CVC			
	development control plans	CVC DCP Residential	see	
		building height, side/rear setbacks, carpark rates	separate list	achieved
		CVC LEP		
		specific Floor space ratio- NO REQUIREMENT		achieved
	Concurance	National Quality Framework Checklist	see	
			separate list	achieved
		Part 4 of guideline	see	
			separate list	achieved

	NSW CHILD CARE DESIGN GUIDE			
	Education SEPP provisions			
	Clause	required	proposed	comply
	National Quality Framework			
	Assessment checklist			
	TABLE 1			
	Education SEPP provisions			
1	context	repond to context,access,community	complies	achieved
2	built form	scale,bulk,height,proportion, articulation		
		variety of colours and materials	complies	achieved
3	adaptive learning spaces	high level learning and amenity spaces		
		mix of learning, variety and opportunities	complies	achieved
4	sustainability	positive environmental, social, economic outcomes		
		ventilation, sunlight,passive thermal design		
		sustainability reduced energy consumption	complies	achieved
5	landscape	integrated, attractive and good amenity		
		contributes to streetscape,context	complies	achieved
6	amenity	positive influences to internal/external amenity		
		diverse and attractive spaces	complies	achieved
7	safety	optimise built environment for learning and play		
		low health and safety risk, balanced security, passive		
		surveilliance CPTED, well design access and parking	complies	achieved

	NSW CHILD CARE DESIGN GUIDE			
	Education SEPP provisions			
	Clause	required	proposed	comply
	National Quality Framework			
	Assessment checklist			
	section 3			
c1	appropriate zone	acoustic privacy, setbacks, visual amenity impacts		
		Traffic, safety, compatibly with nature/ community		
		avaliable on site carpark, compatibility of uses	complies	achieved
c2	site selected is suitable for use	compatibility of surrounding uses, environmentally		
		safe, no environmental contaminates		
		suitable street frontages, dimensions and size		
		no adverse inpacts on surroundings, direct access to		
		roads with high volumns, not located closely to		
		incompatible activities	complies	achieved
c3	site are appropriated located	located near compatible social uses, public open space		
		pedestrian connectivity	complies	achieved
c4	don't incur risks form environment	located to avoid risks from adverse environmental		
		contidions, hazards	complies	achieved

	NSW CHILD CARE DESIGN GUIDE			
	Education SEPP provisions			
	Clause	required	proposed	comply
	National Quality Framework			
	Assessment checklist			
	section 3.2 Local Character, streetscape			
	public domain inteface			
	Communities	reinforce social dynamics	complies	achieved
	Place	inspiration form indigenous, heritage, local identity	complies	achieved
	Natural Resources	maximising resources, more substainable	complies	achieved
	Connections	street and road linkages effective and integrated nextwork	complies	achieved
	Feasibility	economically viable and deliverable	complies	achieved
	Vision	aspirations of site and settings	complies	achieved
	Streetscape	integral to local character, Public domain interface		
		fences, walls, windows	complies	achieved
		consideration of local character, building oreintation		
		building envelope, FSR,roof facades, materials		
		position of open space play	complies	achieved
	Neighbourhood	minimise impacts on natural and built neighbourhoods		
		contextual fit and landscape	complies	achieved
c5	compatible to local character	respond,built, draw, surrounding character	complies	achieved
		integrate into streescape and local character+landscape	complies	achieved
c6	clear delination to public spaces	thresholds with clear transitions between public/private		
		realms integrate landscape with fencing design	complies	achieved
c7	multiple buildings	legibility	NA	
c8	adjoining public parks	clearly identifable entries, low fences, min use of blank walls	complies	achieved
c9	front fences	visually permeable materials and treatments	complies	achieved
c10	high acoustic fences	used when sheilding from noise on classified road	NA	

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JOB NUMBER: 2842
AMENDMENT: ISSUE A-21 NOV 23

CLIENT: MPD INVESTMENTS PTY LDT
PROJECT: VILLAGE@JAMES CREEK-CHILDCARE
TITLE: 3- REVIEW OF NSW GUIDELINE
2-TABLE 1 AND PART 3 part 1

DATE: NOV23
SCALE: AS SHOWN
ISSUE: DA
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	NSW CHILD CARE DESIGN GUIDE			
	Education SEPP provisions			
	Clause	required	proposed	comply
	National Quality Framework			
	Assessment checklist			
	section 3.2 Local Character, streetscape			
	public domain inteface			
	Communities	reinforce social dynamics	complies	achieved
	Place	inspiration form indigenous, heritage, local identity	complies	achieved
	Natural Resources	maximising resources, more substainable	complies	achieved
	Connections	street and road linkages effective and integrated nextwork	complies	achieved
	Feasibility	economically viable and deliverable	complies	achieved
	Vision	aspirations of site and settings	complies	achieved
	Streetscape	integral to local character, Public domain interface		
		fences, walls, windows	complies	achieved
		consideration of local character, building oreintation		
		building envelope, FSR,roof facades, materials		
		position of open space play	complies	achieved
	Neighbourhood	minimise impacts on natural and built neighbourhoods		
		contextual fit and landscape	complies	achieved
c5	compatible to local character	respond,built, draw, surrounding character	complies	achieved
		integrate into streescape and local character+landscape	complies	achieved
c6	clear delination to public spaces	thresholds with clear transitions between public/private		
		realms integrate landscape with fencing design	complies	achieved
c7	multiple buildings	legibility	NA	
c8	adjoining public parks	clearly identifable entries, low fences, min use of blank walls	complies	achieved
c9	front fences	visually permeable materials and treatments	complies	achieved
c10	high acoustic fences	used when sheilding from noise on classified road	NA	

	NSW CHILD CARE DESIGN GUIDE			
	Education SEPP provisions			
	Clause	required	proposed	comply
	National Quality Framework			
	Assessment checklist			
	section 3.3 Building Orientation,			
	envelope,building design and access			
	Orientation	positionof building and internal spaces in relation to site		
		the street, the subdivision, vistas, weather	complies	achieved
	Building height	character of place, setting and topography	complies	achieved
	Setbacks	setback amenity, defined proportion and scale	complies	achieved
	Floor Space Ratio	regulate bulk and scale	NA	
	Architectural form	distant views, contribution to local character, composition	complies	achieved
	Roof design	Skyline, reduced bulk and visual impact	complies	achieved
	Facades	visual interest and impact on amenity	complies	achieved
	matrial and Finishes	consistency, durability, damage, vandalism	complies	achieved
	safe and equitable access	all members of community including disabilities	complies	achieved
c11	respond to streetscape and site	ensure visual privacy, minimise noise, overlooking	complies	achieved
		face doors away from private open space/ bedroms/ living	complies	achieved
		locate play equipment away form common boundaries	complies	achieved
		locate play equipment away from residential sensitive uses	complies	achieved
		optimise solar access, avoid overshadowing	complies	achieved
		minimise cut and fill	complies	achieved
		define a street frontage	NA	
		locate play above ground, protect from wind, clmate	complies	achieved
c12	scale is compatible with adjoining	consistant with other buildings	complies	achieved
		respond to scale and character of street	complies	achieved
		setbacks provide privacy of neighbours/ children	complies	achieved
		setbacks for maintenance	complies	achieved
		consistant setbacks	complies	achieved
	local environmental plan or DCP	Floor space ration for R2 zone 0.51	NA	
c13	setbacks	where no prevailing stback controls should be 10m	NA	
		6m for CVC DCP		
c14	side /rear setbacks	prevailing setbacks for residential as per CVC DCP	complies	achieved
c15	create safe environments for all users	ease access, direct from street, visible entry, separate from play	complies	achieved
c16	design for accessibility by potential users	provide accessibility inaccordance with legistration	complies	achieved
		continuous path of travel, less ramps, link carpark/street/entry	complies	achieved
		NCC access to premises building standards 2010	complies	achieved

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CLIENT: MPD INVESTMENTS PTY LTD

PROJECT: VILLAGE@JAMES CREEK-CHILDCARE

TITLE: 3- REVIEW OF NSW GUIDELINE 2-TABLE 1 AND PART 3 part 2

DATE: NOV23

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	NSW CHILD CARE DESIGN GUIDE			
	Education SEPP provisions			
	Clause	required	proposed	comply
	National Quality Framework			
	Assessment checklist			
	3.4 landscape	integrated landscape, street scape and context	complies	achieved
c17	landscape that contributes to streetscape	appropriate planting,integrated fencing, screen planting	complies	achieved
		reflect and reinforce context, incorporate natural features	complies	achieved
c18	carpark incorporate into landscape design	shade trees, low level softening, local context, screening	complies	achieved
	3.5 visual and acoustic privacy	no overlooking, reducing sound trasmission	complies	achieved
		site context, orientation, space planning, relationships	complies	achieved
		separation, physical barries, passive uses near residential	complies	achieved
c19	protect privacy and security of children	no overlooking balconies, no over hanging play areas	complies	achieved
c20	minimise over looking of indoor/outdoor	site and building layout, placed window/doors+ screens	complies	achieved
c21	minimise impacts on privacy of adjoining	minimise over looking from residential live areas	complies	achieved
	to minimise the impact on acoustic privacy			
	of neighbouring residentail			
c22	acoustic fence	where adjoining propery id residential (solid gap free fence	NA	
		screen mechanical plant with fence or enclosurer	complies	achieved
c23	acoustic report	identify appropriate levels in residential zone	TBC	to detail
		determine background noise levels	TBC	to detail
		determine height of acoustic fence		
	n3.6oise and air pollution	location close to industrial areas	NA	
c24	ensure outside noise levels are minimised	physical separation, ortientation, buffers, landscape,reduced		
		openings, using mass materials/ sound insulation, layout	TBC	tbc
c25	acoustic report	identify appropriate noise levels for sleep/ play for nominated		
		locations	NA	
c26	air quality	minimise air pollution from major rods/ industry	NA	
c27	professional report/assessment	report where located near a mojor source (road/industry)	NA	
		appropriate separation/landscape/ ventilation	NA	
	3.7 hours of operation	not advesrsly impact amenity of surrounding		
		7am to 7pm		
	to minimise impact on neighbouring			
	residential developments			
c28	hours of operation	residential land use core hours 7am to 7pm wekdays	complies	achieved
c29	hours of operation	non residential land use	NA	
	3.8 Traffic, parking	site access to ensure safety, safe pedestrian environment		
		minimised conflicts with design and management		
		provide suitable carparking, function of capacity, number of		
		children, ref to national Quality frame work	complies	achieved
	carpark to satisfies needs/demands			
c30	car park rates	rates as per CVC DCP	complies	achieved
		guide is 1/4 children	NA	
		reduction of numbers in urban areas/ transport	NA	
c31	commercial/ industrail zone car parking	requirements for on street car parking	NA	
c32	traffic and carpark study	prepare report to support proposal	TBC	to detail
	vehicle access in a safe and undistruptive			
	traffic flow			
c33	classifed road	alternative access, roads carry freight, dangerous goods	NA	
		impact on development		
c34	cul-de-sacs or via narrow roads	safe access requirements	NA	
	provide a safe and connected environment			
	for pedestrians both on and surrounding			
c35	safe pedestrian environment	pedestrians-separate access, defined, limited cross paths	complies	achieved
		delivery, loading located away from pedestrians	complies	achieved
		clear sight lines	complies	achieved
c36	mixed use developments		NA	
c37	carpark design	include a safety fence to separate building entry for carparks	complies	achieved
		accessible carpark spaces at entry	complies	achieved
		include wheelchair and pram accessible	complies	achieved

	NSW CHILD CARE DESIGN GUIDE			
	Education SEPP provisions			
	Clause	required	proposed	comply
	National Quality Framework			
	Assessment checklist			
4	APPLYING THE NATIONAL REGULATIONS			
	TO DEVELOPMENT PROPOSAL	internal physical environment		
		external physical environment		
		best practice example		
		national quality framework assessment checklist		
4a	Internal physical environment			
4.1	Indoor space requirements	Regulation 107 3.25m2 per child	complies	achieved
		if verandah included as indoor space -meets design aspects	complies	achieved
		storage		
		0.3m2 external storage per child	complies	achieved
		0.2m2 internal storage space	complies	achieved
4.2	laundry and hygiene facilities	Regulation 106		
		NCC requirements-F4P2- class 9b-early childhood centre		
		provide a space suitable	complies	achieved
4.3	Toilet and hygiene facilities	Regulation 109		
		NCC requirements-F4V1-class 9b-early childhood centre	complies	achieved
4.4	ventilation and natural light	Regulation 110		
		NCC requirements F6F1-natural light	complies	achieved
		NCC requirements F6F2-artifical light	complies	achieved
		NCC requirements F6F3 ventilation-natural light	complies	achieved
		reduce need for artifical light room dimension depth >2.5xheight	complies	achieved
4.5	Adminstration	Regulation 111		
		design criteria for space, sound proofing, equitable users	complies	achieved
4.6	Nappy Changing facilities	Regulation 112		
		NCC requirement F4D4 (9)c(iii)	complies	achieved
4.7	Premises designed to facilitate supervision	Regulation 115		
		Ncc requirement		
		design to facilitate adequate supervision at all times	complies	achieved
4.8	Emergency and evacuation procedures	Regulation 97 and 168		
		procedures for emergency and evacuation	complies	achieved
4b	external physical environemt			
4.9	Outdoor space requirements	Regulation 108 7.0m2 of space per child		
		excludes dense plantings etc for landscape purposes	complies	achieved
		verandah may be included		
		simulated outdoor environments		
4.1	Natural environment	Regulation 113		
		safe and explore natural environments	complies	achieved
4.11	Shade	Regulation 114		
		protection against overwxposurer		
		solar access min 2hours between 8.00am to 4.00pm winter		
		for at least 30% of the 7m2 or 2.1m2 per child	complies	achieved
		shade for 30% of the outdoor play 7.0m2 area or 2.1m2 per child	complies	achieved
		natural shade, appro[priately place and maintained		
		evergreen or deciduous	complies	achieved
		shade structures min height and size	complies	achieved
4.12	Fencing	Regulation 104		
		enclosuring barrier as per NCC requirements		
		internal fencing 1.2m high	complies	achieved
		external boundary fencing pre finished metal or masonry 1.8m high	complies	achieved
		adequate sightlines for vehicles		
4.13	Soil assessment	Regulation 25		
		soil assessment (subclause (d))	complies	achieved
		soil sampling required		
C	Best Practice example			
D		NATIONAL QUALITY FRAMEWORK ASSESSMENT CHECKLIST		

TABLE AS COMPLETED AS PART OF APPLICATION SUBMISSION ASSESSMENT CHECK LIST-NSW GOVERMENT GAZETTE 1 OCT 21-REF TO PLANS AS SHOWN HEREIN

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Enclosure 14

Childcare centre need report prepared by Business Geographics dated November 2023

CHILDCARE NEEDS ASSESSMENT

PROPOSED DEVELOPMENT SITE
LOT 103 JAMES CREEK ROAD
JAMES CREEK NSW 2463

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www.businessgeographics.com.au

REPORT PREPARED BY BUSINESS GEOGRAPHICS PTY LTD FOR:

Doug Lomas

NOVEMBER 2023

IMPORTANT INFORMATION

This report represents an assessment of the need for long day care services in the study area only and should not be interpreted as an assessment of the commercial feasibility for centre development, acquisition or disposal. Information and assumptions used in this report are subject to change and should not be interpreted as precise predictions of the demographic future nor of future market conditions.

While all due care has been taken to ensure the accuracy and currency of information provided in this report, it should not be relied upon in isolation for the making of business decisions. Interested parties should undertake independent inquiries and investigations to satisfy themselves that relevant information remains current, comprehensive and correct.

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INTRODUCTION

This Childcare Needs Assessment provides an independent assessment of the community, economic and planning need for long day care services in JAMES CREEK, NEW SOUTH WALES - specifically concerning a proposed long day care centre located at Lot 103 James Creek Road, James Creek NSW 2463.

The report includes a review of existing long day care facilities (supply) in the local catchment area (including estimates of occupancy rates and fees for existing centres); estimates of demand for long day care from the resident and non-resident working population; and a demographic profile of the local area. It also provides an analysis of key demand drivers for childcare and an assessment of the extent to which the existing supply of long day care is meeting current levels of demand.

This assessment is restricted to the demand and supply of long day care centres. Other forms of informal childcare and centre-based childcare (ie: kindergarten/preschool and outside school hours care) service separate markets and are not considered relevant to assessing the need for long day care.

ABBREVIATIONS USED IN THIS REPORT

ABS - Australian Bureau of Statistics
ACECQA - Australian Children's Education and Care Quality Authority
ASGS - Australian Statistical Geography Standard
CCS – Child Care Subsidy
ERP - Estimated Resident Population
FLFPR – Female labour Force Participation Rate
LGA - Local Government Area
NQS - National Quality Standard
OSHC – Outside School Hours Care
ROGS – Report on Government Services
SA1 or SA2 – Statistical Area Level 1 or 2 (ABS Geography Level)

Note: This report should be read in conjunction with the Appendices which explain the benchmarks used in the report and many of the terms and concepts used.

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ABOUT BUSINESS GEOGRAPHICS

Business Geographics are specialists in childcare location research. We work with the leading names in childcare in Australia and our clients include Australia's largest childcare providers as well as many independent management groups, operators & developers.

We produce hundreds of needs assessments each year throughout Australia and have a detailed understanding of local market trends and conditions. We maintain a comprehensive database of long day care centres and developments and closely monitor relevant demographic data, population forecasts and residential development trends.

We also provide a ready-made mapping online platform tailored to the specific needs of childcare operators, developers and investors. Qikmaps can be used to conduct quick desktop appraisals of prospective sites and identify new opportunities for centre development and/or acquisition. More information is available at www.qikmaps.com.au

LONG DAY CARE IN AUSTRALIA

Long Day Care is a form of centre-based childcare that provides all day care for children of (typically) working families. Long Day Care centres may be run by private operators, not-for-profit organisations, employers and community groups. Many long day care services also offer kindergarten or pre-school programs and some offer outside school hours care (OSHC).

Long Day Care has become a significant social service as it is seen as both a mechanism to support labour force participation and as an important form of early learning and education. Government investment in childcare is now well understood to generate direct economic benefits that are a multiple of its cost. As such the availability, accessibility and use of childcare by working families continues to grow strongly. This growth reflects changing social attitudes and aspirations, the need for families to have two sources of income to support rising housing costs and the associated increase in female labour force participation, and increasing government support for the sector. Indeed, the massive financial support for childcare during the COVID pandemic confirms the importance of the sector to the economy.

MARKET SEGMENTS

The market for long day care can be split between Infants/nursery and toddlers (aged under 2 years) and Junior Kindy/Kindergarten (aged 2 – 5 years).

- The infants/toddler market has lower rates of participation and attendance as mothers with children in this age group are more likely to return to work part-time initially and are more likely to rely on informal carers such as grandparents.
- Children aged three and four have the highest rate of participation and attendance at long day care. Some of these children may access alternative childcare options such as stand-alone kindergarten and preschool services, however these options do not offer the same hours as long day care and may not be as convenient for working families.

DEMAND DRIVERS

Population of Children under 5 – The number of children under 5 years requiring childcare is a key factor affecting demand for long day care at both a national and local level. A small number of children aged 5 years also access kindergarten/preschool delivered in a long day care environment, however most children aged 5 years have already commenced formal schooling.

Government Subsidies – The Australian Government helps Australian families with childcare fees through the Child Care Subsidy (CCS). CCS is paid to approved providers who pass it on to families as a fee reduction. Families pay the difference (or Gap) between the provider's fee and the subsidy amount. The CCS was introduced in July 2018 with the aim of making childcare more flexible, accessible and affordable to encourage more families to increase their hours of paid employment. Changes to the CCS were introduced on 10th July 2023. These changes include an increase in the subsidy rate for low-income families and an extension of the subsidy to cover more hours of care per week.

Female Labour Force Participation Rate (FLFPR) – There is a strong (almost 1:1) correlation between the FLFPR and long day care participation. As the FLFPR increases so does childcare demand. Importantly, this relationship is linked both ways such that increasing childcare availability (ie supply) is a strong incentive for mothers to access formal childcare services in order to increase their workforce participation.

Household Income - Higher income households (typically double-income) are more able to afford (and more dependent on) chil care services. Lower-income areas, or areas of significant socio-economic disadvantage tend to have lower rates of childcare participation.

Parental Preferences – Quality and 'warmth of care-giving' are a key factor for families in choosing childcare. Whilst most parents prefer services located near their home, parents will also seek out high quality centres that suit their values and/or have a good reputation. Other parents prefer to utilise childcare services near their place of work.

MARKET SHARE

The Child Care Services industry is highly fragmented. The three largest providers Goodstart Early Learning, G8 Education and Affinity Education Group comprise only approx. 15%-16% of total supply. Not-for-profit organisations operate approx. 50% of all approved industry services, and over a third of approved centres are operated by single-service providers. Providers are diverse and include schools, churches, community organisations and councils, however private 'for-profit' operators are increasingly dominating the long day care market.

INDUSTRY TRENDS & OUTLOOK

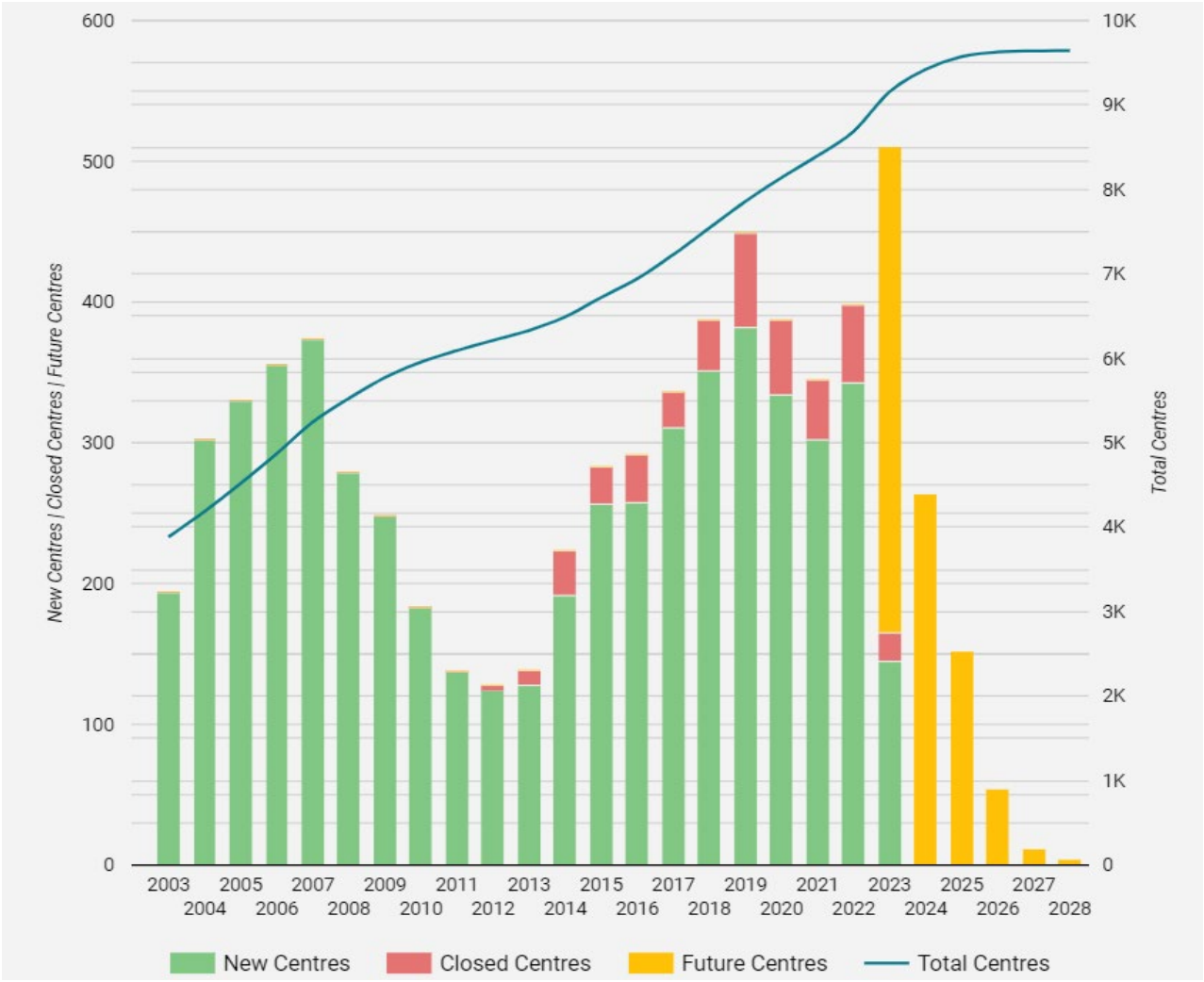
As at June 2023, there were approx. **8,540** licensed long day care centres operating in Australia. As shown in the chart below, development activity peaked in 2019, slowed through 2020 and 2021 and has increased again in 2022 and 2023.

New supply in recent years has improved the quality, amenity and availability of childcare with older centres facing increasing competitive pressure from new high-quality, purpose-built facilities. Indeed, increasing supply levels have been partially offset by the closure of older centres.

Overall, supply is largely meeting demand across Australia, however there are some spatial inequities in access to childcare and, in particular, a continued need for new centres in areas of population growth and urban expansion. There are also opportunities in established areas for quality improvement and renewal.

Large corporate consolidators are increasingly seeking acquisition opportunities to increase market share and leverage scale. With private equity money flowing into the sector, this trend of acquisition activity is forecast to continue over the next five years and will lead to greater industry consolidation, as larger for-profit players acquire smaller portfolios. That said, the sector will continue to attract new entrants with ownership remaining fragmented and diverse overall.

On-going government support and the attractiveness of childcare as an investment asset class will see growth continue over the next 5 years. However, a significant challenge facing the industry is staffing (particularly in regional markets) with some centres forced to close rooms and operate below their licensed capacity due to a lack of qualified staff.



Source: Business Geographics Childcare Market Dashboard (June 2023)

EXECUTIVE SUMMARY

An overview of key statistical indicators of the James Creek long day care market.

MARKET SUMMARY

Supply	Demand	Key Demand Drivers	Market Assessment
5 Long Day Care Centres	930 Children 0-4 (2023)	42.54% Female Labour Participation	100% Occupancy (2023)
297 Licensed Places	279 Resident Demand (2023)	56.85% Pop 0-4 w/ Employed Mother	UNDERSUPPLIED Market Assessment
$106 Average Daily Fee	50% Participation Rate	886 SEIFA Score (2021)	NO VACANCIES Availability
	18 Non-Resident Demand (2023)	3.13 : 1 Ratio Children per Place	135 - 175 Additional Need 2028

NEEDS ASSESSMENT SUMMARY

At present (November 2023), there are five (5) long day care centres in the local catchment supplying a total of 297 places to a market of 930 children under 5. This represents a ratio of 3.13 children per childcare place, which is higher than the NSW average of 2.4 children per place. Resident demand is also complemented by some external demand that is serviced in the local area.

Local centres currently report NO VACANCIES and long waiting lists. The market is UNDERSUPPLIED and it's Business Geographic's view that there is a strong need for additional local childcare options.

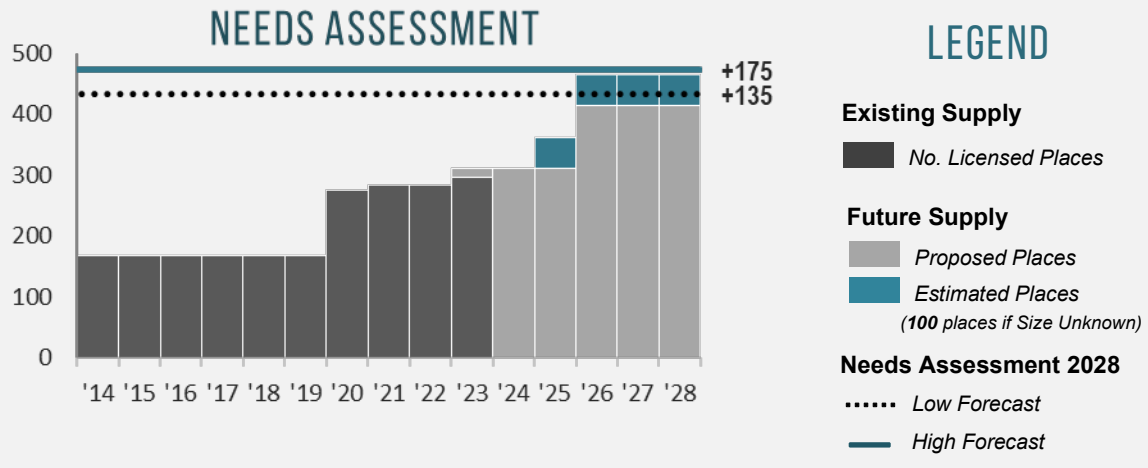
The proposed development is ideally located in the proposed Village on James Creek subdivision which would be expected to be attractive to young family households. The nearest existing childcare centres are over 3kms away in Maclean and Harwood.

The catchment has a positive outlook in terms of demand growth, and at current forecasts, it's estimated that total demand will increase by an additional 49 - 84 places by 2028. However, in order to address the current undersupply and service the forecast growth in demand, it's estimated the local catchment could sustainably support an additional 135 - 175 places to 2028 without having significant negative impacts on the existing (or future) supply network.

The potential childcare development pipeline appears to be generally consistent with this forecast need with an estimated 153 places proposed for development including the 103-place centre at the subject site and an estimated 50-place centre at 4 River St, Harwood (Next door to the existing Walla Walla Bing Bang ELC).

Overall, it's Business Geographic's view that the subject site represents a reasonable and appropriate location for a new purpose-built childcare centre in the local catchment. It would greatly improve childcare choice, availability and amenity and any impacts on the existing network would be expected to be minor, ameliorated over time and outweighed by the positive economic benefits to the local community of improved local childcare options.

NEEDS ASSESSMENT TRENDS



SUMMARY OF KEY STATISTICAL INDICATORS

Table 1 summarises some of the key statistical indicators from the report that describe the long day care market in the study area. It provides a quick overview of key information provided in the report.

------ KEY STATISTICAL INDICATORS ------		
DEMAND INDICATORS	**LOCAL CATCHMENT**	**NSW AVERAGE**
Total Population (2023)	21,768	
Children Aged Under 5 (%)	930 (4.27%)	5.80%
Recent Growth 2021-2023 (Under 5)	47 (2.64% p.a.)	-1.07%
Forecast Growth 2023-2028 (Under 5)	159 (3.42% p.a.)	1.51% p.a. *(ABS & Other Sources)*
Long Day Care Participation Rate	50%	51% *(2023)*
Estimated Daily Demand	279	*Locally generated demand*
External Demand Inflows	+18	*Non-resident workers demand*
Estimated Net Daily Demand	297	*Demand serviced locally*
SUPPLY INDICATORS		
No. of Long Day Care Centres (2023)	5	
Supply of Long Day Care Places (2023)	297	
Change in Supply 2021 – 2023 (%)	21 new places (+7.6%)	10.4%
Average Daily Fee	$106 *(Range from $100 to $115)*	$132 *(2023)*
Vacancies at Existing Centres	NO VACANCIES	
NEEDS ASSESSMENT		
Average Estimated Occupancy Rate (%)	100%	87.7% *(2023)*
Ratio of Children per LDC Place	3.13:1	2.4:1 *(2023)*
Assessment of Market	UNDERSUPPLIED	
Potential Additional Market Need	135 to 175 places to 2028	*Assuming participation rate of 50% - 55%*
Development Pipeline[1]	A limited online search has been conducted for childcare development applications and/or approvals within the catchment**, returning (two (2) relevant results (including the subject site) as outlined on the following page.** It is unknown if any other applications or approvals exist. Interested parties should undertake their own inquiries and monitor the market for future developments.	

[1] NOTE: Information regarding Development Applications or Approvals should not be interpreted as conclusive. This information is sourced from third-parties and its accuracy is not able to be verified by Business Geographics. This information is of course also subject to change. Interested parties may wish to discuss development activity in an area of interest in more detail with the relevant local government authority and/or a consultant town planner.

CHILDCARE DEVELOPMENT PIPELINE

The list below shows proposed or approved new centres within the local catchment. ***This list may not include applications that are less than 1 month old due to delays in reporting.***

-----	***DEVELOPMENT APPLICATIONS***	-----			
PROJECT	STREET ADDRESS	SUBURB	PLACES	PLANNING REF. & STATUS	DESCRIPTION
Village On James Creek CCC (SUBJECT SITE)	Lot 103 James Creek Road	JAMES CREEK	103	Awaiting DA Submission (Nov23)	Construction of a childcare centre.
River St CCC	4 River St	HARWOOD	50*	DA2023/0543 Development Application Submitted (Sep23) Awaiting Council Decision (Nov23)	Convert existing dwelling to a childcare centre.
	TOTAL PLACES		**153**		

**Note – Proposed centre at 4 River Street is assumed to be 50 places (Similar to the existing 57-place Walla Walla Bing Bang Early Learning Centre at 6 River Street).*

LOCAL CONTEXT

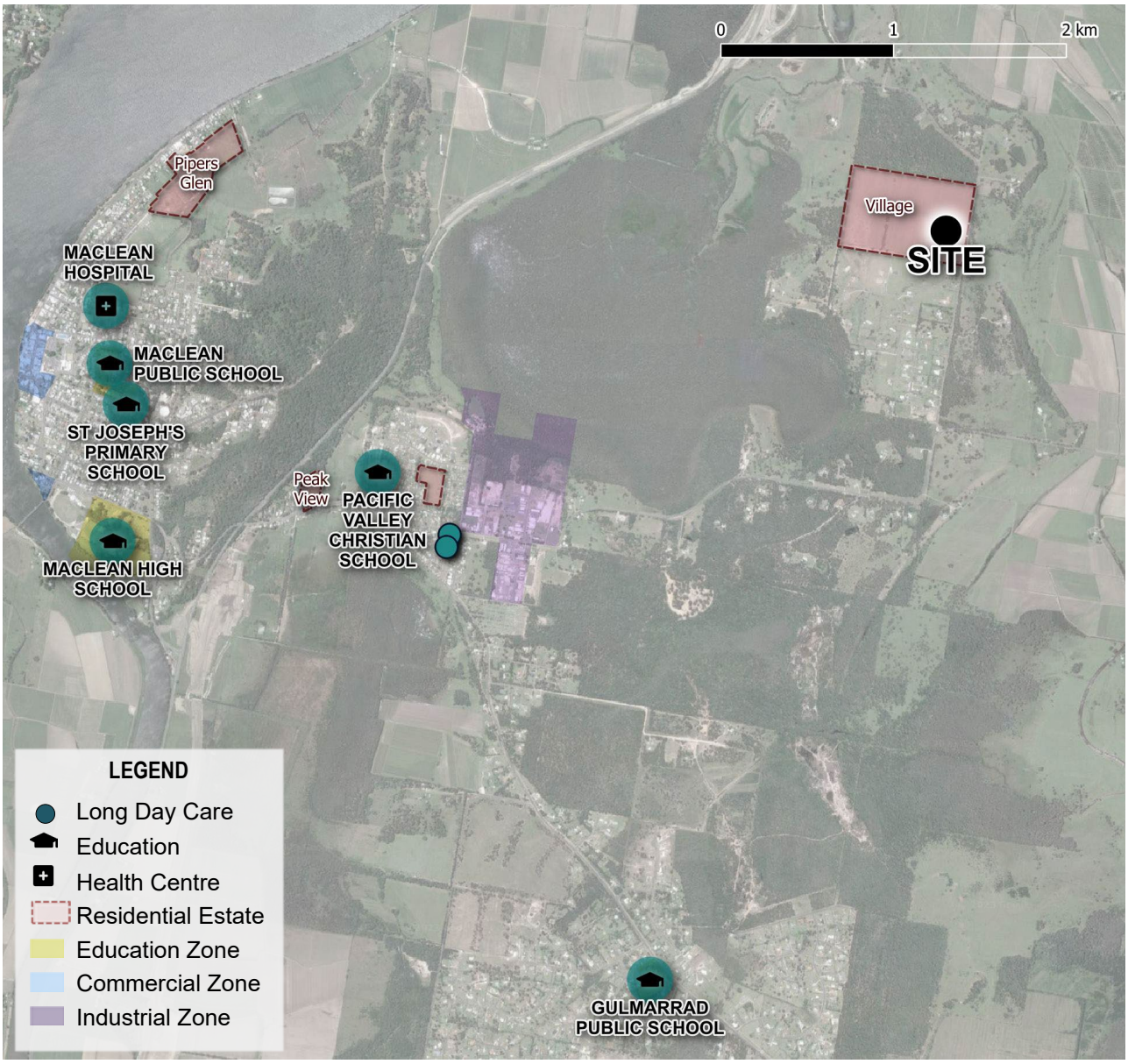
The photo below shows the proposed site at Village on James Creek Estate, James Creek, and an aerial image of the immediate area.

Some points of interest nearby include:

PACIFIC VALLEY CHRISTIAN SCHOOL

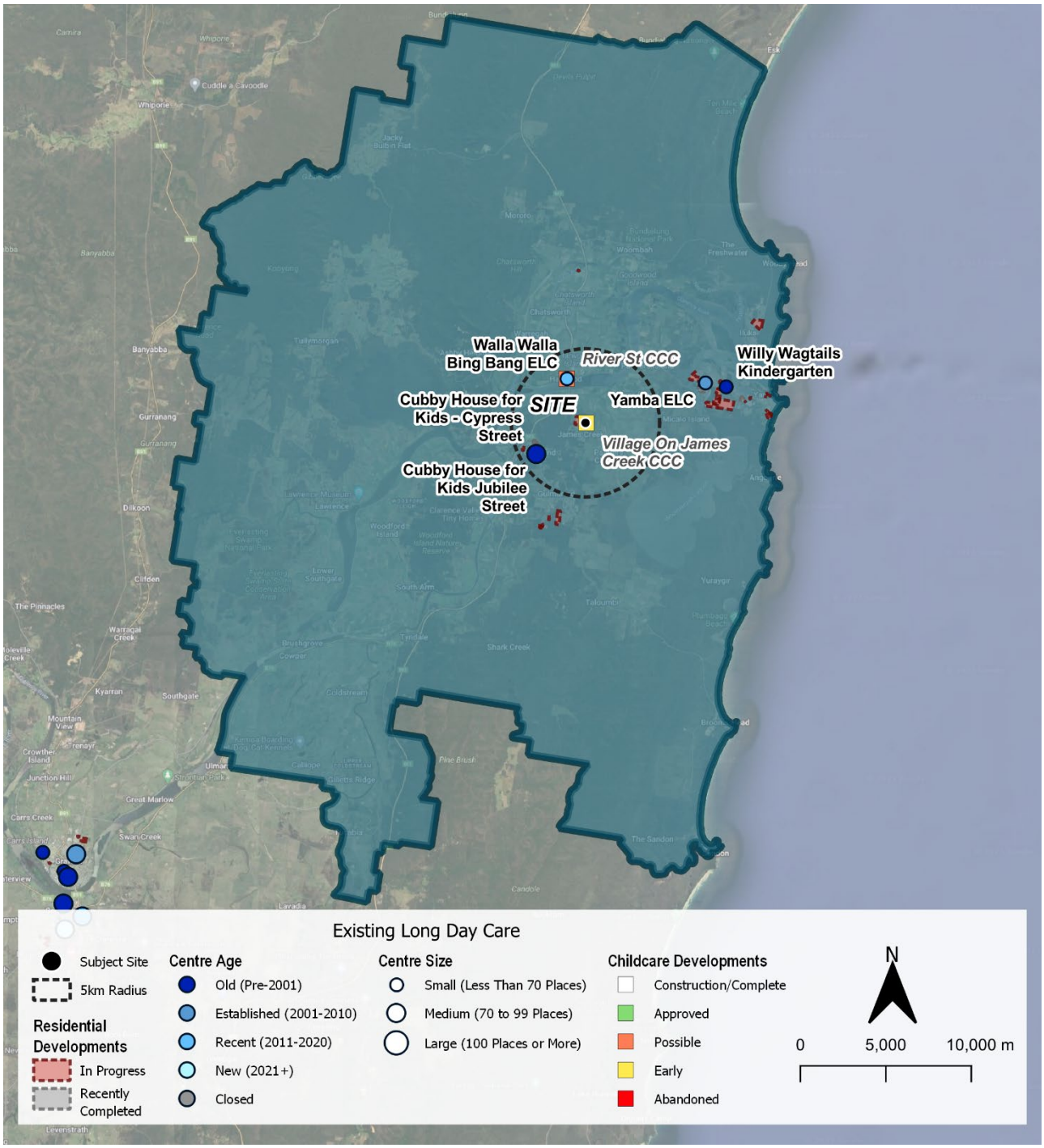
MACLEAN HOSPITAL

ST JOSEPH'S PRIMARY SCHOOL



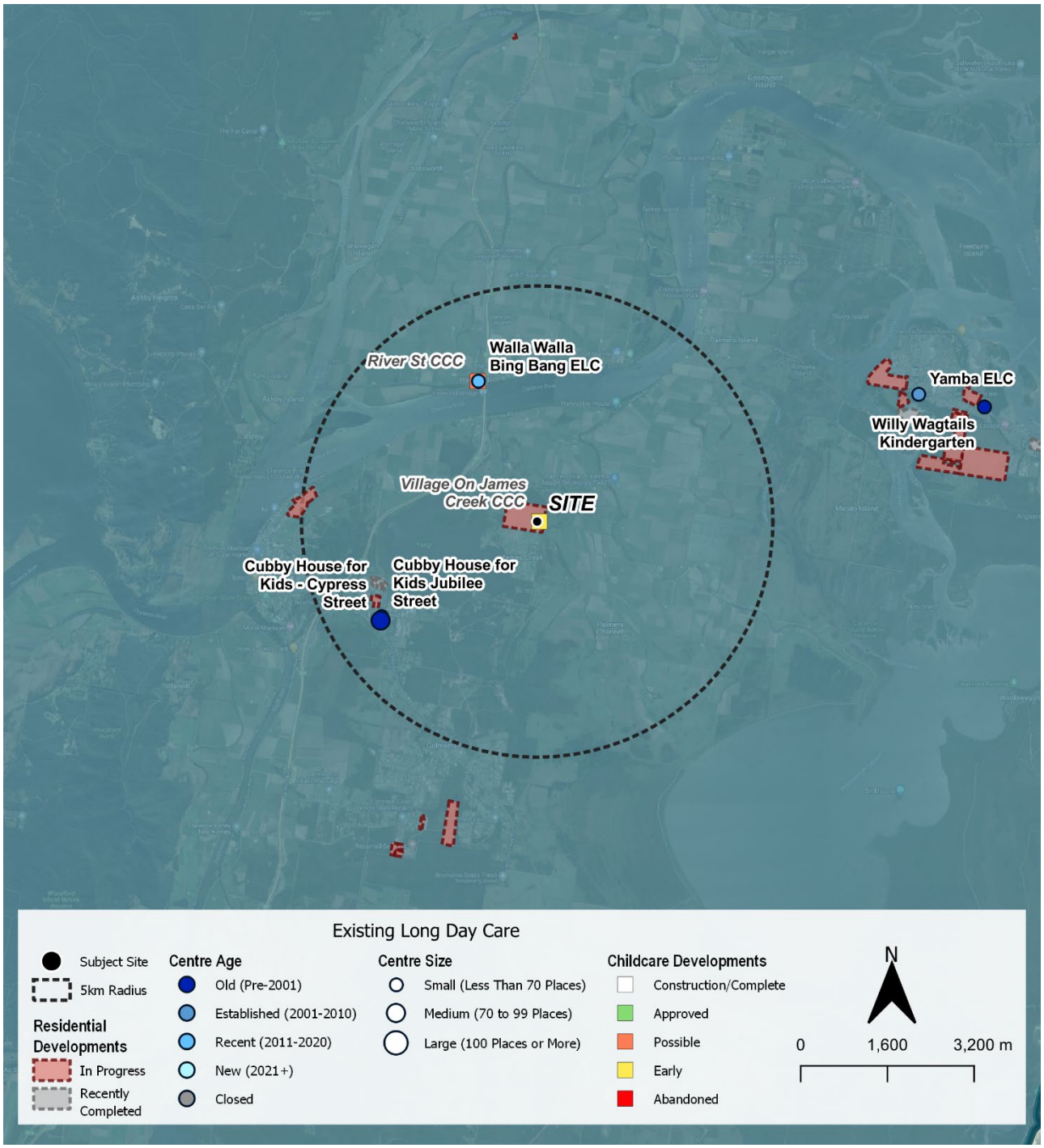
MAP OF LOCAL CATCHMENT AREA

The local catchment represents the immediate local community that is (or will be) serviced by the subject site. In most cases, the local catchment represents the area from which the majority of enrolments at the subject site would be expected to originate from and the existing (and future) childcare centres available to them. The extents of a local catchment area are assessed by taking into account a range of factors (described in more detail in Appendix 1). Unless otherwise stated the statistics provided in this report relate to the defined catchment area.



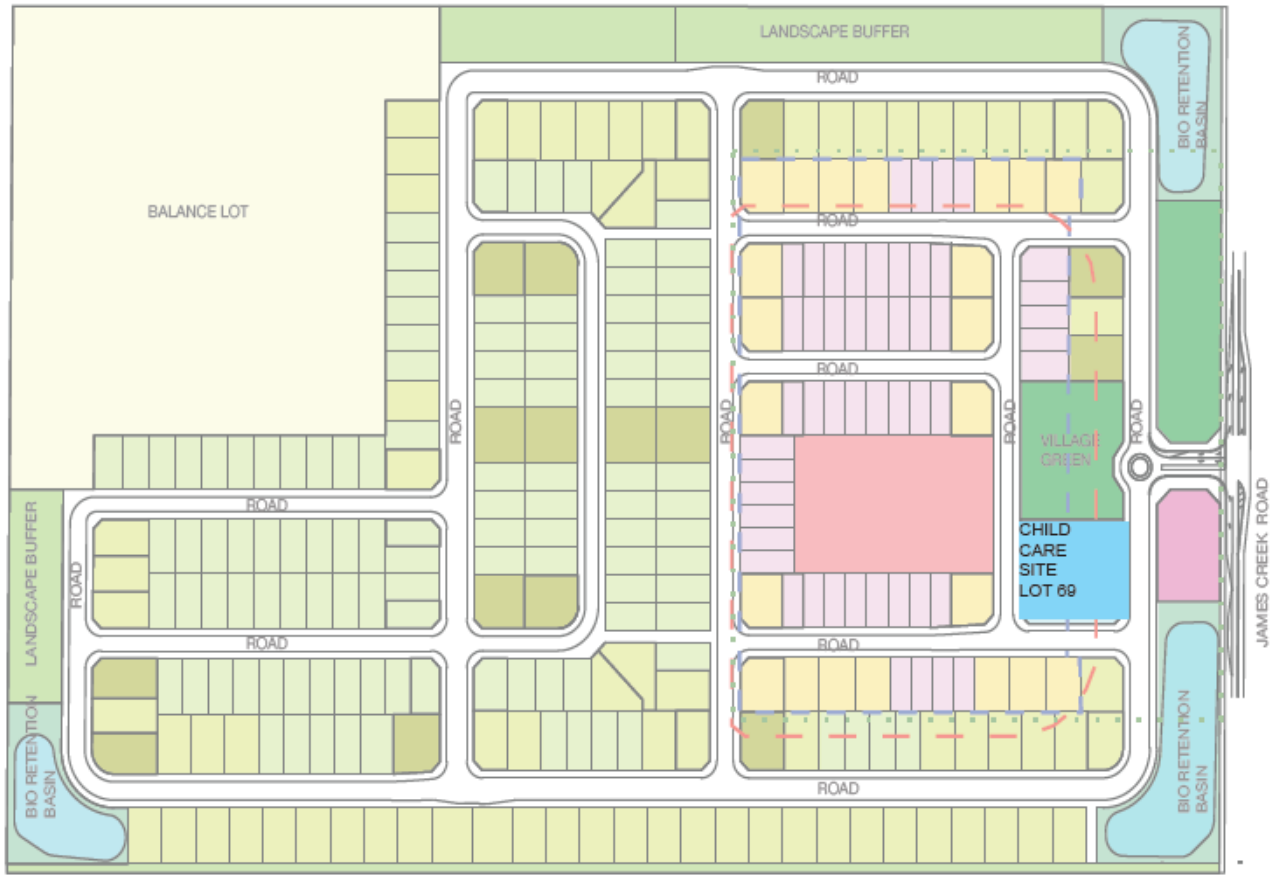
MAP OF MAJOR CATCHMENT AREA – DETAIL

This zoomed-in map is to clearly show the location of existing long day care centres as well as the proposed childcare development sites within the catchment (shaded blue area).



PROPOSED DEVELOPMENT

The subject site is located on proposed Lot 69 in the Village on James Creek Subdivision. The plan below shows the location of the proposed childcare centre in relation to the reminder of the subdivision.



SITE LOCATION IN PROPOSED
"VILLAGE ON JAMES CREEK" SUBDIVISION
REF TO SUBDIVISION APPLICATION FOR FULL DETAILS
SITE PLAN NTS REFERENCE ONLY

POPULATION & DEMOGRAPHICS

This section provides an overview of the key demographic characteristics of the local catchment area and includes historic and current population estimates and projections from 2021 to 2028.

The subject site is located in James Creek, a small rural locality (and future residential growth area) in the Northern Rivers region of New South Wales near the town of Maclean, in the Clarence Valley Council local government area. James Creek is 645km north of Sydney and 270 km south of Brisbane. It is on the traditional lands of the Bundjalung, Gumbaynggirr and Yaegl nations.

The subject site is is part of the proposed 'Village on James Street' development.

The local catchment comprises surrounding regional towns and hamlets including Maclean, Townsend, Gumarrad, Yamba, Iluka, and Angourie. The main industries in the local catchment area are agriculture and tourism. A variety of crops are produced including bananas, avocados, and macadamia nuts. Tourists come to enjoy the natural beauty of the area, including the Gibraltar Range National Park and the Yuraygir National Park and beaches.

There are five (5) primary schools within 5kms of the subject site – Gulmarrad Public School (199 students in 2022), Valley Hope Christian School (28 students in 2022), Maclean Public School (217 students in 2022), St Joseph's Primary School (107 students in 2022) and Harwood Island Public School (39 students in 2022).

The age profile in the local catchment is more than 10 years older than the New South Wales profile, with an average age of 53 (fourteen years over the state average). The female labour force participation rate (42.54%), which is correlated with childcare participation, is lower than the state average (55.50%).

The table on the following page highlights some key demographic indicators evident in the local catchment when compared to the state profile. Key findings include –

- **Lower proportion of children under 5.**
- **Higher proportion of couple families without children.**
- **Lower individual, household and family incomes.**
- **Lower proportion of persons born overseas.**

Forecast population growth in the local catchment is MODERATE with the total population forecast to increase by 1.32% p.a. from 2023 to 2028 (net 1,440 persons). However, the population of children under 5 in the local catchment higher and is forecast to increase at a rate of 3.42% p.a. from 2023 to 2028 (net 159 children).[2]

The following table shows population forecasts from 2021 – 2028 by age group in the local catchment.

-----	***POPULATION FORECASTS 2021 – 2028***	-----						
	2021		*2023*		*2028*		*Change (23-28)*	
AGE GROUP	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No. total*	*% per annum*
0-4 years	883	4.17%	930	4.27%	1,089	4.69%	159	3.42%
5-14 years	2,058	9.72%	2,093	9.62%	2,327	10.03%	234	2.23%
15-24 years	1,640	7.75%	1,639	7.53%	1,712	7.38%	73	0.90%
25-44 years	3,477	16.42%	3,655	16.79%	4,140	17.84%	485	2.65%
45-64 years	5,970	28.20%	5,939	27.28%	5,989	25.81%	50	0.17%
65 years and over	7,143	33.74%	7,512	34.51%	7,951	34.26%	439	1.17%
TOTAL	**21,171**	**100.00%**	**21,768**	**100.00%**	**23,207**	**100.00%**	**1,440**	**1.32%**

[2] *NOTE: Population forecasts are not targets. They are Business Geographics estimates based on a review of recent population trends, residential development activity and published population projections from the ABS, AIHW and a range of state and local government sources. It is important to recognise that projections reflect the outcome of certain assumptions about the future of fertility, mortality and migration – assumptions which may or may not eventuate. The projections should not be interpreted as precise predictions of the demographic future.*

KEY DEMOGRAPHIC INDICATORS

The following table provides a summary demographic profile of the local catchment area (compared to state benchmarks) based on data from the 2021 ABS census of population and housing.

	----- 2021 CENSUS -----			
	LOCAL CATCHMENT		STATE COMPARISON	
	No.	%.	Higher than NSW ▲ Lower than NSW ▼	NSW average
TOTAL PERSONS	21,171	100.00%		
Males	10,400	49.13%	▼	49.36%
Females	10,771	50.87%	▲	50.64%
AGE GROUPS				
0-4 years	883	4.17%	▼	5.80%
5-14 years	2,058	9.72%	▼	12.41%
15-24 years	1,640	7.75%	▼	11.82%
25-44 years	3,477	16.42%	▼	27.81%
45-64 years	5,970	28.20%	▲	24.51%
65 years and over	7,143	33.74%	▲	17.64%
Median Age	53		▲	39
SELECTED PERSON CHARACTERISTICS				
Performed unpaid childcare (15 years +)	3,658	20.07%	▼	25.29%
Married persons (15 years +)	7,923	43.46%	▼	47.32%
Country of birth - Australia	17,502	82.67%	▲	65.38%
Language spoken at home - English only	19,315	91.23%	▲	67.61%
WEEKLY INCOME (POPULATION AGED 15 YEARS AND OVER)				
Average individual income	$579		▼	$813
Average household income	$1,126		▼	$1,829
Average family income	$1,385		▼	$2,185
LABOUR & SOCIO ECONOMIC STATISTICS (2021 Census)				
Socio-economic Index (IRSAD SEIFA)	886			1000 *(AU)*
Female Labour Participation (%) *	42.54%		▼	55.50%
Parents w. children 0-14 (Both employed)*	1,032	58.54%	▲	54.02%
Pop 0-4 with Employed Mother (% pop)*	502	56.85%	▲	46.72%
FAMILY CHARACTERISTICS				
Total families	6,127	100.00%		100.00%
Couple families without children	3,418	55.79%	▲	37.90%
Couple families with children	1,150	18.77%	▼	30.19%
One parent families	885	14.44%	▼	15.81%
Other families	79	1.29%	▼	1.59%
Source: ABS Census (2021)*				
----- OTHER (NON-CENSUS) STATISTICS -----				
Unemployment Rate (July 2023)	3.68%		▲	3.20%
Fertility Rate (2021)	2.49		▲	1.78

WORKING POPULATION

This section provides an overview of the key demographic characteristics of the working population in the local catchment area and the demand for long day care from non-resident workers.

Non-resident workers are an important part of the local community and make an important economic contribution. However, they also compete with residents for local childcare places. It is generally accepted that a proportion of local demand in most childcare markets is from local workers who access childcare near their place of work. An extreme example is a Capital City CBD, where the majority of local need is from workers that live elsewhere (externally) but demand childcare near their workplace.

There are many reasons why some parents prefer to use childcare near their place of work. This includes –

- An easier commute with fewer stops and more time together.
- Ease of access in case of emergencies, sickness, breastfeeding or events.
- Allows for a later drop-off and earlier pick-up.

The potential demand for childcare from non-resident workers can be calculated by applying a child-to-worker ratio to calculate demand.

It's estimated that in 2023, there are approx. 6,813 full-time equivalent (FTE) workers within the local catchment area. Based on the child to worker ratio for the region (0.177), the local worker population would have 1,206 children under 5. These children would demand an average of 362 places per day. (Based on the local participation rate and attendance rate). Some of these workers and their children live locally but based on 2021 Journey to Work data, 35% live elsewhere and commute to work in the local catchment.

Whilst, the majority of non-resident worker demand would be serviced near where workers live, it's estimated that a small proportion of this demand would be serviced near parents' workplaces in the local catchment. This is based on an average of 16% weighted by the female/male worker ratio in the catchment. (ie So that areas with a higher proportion of female workers have a higher preference for using childcare near their workplace).

An analysis of the working population in the local catchment (based on the 2021 census) has revealed the dominant industries of employment are: Health Care and Social Assistance, Accommodation & Food and Agriculture. The top reported occupations were Managers, Professionals and Community and personal service workers.

Using these assumptions, the current demand for places (2023) from the children of non-resident working population (those that live outside the local catchment) is estimated at 18 places per day. At current forecasts, this non-resident worker demand is expected to increase by range from 19 and 21 places per day by 2028 – an increase of between 1 - 3 places.

----- WORKING POPULATION FORECASTS 2021 – 2028 -----

	2021	2023	2028		Change (23-28)	
	(estimate)	(estimate)	(low forecast)	(high forecast)	(low – high)	
Working Population	No. or %	No. or %	No. or %.	No. or %	No. total	% per annum
Full-Time Equivalent (FTE) Workers#	6,321	6,813	7,250	7,250	437 - 437	1.28%
Children Under 5 of Workers##	1,119	1,206	1,283	1,283	77 - 77	1.28% - 1.28%
Total Childcare Demand from Children of Workers*	322	362	385	423	23 - 61	1.27% - 3.37%
% from outside the Catchment**	35%	35%	35%	35%		
% of workers using childcare near work^	14%	14%	14%	14%		
Childcare demand from Non-resident workers	16	18	19	21	1 - 3	1.11% - 3.33%

#FTE Workers is based the number of full-time employees PLUS 50% of part-time employees and employees away from work. (Note: 1 part time or employed away from work worker = 0.5 FTEs).
##The Number of Children Under 5 for workers is calculated by multiplying the number of FTE workers by the relevant ratio of children under per worker based on benchmarks for the region.
****This is the number of children of workers multiplied by the local participation rate and attendance rate (see Demand Table).***
*****The percentage of non-resident workers is based on 2021 Journey to Work data (ie: workers in the relevant SA2 that live elsewhere).***
^ The percentage of workers that prefer to use childcare near their workplace is based on ABS data shows that about 16% of families chose a childcare service because it was close to our on the way to work (ABS, 2018) - Childhood Education and Care, Australia. The 16% is weighted by the female/male worker ratio in the catchment so that areas with a higher proportion of female workers have a higher preference for using childcare near their workplace.

SUPPLY ANALYSIS

This section provides a review of existing long day care facilities in the local catchment area. A table is provided on the following page providing specific details of Licensed Places, Fees and Occupancy at existing centres. This information is sourced from ACECQA and directly from centres and its accuracy is dependent on the knowledge of the person supplying this information.

At present (November 2023), there are five (5) long day care centres in the local catchment supplying a total of 297 places to an estimated market of 930 children under 5.

Childcare development in the area commenced in 1994 when Willy Wagtails Kindergarten established. In fact, nearly half (48%) of the supply is offered by centres which established more than 20 years ago.

No centres have established since Walla Walla Bing Bang Early Learning Centre opened in 2020. Supply has increased by 7.6% since 2021 after the extensions of 14-places at Cubby House for Kids – Cypress Street and 7-places at Walla Walla Bing Bang Early Learning Centre.

The largest Market Share is held by Cubby House for Kids Pty Ltd, holding approximately 38% of the supply (113 places) across two (2) centresin Maclean.

The catchment averages 59 places per centre, ranging from 40 places at Cubby House for Kids Jubilee Street to 73 places at Cubby House for Kids - Cypress Street.

Daily Fees[3] in the local catchment (weighted by places) average $106 per day (or $529 per week for full-time attendance), occupying a tight range from $100 at both Cubby House for Kids Jubilee Street and Cubby House for Kids - Cypress Street to $115 at Walla Walla Bing Bang ELC.

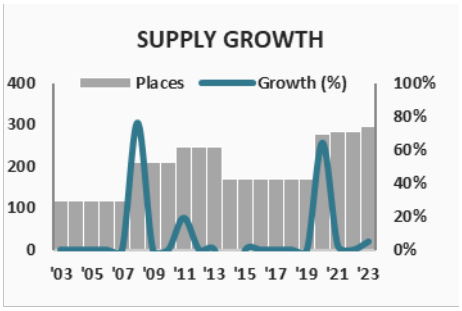
All centres have been assessed against the National Quality Standard and rated as Meeting (2) or Exceeding (3) the NQS

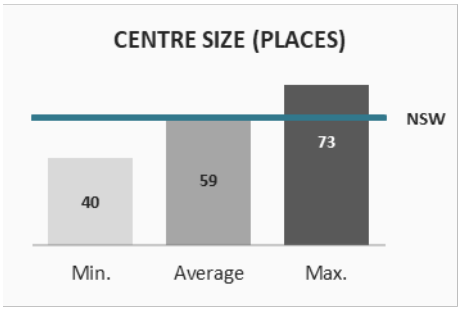
A telephone survey of the centres in the local catchment has revealed that all centres reported NO VACANCIES at all. Comments from individual centres wre –

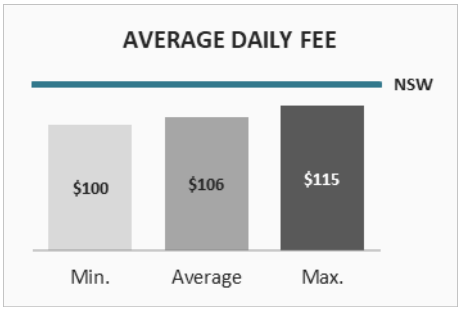
- Willy Wagtails Kindergarten – “Fully booked next year. 50 kids in the waiting list”.
- Cubby House for Kids - Cypress Street - “Completely full in both rooms. Waitlist available”.
- Cubby House for Kids Jubilee Street – “Waitlist available”.
- Walla Walla Bing Bang Early Learning Centre – “Fully booked for next year. Long waiting list”.
- Yamba Early Learning Centre – “Long waitlist”.

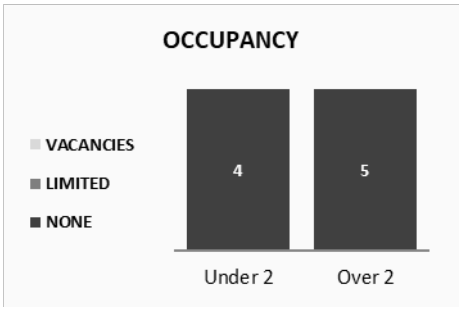
Reported occupancy indicates an average occupancy rate of 100% which strongly indicates an UNDERSUPPLIED market.

A search for childcare development applications and/or approvals returned two (2) results (including the subject Site), detailed on page 7[4].









[3] Fees quoted are the full-fee calculated before any child care benefit is applied. Daily Fees are typically higher for babies and younger children and vary depending on specific inclusions offered by centres such as meals and educational programs.
[4] It is unknown if any other applications or approvals exist and interested parties should undertake their own enquiries. Please refer to previous notes regarding Development Applications and/or Approvals.

SUPPLY TABLE – LONG DAY CARE CENTRES

The following table provides details of existing long day care centres in the local catchment area. This list has been compiled by Business Geographics from a range of sources.[5]

INCLUSIONS PROVIDED = Lunch Snacks Nappies

		----- CENTRES IN CATCHMENT -----				
DETAILS	PROVIDER & DATE ESTABLISHED	LICENSED PLACES	VACANCIES	FEE SCHEDULE PER DAY	FEE SCHEDULE PER WEEK	INCLUSIONS, OPERATING HOURS & QUALITY RATING
Willy Wagtails Kindergarten 7-9 Shores Drive YAMBA 2464 NSW (02) 6646 8168	Sjvjcl Investments Pty Ltd ATF Willy Wagtails Unit Trust Est. pre 1995	69	None <2 None >2	$108.00	$540.00	Parents provide 7:00AM to 6:00PM Meeting NQS
Cubby House for Kids Jubilee Street 116 Jubilee Street MACLEAN 2463 NSW (02) 6645 4201 (Enrolments)	Cubby House for Kids Pty Ltd Est. 2011	40	Na <2 None >2	$100.00	$500.00	Parents provide 7:30AM to 5:30PM Exceeding NQS
Cubby House for Kids - Cypress Street 8 Cypress St MACLEAN 2463 NSW (02) 6645 4201 (Enrolments)	Cubby House for Kids Pty Ltd Since 2002 Est. pre 1995	73	None <2 None >2	$100.00	$500.00	Parents provide 7:30AM to 5:30PM Exceeding NQS
Yamba Early Learning Centre 2 Providence Court YAMBA 2464 NSW (02) 6645 8983	Clarence Childhood Services Association Incorporated Since 2020 Est. 2008	58	None <2 None >2	$105.00	$525.00	Parents provide 6:30AM to 6:30PM Exceeding NQS
Walla Walla Bing Bang Early Learning Centre 6 River Street HARWOOD 2465 NSW 1300 262 180	HZY Education Group Pty Ltd Since 2022 Est. 2020	57	None <2 None >2	$115.00	$575.00	 6:30AM to 6:00PM Meeting NQS
TOTAL/AVERAGES		**297**		**$106**	**$529**	

[5] Information provided in the Supply Tables has been collated from state and federal government childcare information registers, Business Geographics databases and telephone surveys of the listed centres. In particular, the Vacancy Rates and Fees provided are dependent on information supplied to us to by staff at the centres (or online sources) and therefore should not be interpreted as conclusive. They represent the information supplied at a given point in time and their accuracy is subject to the interpretation of the relevant staff member or accuracy of the website, and are subject to change.

DEMAND TABLE

The following table details the estimated demand for long day care from the population of children aged under 5 based on state benchmarks for participation and attendance and the specific socio-demographic characteristics of the local catchment area.

Resident Demand for long day care originating in the local catchment is estimated at 279 places. This has been estimated based on a local Long Day Care Participation Rate of 50% (slightly below the state average). This rate has increased since 2021 and is expected to range from 50% (the current rate) to 55% (high forecast) by 2028. The Local Attendance Rate is estimated at 60% (i.e. 3 days per week).

Depending on the Participation Rate, Resident Demand is forecast to increase by between 48 - 81 places over the next five years to 2028.

External Non-resident Demand from the working population (that lives in the surrounding area but utilises local childcare near their place of work) is estimated at 18 places in 2023 and is forecast to increase by 1 – 3 places per day on average by 2028.

Total Demand (serviced locally) is therefore estimated at 297 places for 2023 and is forecast to range between 346 and 381 places by 2028. This represents an increase in demand of 49 – 84 places.

------- ***HISTORIC, CURRENT & FORECAST DEMAND FOR LONG DAY CARE*** -------

	2021		*2023*		*2028*				*Change (2023-28)*	
	(actual)		*(estimate)*		*(low forecast)*		*(high forecast)*		*(low – high)*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No. total*	*% p.a.*
Total Population	21,171	100%	21,768	100%	23,207	100%	23,207	100%	1,440	1.32%
Children Aged 0 - 4	883	4.17%	930	4.27%	1,089	4.69%	1,089	4.69%	159	3.42%
Participation Rate *	48%		50%		50%		55%		-	-
Children Attending Long Day Care	424		465		544		599		80 - 134	3.42% - 5.77%
Attendance Rate #	60%		60%		60%		60%		-	-
Estimated Daily Demand	255		279		327		360		48 - 81	3.42% - 5.77%
External Demand Inflows	+16		+18		+19		+21		1 - 3	1.11% - 3.33%
Net Daily Demand	271		297		346		381		49 - 84	3.31% - 5.66%

*Estimated Participation Rate – The participation rate is the number of children aged under 5 that attend long day care and is based on state benchmarks adjusted for local conditions. The figure used for the local catchment is slightly below this average. The Participation Rate has increased in recent years due to changes to childcare subsidy eligibility which have increased childcare affordability.

Attendance Rate – Data from the Office of Early Childhood Education & Child Care shows that the average time that a child spends in long day care is approx. 31 hours per week. Nationally, this rate of attendance has also increased slightly in recent years. For the purposes of this report, the local attendance rate is 60%.

Source: ABS, State & Local Government Population Forecasts & estimates calculated by Business Geographics.

NEEDS ASSESSMENT – LONG DAY CARE

This section provides an assessment of whether there is any unmet demand (undersupply) or oversupply of long day care services within the local catchment area.

At present (November 2023), there are five (5) long day care centres in the local catchment supplying a total of 297 places to a market of 930 children under 5. This represents a ratio of 3.13 children per childcare place, which is higher than the NSW average of 2.4 children per place. Resident demand is also complemented by some external demand that is serviced in the local area.

Local centres currently report NO VACANCIES and long waiting lists. The market is UNDERSUPPLIED and it's Business Geographic's view that there is a strong need for additional local childcare options. The lack of availability has significant negative impacts on parents and families.

The proposed development is ideally located in the proposed Village on James Creek subdivision which would be expected to be attractive to young family households. The nearest existing childcare centres are over 3kms away in Maclean and Harwood.

Supply has increased by 21 new places (+7.6%) since 2021 with the 14-place extension of Cubby House for Kids -Cypress Street and the extension by 7-places at Walla Walla Bing Bang. However, these increases have been insufficient to adequately service the underlying demand for childcare and additional childcare is needed.

The catchment has a positive outlook in terms of demand growth, and at current forecasts, it's estimated that total demand will increase by an additional 49 - 84 places by 2028. However, in order to address the current undersupply and service the forecast growth in demand, it's estimated the local catchment could sustainably support an additional 135 - 175 places to 2028 without having significant negative impacts on the existing (or future) supply network.

The potential childcare development pipeline appears to be generally consistent with this forecast need with an estimated 153 places proposed for development including the 103-place centre at the subject site and an estimated 50-place centre at 4 River St, Harwood (Next door to the existing Walla Walla Bing Bang ELC).

Overall, it's Business Geographic's view that the subject site represents a reasonable and appropriate location for a new purpose-built childcare centre in the local catchment. It would greatly improve childcare choice, availability and amenity and any impacts on the existing network would be expected to be minor, ameliorated over time and outweighed by the positive economic benefits to the local community of improved local childcare options.

------- *NEEDS ASSESSMENT TABLE* -------

	2021#	2023	2028*		Change (2023-28)	
	(actual)	(estimate)	(low forecast)	(high forecast)	(low – high)	
	No. %	No. %	No. %	No. %	No.	%
Estimated Daily Demand for LDC	271	297	346	381	49 - 84	16.6% - 28.3%
Estimated Daily Supply of LDC	276	297	432	472	135 - 175	45.5% - 58.9%
Ratio of Children per Place	3.20	3.13	2.52	2.31		
Average Estimated Occupancy Rate**	98.11%	99.91%	80.06%	80.66%		
Needs Assessment	**SUPPLY RESTRICTION**	**SUPPLY RESTRICTION**	**BALANCED**	**BALANCED**		

**2028 - This allows for population change to 2028 and assumes an increase in the supply of places by 135 - 175 places.*

*** Average Estimated Occupancy Rate across the entire Catchment. Average Occupancy Rates over 85% indicate some supply restriction, whilst rates below 75% suggest some oversupply. 80% is considered to be balanced.*

#Supply estimates prior to the extensions of 14 and 7.

**NOTE: It's relevant to note that average occupancy rates of 70% - 80% are typically considered to be consistent with a balanced market in which centres operate profitably and there is sufficient choice and availability for consumers. Industry research indicates that most centres are viable at an occupancy of 60% - 70% and occupancy above 70% is profitable. Occupancy rates between 70% - 80% represent the best outcome for both operators and consumers as it means that businesses are profitable and consumers have choice and flexibility. In this market, a target occupancy of 80% is considered appropriate and represents a healthy market for consumers and providers.*

APPENDIX 1 - REPORT BENCHMARKS & TRENDS

*This report relies on some statistical benchmarks and assumptions derived from the latest **Report on Government Services (2023) prepared by the Productivity Commission (Volume B Chapter 3 Early Education & Care).** In particular, benchmarks for the long day care participation rate and attendance rate, which are explained in more detail below.*

PARTICIPATION RATE

In 2023, the estimated national long day care participation rate is 50% for children aged under 5. That is 50% of children aged under 5 are enrolled in long day care. The participation rate varies by age with only 11% of children under 1 enrolled at Long Day Care, 47.5% aged 1 and 61% - 67% aged 2 – 4. Children aged 5 have been excluded for the purposes of this report as they comprise only a small number of long day care enrolments as most children of this age have already commenced formal schooling.

This participation rate benchmarks also vary significantly by state (and region) and are further influenced by local supply and demand side factors such as the availability of appropriate childcare and the female labour force participation rate*. These factors are taken into account in the report to provide the local 'adjusted' participation rate.

It's worth noting that statistical analysis conducted by Business Geographics has identified a strong correlation between the long day care participation rate and the Female Labour Force Participation Rate (FLFPR) such that the FLFPR serves as a useful proxy for estimating the long day care participation rate in specific markets. Indeed, for every 1% change in the FLFPR, a 1% change in the long day care participation rate has been observed and is typically applied.

The long day care participation rate has also been increasing steadily in Australia hand-in-hand with an increasing female labour force participation rate and increasing childcare supply and availability. Since 2016, it's estimated that the long day care participation rate has increased by 6 points from 44% in 2016 to 50% in 2023. Expressed another way, this is an 13.6% increase. The introduction of the CCS scheme in 2018 (and eligibility improvements in 2023) has had a noticeable impact on participation.

State and National Benchmarks - Long Day Care Participation Rate

Participation Rate (PR)	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	AUS
2023 Estimate	51%	47%	54%	41%	47%	47%	61%	38%	50%
Change since 2016	+5%	+4%	+5%	+4%	+5%	+4%	+6%	+4%	+6%

**Long day care participation rates are typically higher in metropolitan markets compared to regional areas. The availability of alternative forms of childcare (eg kindergarten/preschool) will also influence local long day care participation rates.*

RATIO OF CHILDREN PER PLACE

The Ratio of children (aged under 5) per childcare place, is a useful indicator of the state of the long day care market. A low ratio can be an indicator of an OVERSUPPLY, whilst a high ratio may indicate a market that has some additional need for places. For Australia as a whole the ratio is 2.3. This varies from 1.9 in the QLD to 3.2 in TAS. There is significant variation by local area. Regional areas tend to have higher ratios than metropolitan areas. In 2016, the ratio of children per place in Australia was 3.8. The ratio has decreased in all states and territories primarily due to increased supply.

State and National Benchmarks – Ratio of Children Per Place

Ratio	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	AUS
Ratio of Children per place (2023)	2.4	2.2	1.9	3.1	2.6	3.2	2.0	2.5	2.3
Ratio of Children per place (2016)	3.6	4.2	2.9	5.3	4.5	4.2	2.8	4.1	3.8
Change since 2016	-1.2	-2.0	-1.0	-2.2	-1.9	-1.1	-0.9	-1.6	-1.4

OCCUPANCY

Occupancy is estimated based on demand (average places demanded per day) divided by supply (licensed long day acre places). It is based on data maintained by Business Geographics. Nationally, occupancy has declined slightly since 2016 due to increased supply. Notably occupancy has increased in QLD, WA, TAS and NT.

State and National Benchmarks – Occupancy

Occupancy	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	AUS
Est. Average Occupancy (2023)*	87.71%	83.32%	83.04%	83.51%	84.78%	85.54%	84.21%	84.75%	84.78%
Est. Average Occupancy (2016)*	88.00%	85.60%	79.60%	83.00%	86.60%	79.80%	90.50%	79.50%	86.40%
Change since 2016	-0.29%	-2.28%	+3.44%	+0.51%	-1.82%	+5.74%	-6.29%	+5.25%	-1.62%

** Occupancy estimate is the annual average based on the latent demand. Actual occupancy at any given point in time will vary depending on seasonal factors and the availability of supply. Occupancy may also be temporarily impacted by events such as pandemics, economic recession and/or natural disasters.*

ATTENDANCE RATE

The average hours of attendance for children at long day care in 2023 is estimated at 31 hours. For the purposes of this report, this is estimated at 3 days per week (out of 5) or 60% of full-time attendance. Attendance varies slightly by state with QLD, NSW, ACT and VIC averaging 31 to 33 hours per week and WA, SA and TAS having slightly lower attendance at 25 to 28 hours per week. The NT has the highest average hours of attendance at 37 hours per week.

It's also worth noting that attendance is not consistent throughout the year as children tend to enter and leave care at different points of the year, depending on the family's circumstances. The number of children that use long day care across a given year is therefore greater than the number using care at any point in time. Hours of attendance at long day care have also increased since 2016 by approx. 9.9%.

State and National Attendance Benchmarks – Attendance Rate

Attendance Rate	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	AUS
Hours Attended 2023	31.2	31.1	32.9	26.9	27.9	25.2	32.1	37.3	31.0
Change since 2016	+3.5	+2.8	+2.2	+1.9	+2.6	+1.9	+3.0	+2.8	+2.8
Attendance Rate	60%	60%	60%	55%	55%	50%	60%	70%	60%

AVERAGE DAILY FEE

Average Daily Fee is estimated based on data collected by Business Geographics via its ongoing survey program. Nationally, since 2016, the average daily fee has increased by $33 or 33% (approx. 4.8% p.a.)

State and National Benchmarks – Average Daily Fees

Average Daily Fees	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	AUS
Average Daily Fees (2023)*	$132	$138	$124	$132	$130	$115	$142	$115	$132
Average Daily Fees (2016)	$102	$104	$89	$103	$92	$92	$108	$92	$99
Change since 2016	+$30	+$34	+$35	+$29	+$38	+$23	+$34	+$23	+$33

**Average daily fees as at September 2023*

CENTRES

The number of centres is based on data maintained by Business Geographics and includes all approved (licensed) long day care services. Nationally, the number of centres has increased by approx. 24% (or 3.4% p.a.) since 2016.

State and National Benchmarks – Long Day Care Centres

Centres	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	AUS
LDC Centres (2023)	3,391	1,836	1,770	771	455	130	164	95	8,612
LDC Centre (2016)	2,741	1,326	1,457	579	348	119	148	79	6,946
Change since 2016	+650	+510	+313	+192	+107	+11	+16	+16	+1,666

CHILD TO FTE WORKER RATIO

The child to full-time equivalent (FTE) worker ratio is used (in part) to calculate the demand for childcare from workers in an area. It varies from region to region.

GCSSA REGION	Child to FTE Worker Ratio	GCSSA REGION	Child to FTE Worker Ratio
Greater Sydney	0.166	**Rest of NSW**	0.1768
Greater Melbourne	0.1538	**Rest of Vic.**	0.1706
Greater Brisbane	0.1587	**Rest of Qld**	0.1621
Greater Adelaide	0.1502	**Rest of SA**	0.1572
Greater Perth	0.1687	**Rest of WA**	0.143
Greater Hobart	0.1423	**Rest of Tas.**	0.1634
Greater Darwin	0.1586	**Rest of NT**	0.2159
Australian Capital Territory	0.1208	**Other Territories**	0.1133

APPENDIX 2 -TERMS USED IN THIS REPORT

ACECQA

The Australian Children's Education and Care Quality Authority (ACECQA) is an independent national authority that assists governments in administering the National Quality Framework (NQF) for children's education and care. New services must be approved by ACECQA before commencing operations.

ATTENDANCE RATE

Data from the **Report on Government Services (2023) prepared by the Productivity Commission (Volume B Chapter 3 Early Education & Care)** reveals that the average time that a child spends in long day care is approximately 31 hours per week (out of a typical 50 - hour week).

For the purposes of this report, it is assumed that average attendance rate of children at long day care is therefore 3 days per week or 60% of full-time. This rate of attendance has been increasing slowly over the years and varies from state to state.

Attendance varies slightly by state with QLD, NSW, ACT and VIC averaging 31 to 33 hours per week and WA, SA and TAS having slightly lower attendance at 25 to 28 hours per week. The NT has the highest average hours of attendance at 37 hours per week.

It's also worth noting that attendance is not consistent throughout the year as children tend to enter and leave care at different points of the year, depending on the family's circumstances. The number of children that use long day care across a given year is therefore greater than the number using care at any point in time.

BALANCED MARKET

A BALANCED Market is where current levels of supply are MEETING current estimated levels of demand. There are long day care places available within the local area for parents that need care for their children. At the same time, the majority of centres will have solid occupancy rates and be achieving benchmark returns.

A Balanced Market is typically evidenced by an average estimated occupancy rate close to 80%.

ESTIMATED AVERAGE OCCUPANCY RATE

This figure represents a statistical estimate of the occupancy level at all existing centres in the catchment area. It is calculated by dividing the total estimated daily demand by the observed daily supply of places.

The Office of Early Childhood Education & Child Care collects data on vacancies for long day care centres on a quarterly basis. Trend data for the past few years shows average occupancy rates nationally at between 75% and 80%. For the purposes of this report, Average Occupancy Rates over 85% indicate RESTRICTED SUPPLY, while more than 100% indicates an UNDERSUPPLY. Rates below 75% suggest a tendency to some oversupply while rates less than 70% indicate an OVERSUPPLY. An estimated average occupancy rate of 80% tends to indicate a BALANCED market.

HIGH FORECAST SCENARIO

This scenario assumes the occurrence of one or more events which may boost future Demand for long day care through increased participation rates.

Some of these events may include but are not limited to: greater levels of social assistance (payments to families to help cover the cost of childcare), growth in female labour participation (specifically those with dependent children), an increase in the working population traveling to (or through) the catchment (that utilise services in the catchment), an increase in the real household disposable income (households with higher disposable incomes are more likely to be able to afford childcare services), an increase in the Supply (e.g. a new centre) and/or enhancements to the current Supply (renovations or refurbishments), increasing choice and attracting parents seeking modern or purpose-built facilities.

LOCAL CATCHMENT AREA

The local catchment represents the immediate local community that is (or will be) serviced by the subject site. In the majority of cases*, the local catchment represents the area from which the majority of enrolments at the subject site would be expected to originate from and the existing (and future) childcare centres available to them.

The extents of a local catchment area are assessed by taking into account a range of factors including –

• ABS boundaries for which statistical data is available. Catchments are typically based on Australian Statistical Geography Standard (ASGS) Statistical Area Level 1 or 2 (SA1 or SA2).
• The location and size of the existing (or proposed) site and the distribution of other existing (or future) long day care centres in the immediate local area.
• The existing road and transport network - with a particular emphasis on peak-hour drivetimes – and the nature of surrounding development.
• Physical barriers (eg. rivers) and psychological barriers (eg. administrative or economic areas) which may influence accessibility.
• If applicable, the attractiveness of neighbouring facilities such as shopping centres, places of employment and schools (eg. school catchment zones).

Unless otherwise stated the statistics provided in this report relate to the defined catchment area.

**In employment areas (such as Central Business Districts) the majority of enrolments will originate from elsewhere and so the catchment represents the local working population and the existing (and future) supply available to them should they choose to utilise childcare near their place of work.*

NATIONAL QUALITY FRAMEWORK (NQF)

The National Quality Framework (NQF) provides a national approach to regulation, assessment and quality improvement for early childhood education and care across Australia. Childcare services covered by the NQS are assessed and rated against seven (7) quality areas of the National Quality Standard (NQS) and the Education and Care Services National Regulations as a means of ensuring continuous quality improvement for services. The quality areas assessed include –

- Educational program and practice
- Children's health and safety
- Staffing arrangements
- Relationships with children
- Collaborative partnerships with families and communities
- Governance and leadership

There are five ratings available against each quality area -

- Excellent
- Exceeding
- Meeting National Quality Standard
- Working towards National Quality Standard
- Significant improvement required

NET DEMAND INFLOW

In some markets, a portion of the demand is generated by parents that neither live (resident demand) or work (working population demand) in the study area. We regard this additional demand as a "net gain of demand". In some locations, the net gain can be substantial. Note that a net gain of demand accounts for (and offsets) any demand that leaves the area.

The origin of the net gain of demand will vary from place to place and, unlike resident or working population demand, is difficult to estimate and sometimes dependent on subjective factors. That said, some common attributes of areas with a net gain, include:

- Markets surrounded by under supplied or under serviced areas: when parents are not able to meet their needs in their local or preferred area, they would seek for childcare in a nearby area.
- Areas with highly desirable, competitive or specialised centres. These services typically draw demand from a broader region and parents are willing to travel outside their local community or workplace to enrol their children in these centres.
- Escape demand passing through the local catchment (i.e. commuters driving through the area and dropping children off in the local catchment).
- Non-residents that regularly travel to the area for reasons other than work, such as parents studying in the area, accessing services or for school drop-off.

NET DEMAND OUTFLOW

Net Demand Outflow explains the difference between locally generated demand and locally serviced demand. If all of the centres are full (or close to full), what happens to the remaining demand? Families will look elsewhere for suitable childcare or will go without. This may include accessing care in the surrounding area or near their workplace. In outer suburban commuter markets, most people travel elsewhere for work and many access services (including childcare) near their place of work.

Net Demand Outflow also accounts for latent unmet demand that is not serviced. This represents potential demand that is unrealised due to limited local childcare options or availability. It includes demand from parents that defer a return to work after having children or make alternative informal childcare arrangements to address their childcare needs.

The net demand outflow is our estimate of this unmet demand. We also assume that an increase in local supply (alternative local childcare options) will retain some of this net demand loss and improve local childcare self-containment. However, in some markets there will always be some demand that is serviced elsewhere simply based on parents' preferences.

OVERSUPPLIED MARKET

An OVERSUPPLIED market is where current levels of supply are EXCEEDING current estimated levels of demand. Some, if not all centres, will have difficulty achieving benchmark returns. Occupancy rates are lower than the benchmark – typically < 70%, and the ratio of children aged under 5 per long day care place is typically < 3:1 (in metropolitan markets – but can be higher in regional markets). Centres in the local area will report VACANCIES across a broad range of age groups, including for children under the age of 2. Places in this age group are typically the most restricted even in a balanced market, so markets with low occupancy rates for children under 2 are typically OVERSUPPLIED.

PARTICIPATION RATE

According to the **Report on Government Services (2023)** an estimated 50% of children aged 0 – 4 attend long day care nationally.

This figure varies from state to state and forms the basis for calculating the estimated participation rate in the local catchment area – that is, the number of children that are enrolled at long day care. Average participation rates are highest in ACT (61%) and lowest in the NT (38%).

It is also influenced by local supply and demand side factors such as the availability of appropriate childcare and the female labour force participation rate. For example, long day care participation rates are typically higher in metropolitan markets compared to regional areas. The availability of alternative forms of childcare (eg kindergarten/preschool) will also influence local long day care participation rates.

The long day care participation rate is also closely correlated to the Female Labour Force Participation Rate (FLFPR) such that the FLFPR serves as a useful proxy for estimating the long day care participation rate in specific markets.

POTENTIAL ADDITIONAL MARKET NEED

Potential Additional Market Need is the number of additional places the market demands, and could potentially support, without creating a significant long-term oversupply. This is indicative only and assumes a constant participation rate. An assessment of need should not be interpreted in isolation as an assessment of the commercial feasibility for centre development, acquisition or disposal.

RATIO OF CHILDREN (AGED UNDER 5) PER LDC PLACE

This is a useful indicator of the local long day care market. A low ratio can be an indicator of an OVERSUPPLY, whilst a high ratio may indicate a market that has some restricted supply. It's worth noting that ratios in regional areas with a BALANCED market are often higher than those in metropolitan areas.

UNDERSUPPLIED MARKET

A market that is UNDERSUPPLIED has fewer places available than demanded – that is, demand EXCEEDS supply. Such a market is characterised by very high occupancy rates (typically approaching 100%) and a relatively high ratio of children aged under 5 per long day care place supplied compared to benchmarks.

In an undersupplied market, not all parents are able to meet their childcare needs locally and may have to look outside of the local area (the Local Catchment) to obtain care that meets their needs or make alternative arrangements. This may mean utilising informal care providers such as Family Day Care or relatives (extended family) or new parent's deferring a return to work after having children.

VACANCY RATES REPORTED BY LONG DAY CARE CENTRES

Vacancy Rates reported by centres in the telephone survey are classified into three categories depending on the perceived availability of places. These Vacancy Rates are estimated based on the response of centre staff to an enrolment enquiry. It's important to note that Vacancies for children under 2 tend to be more restricted than for older children but this is typical of most markets.

A centre that is classified as having NO VACANCIES has no places available for any age groups or on any days. Centres with NO VACANCIES have 100% occupancy and will often run a waiting list for future enrolments.

A centre that reports LIMITED VACANCIES will typically have some vacancies either for specific age groups or on selected days only. Centres with LIMITED VACANCIES are likely to have occupancy rates in excess of 70% but less than 100%.

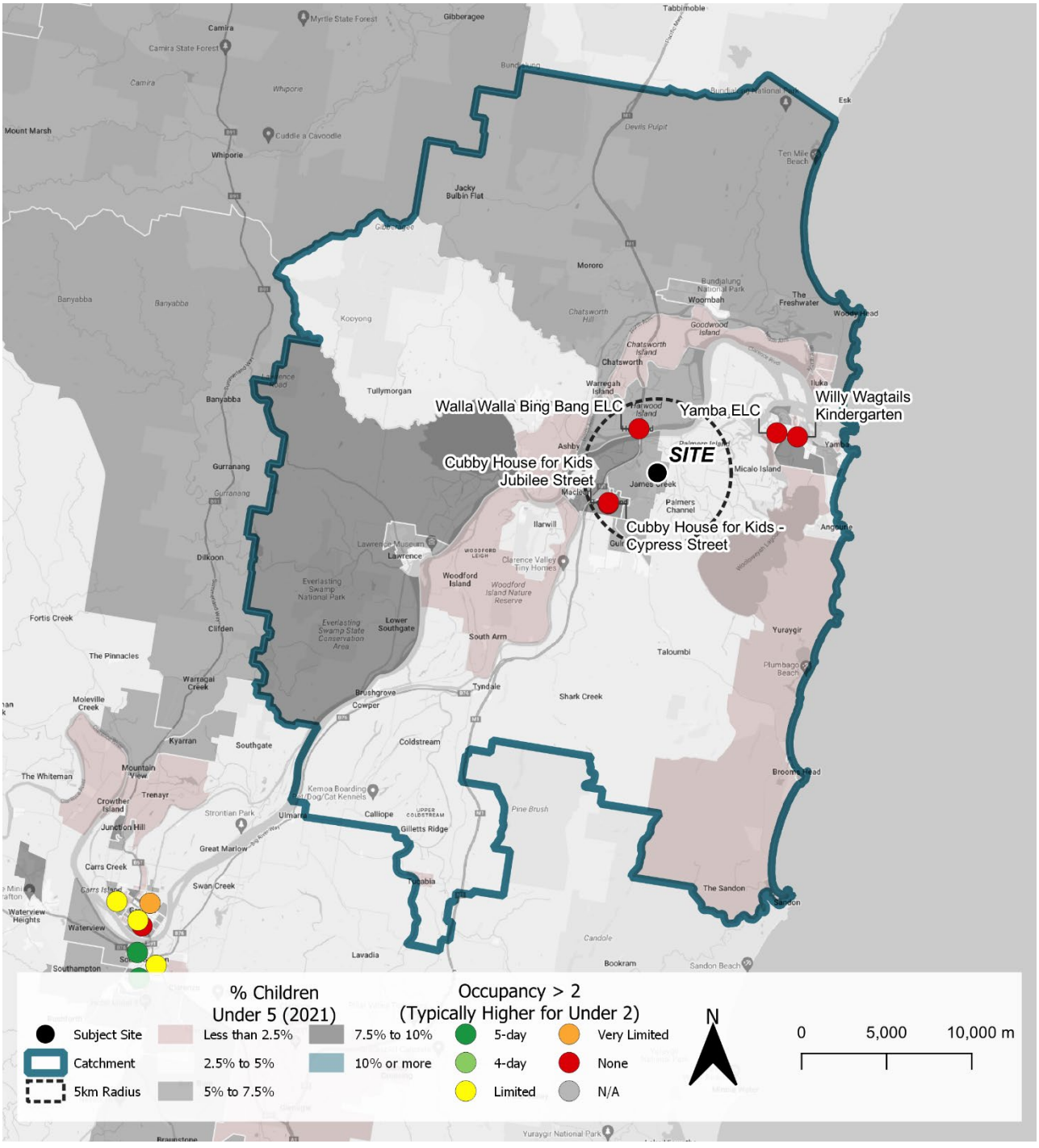
A centre that reports VACANCIES has one or more places available on all days for the nominated age group. Centres with VACANCIES will often have occupancy rates of less than 70%.

APPENDIX 3 – SPATIAL DEMAND INDICATORS

This section identifies key spatial demand drivers evident in the catchment area.

Children Aged Under 5

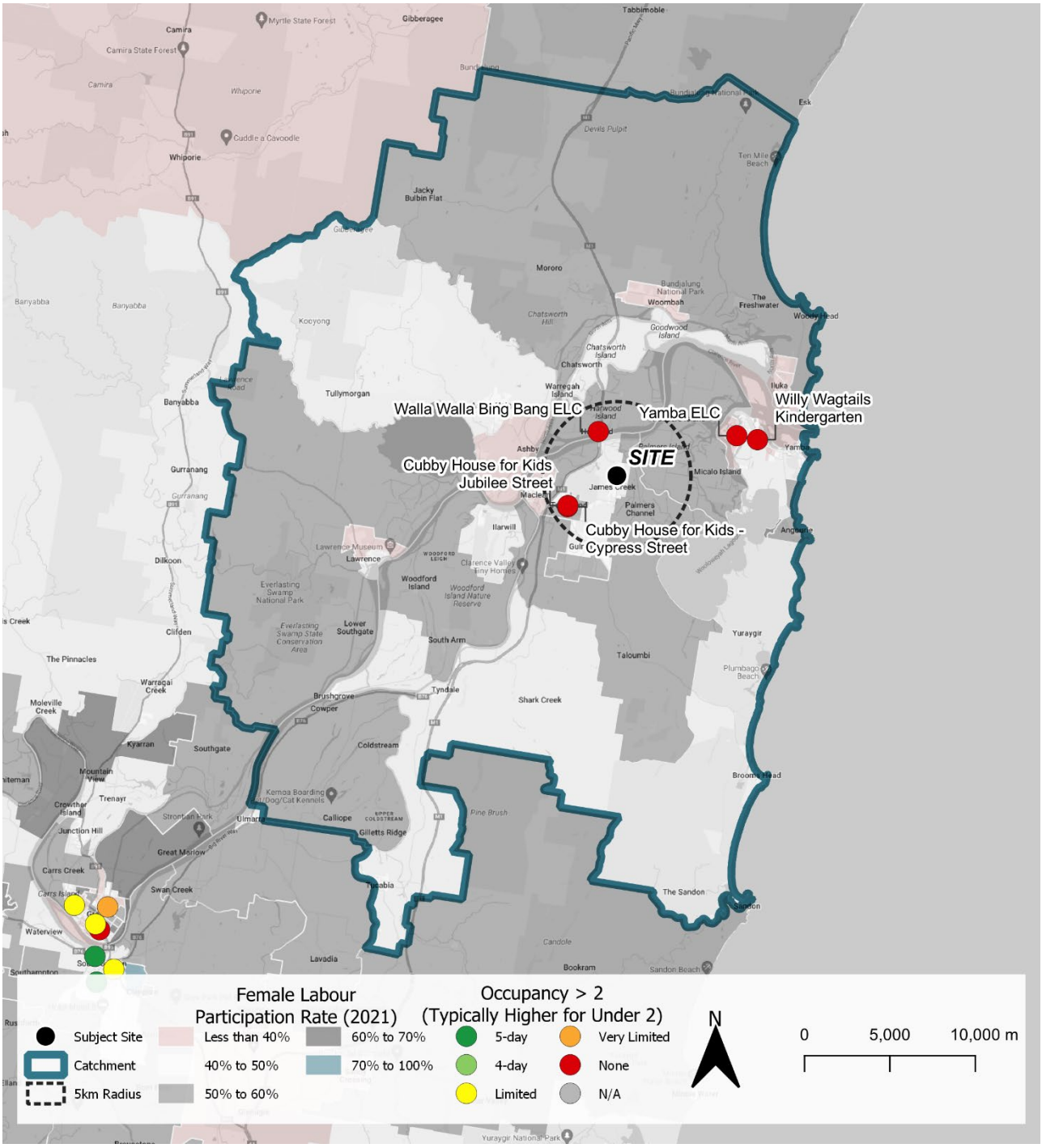
The local catchment currently (2023) has an estimated population of 930 children (under 5), which represents 4.27% of the total population. The map below shows their concentration by neighbourhood.



Female Labour Force Participation Rate

Another important demand driver for long day care is the female labour force participation rate. One of the main social contributions of long day care is to support labour force participation (particularly amongst women). Areas with existing high levels of female labour force participation tend to have high rates of demand for long day care.

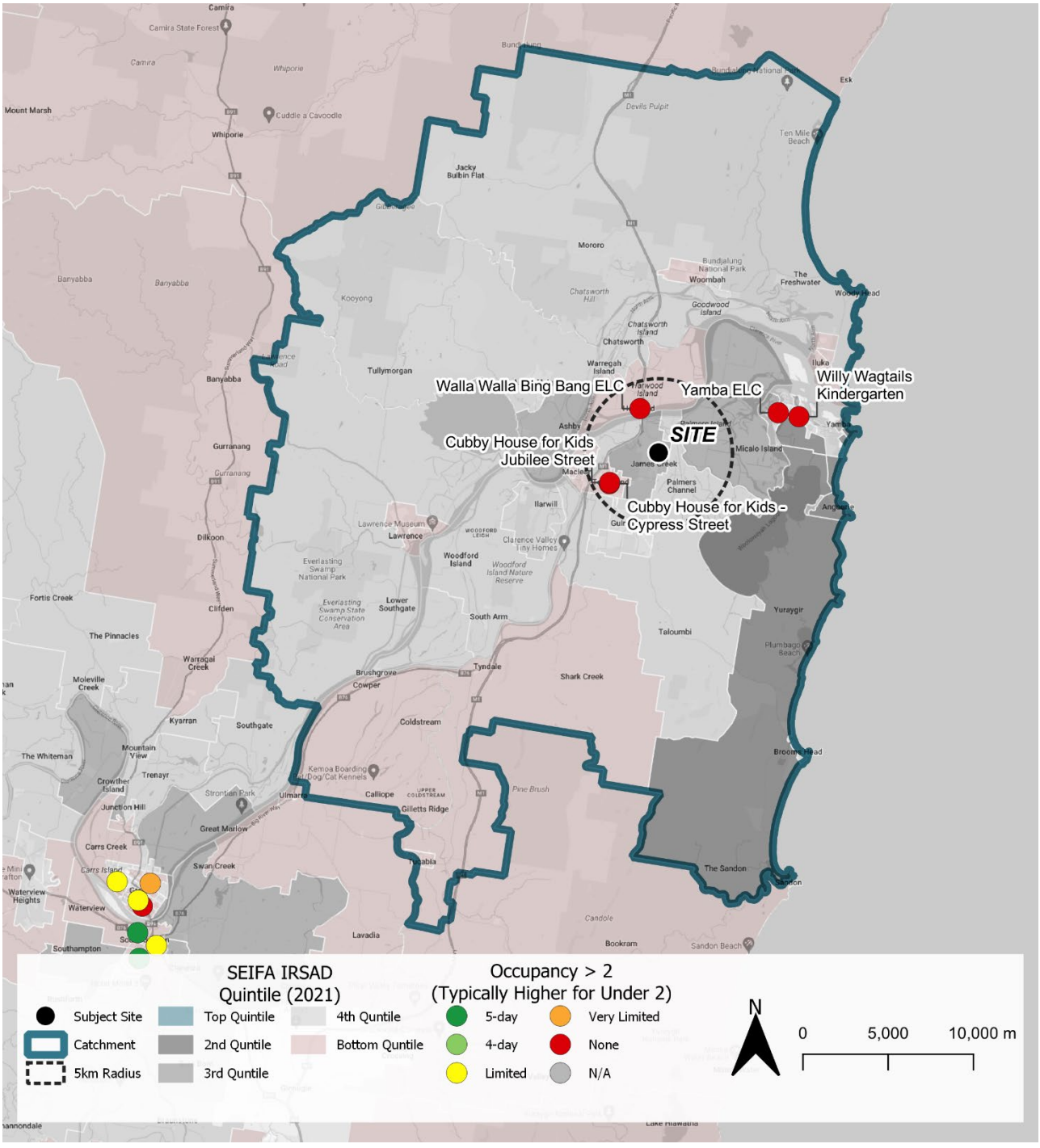
The map below highlights about average female labour force participation rates in the local catchment.



Socioeconomic Advantage and Disadvantage

The Socio-Economic Indexes for Areas (SEIFA) Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD) can be used as a proxy measure to identify services that are more or less likely to educate and care for children from disadvantaged backgrounds.

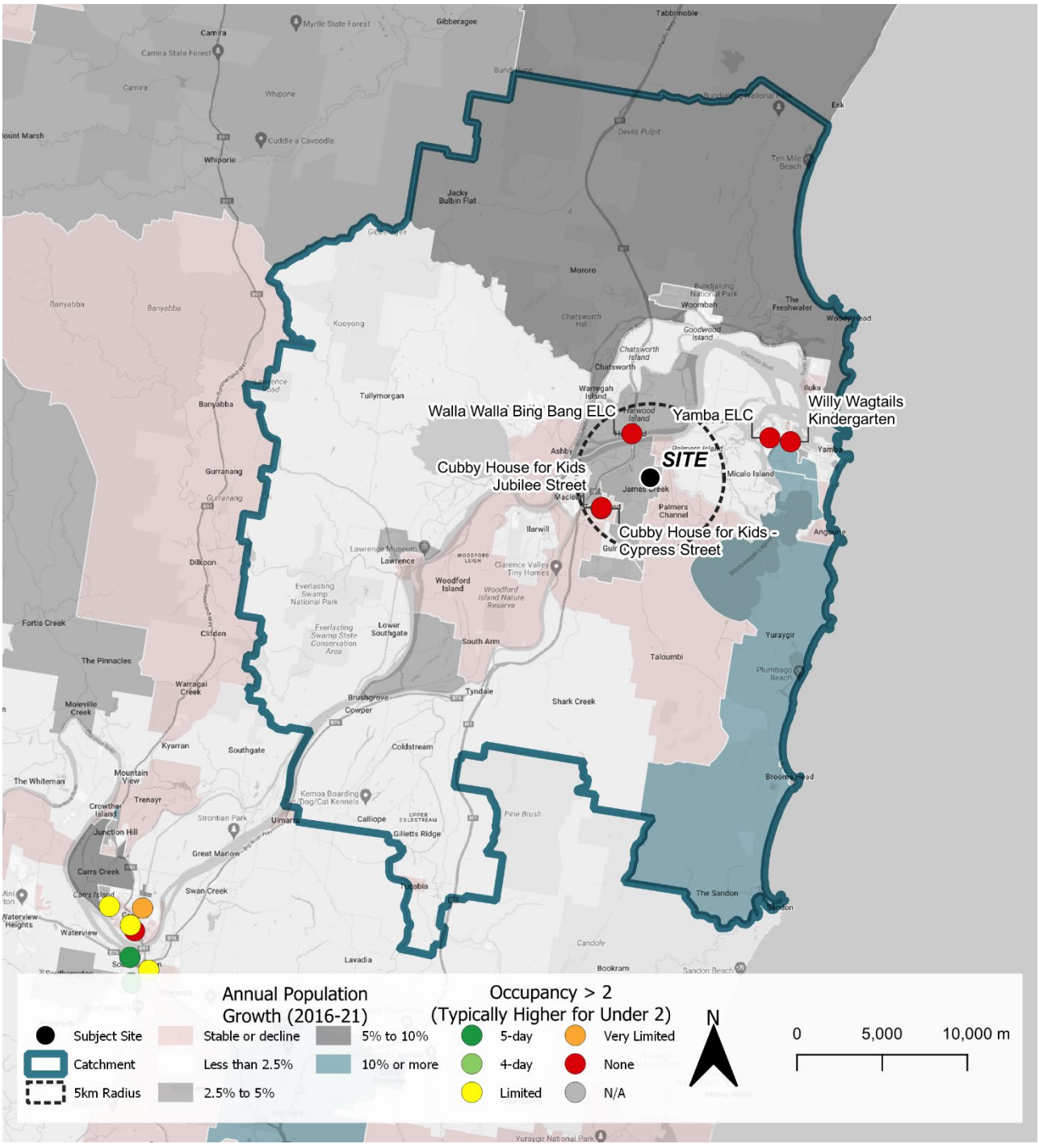
This map shows the distribution of Socio-Economic Advantage and Disadvantage (IRSAD) across the catchment during 2021.



Population Growth

Population growth is another important indicator of demand for long day care with growth often representing the establishment of residential neighbourhoods and family formation.

The map below shows the average annual population growth rate by neighbourhood from 2016-21. Green areas have high rates of population growth (10% or more) or have been populated since 2016 (New Area), while pink areas indicate a stable or declining population growth (0% or less).



Enclosure 15

Contaminated Land Assessment prepared by EAL dated 13 April 2011

ANNEXURE 'C'
ITEM 12.112/11 - 119

CONTAMINATED LAND ASSESSMENT

FOR A PROPOSED REZONING

AT

LOT 104 DP 751388

JAMES CREEK ROAD, JAMES CREEK, NSW

A preliminary assessment of possible soil contamination as required for State Environmental Planning Policy 55

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Report No.: EAL11079.001
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Disclaimer

The Environmental Analysis Laboratory (EAL) as part of Southern Cross University has conducted work concerning the environmental status of the site, which is the subject of this report, and has prepared this report on the basis of that assessment.

The work was conducted, and the report has been prepared, in response to specific instructions from the client or a representative of the client to whom this report is addressed, within the time and budgetary requirements of the client, and in reliance on certain data and information made available to EAL. The analysis, evaluations, opinions and conclusions presented in this report are based on that information, and they could change if the information is in fact inaccurate or incomplete.

While due care was taken during field survey and report preparation, EAL accepts no responsibility for any omissions that may have occurred due to the nature of the survey methodology. EAL has made no allowance to update this report and has not taken into account events occurring after the time its assessment was conducted.

Due consideration has been given to site conditions and to appropriate legislation and documentation available at the time of preparation of the report. As these elements are liable to change over time, the report should be considered current at the time of preparation only.

This report is intended for the sole use of the client and only for the purpose for which it was prepared. Any representation contained in the report is made only to the client unless otherwise noted in the report. Any third party who relies on this report or on any representation contained in it does so at their own risk.

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1. Introduction

EAL Consulting Services of the Environmental Analysis Laboratory (EAL) has been commissioned by Harrison Shepherd Pty Ltd to undertake a preliminary contaminated land assessment for a proposed rezoning at James Creek Road, James Creek, NSW (Fig. 1; Appendix 1). The total allotment area is approximately 33.57 ha. The area assessed as part of this investigation (i.e. investigation area) is considered to be the entirety of the allotment (i.e. 335,700 m^2) (Fig. 2; Appendix 1).

The objective of this preliminary investigation was to determine if land contamination has occurred from historical and current land use activities occurring on site or immediately nearby. To determine if the site poses a significant risk of harm to end users (and nearby sensitive receptors), soil samples have been collected and analysed for a range of contaminants typically associated with the land uses identified as having occurred on site. The results of the soil analysis are compared to relevant EPA acceptable levels in order to assess the significance of risk. As the proposed development is to be residential, the soil analysis results are compared with the NSW DEC (2006) Column 1 of the Table 'Soil Investigation Levels for Urban Redevelopment Sites in NSW'.

This investigation is Stage 1 of the Managing Land Contamination Planning Guidelines (DUAP and EPA, 1998). If contamination levels exceed the adopted EPA acceptable levels, a detailed investigation is then required (i.e. a Stage 2 investigation). If the contamination levels are below the relevant acceptable levels and information gathered as part of the investigation also supports that contamination was unlikely to have occurred; only a Stage 1 investigation would be required.

2. Scope of Work

This preliminary investigation has been used to identify the following:

- Past and present potentially contaminating activities occurring on or near the site; and
- The presence of Potential Contaminants of Concern associated with the identified land uses.

The investigation will also:

- Discuss the site condition;
- Provide a preliminary assessment of the site's contamination status; and
- Assess the need for further investigations.

Relevant documents considered in the preparation of this investigation included:

- ANZECC and NHMRC (1992) Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites;
- Council of Standards Australia (2005) AS 4482.1-2005 Guide to the sampling and investigation of potentially contaminated soil – Non-volatile and semi-volatile compounds;
- NSW DEC (2006) Contaminated Sites – Guidelines for the NSW Site Auditor Scheme 2nd Edition;
- NSW EPA (1994) Guidelines for Assessing Service Station Sites;
- NSW EPA (1995) Contaminated Sites – Sampling Design Guidelines; and
- NSW EPA (1997) Guidelines for Consultants Reporting Contaminated Sites.

This preliminary assessment report is written in accordance with NSW EPA (1997) Guidelines for Consultants Reporting on Contaminated Sites.

3. Site Identification

The site, James Creek Road, James Creek is formally known as Lot 104 DP 751388. The total allotment is approximately 33.57 ha in size and is rectangular in shape (refer Fig. 2). The centre of the site is located approximately 5.1 km north-east of the main business area of Maclean.

4. Site History

4.1 Zoning

The site is zoned as (RU1) Primary Production Zone or 1(a) Rural (Agricultural Protection in accordance with the Draft Clarence Valley Council Local Environmental Plan (2010) and Maclean LEP (2001) respectively.

4.2 Site Usages

Anecdotal information provided by the original owner of the allotment suggests that the land was not cleared until 1969 when it was cleared in three stages. Clearing was completed by 1973 and by 1975 the entire allotment was planted in sugar cane, this farming was continued until 2005. In the last three years the area has been grassed and grazed by cattle and sheep.

4.3 Site and Aerial Photographs

A detailed review of historical aerial photography was not considered necessary for this investigation. Site photographs are attached in Appendix 2.

4.4 Inventory of Known Chemicals, Wastes and Location

An inventory of chemicals and/or wastes stored at the site was not available. However anecdotal information provided by the previous owner of the site specifies that planted cane was fertilised with Crop King 44, N. P. K. 8.5/9.4/26.5 or an equivalent mix plus Aqua Ammonia at one t/ha 20.5% nitrogen or 1990 Urea at a rate of 450 kg/ha at 46% Nitrogen. Rooted crops were fertilised with Aqua Ammonia or Urea at the same rate. Weed control up until 1990 was by cultivation, after this point cultivation was used only until the crop was half a meter high at which point sprays were used. Weed control sprays used on the allotment included Herbicide Velpar K4 at a rate of 2.5 kg/ha or a mix of 1.5kg/ha of Atrazine, 1.5kg/ha of Diuron and 1.5L/ha of Paraquat.

In the last ten years cane seed sets were dipped in a solution of Shirtan (250 ml in 200L of water). Methoxy Ethyl Mercuric Chloride was used for the control of pineapple disease, the crop was also sprayed with Lorsban (Chlorpyrifos) (500ml/ha) for the control of black beetles.

4.5 Possible Contaminant Sources

Table 1 below lists the sources of potential contamination at the site and their associated contaminants of concern.

Table 1: Potential Contaminants of Concern for Identified Activities

Identified Contaminant Source	Potential Contaminants	Targeted Contaminants
Agricultural Activities		
Sugar Cane Cropping and Cattle Grazing	**Fertiliser** (Calcium phosphate, Calcium Sulfate, nitrates, ammonium sulfate, carbonates, potassium, copper, magnesium, molybdenum, boron, cadmium) **Fungicides** (carbamates, copper sulfate, copper chloride, sulfur, chromium, zinc) **Herbicides** (Ammonium Thyocyanate, carbamates, organochlorines, organophosphates, arsenic, mercury, triazines) **Pesticides** (Arsenic, lead, organochlorines, organophosphates, sodium tetraborate, carbamates, sulfur, synthetic pyrethroids) **Solvents** (Xylene, kerosene, methyl isonutyl ketone, amyl acetate, chlorinated solvents)	**Metals** (Silver, Arsenic. Lead, Cadmium, Copper, Nickel, Selenium, Zinc, Mercury, Iron and Aluminium) **Pesticides** (a-BHC, Hexachlorobenzene, b-BHC, g-BHC (Lindane), d-BHC, Heptachlor, Aldrin, Heptachlor epoxide, transchlordane, Endosulfan I, cischlordane, Dieldrin, 4,4-DDE, Endrin, Endosulfan II, 4,4-DDD, Endosulfan sulfate, 4,4-DDT, Methoxyxhlor

4.6 Site Layout Plans

Plates 1 and 2 (Appendix 2) indicate that presently the investigation area is composed of well grassed open paddocks with some scattered trees.

4.7 Historic Use of Adjacent Land

While no historical review of aerial photography was undertaken, it is believed adjacent land uses have been principally agricultural, with a similar history as the subject site being predominantly cane farming.

4.8 Local Usage of Ground/Surface Waters

A search of existing licensed groundwater bores within 250 m of the investigation was conducted using the NSW Natural Resource Atlas (NRATLAS 2009) website. The closest ground water bore (GW301178) is located approximately 870m south of the south-easterly corner of the investigation area. This bore is 42.0m in depth with a standing water level of 7.0m. GW301178 is licensed for domestic use.

4.9 State and Local Authority Records

4.9.1 Contaminated Land Record

A search of the Contaminated Land Record (EPA 2011a) for the, Clarence Valley Council did not identify any site notices relating to the site or adjoining the site.

4.9.2 Protection of the Environment Operations Act Licenses

A search of the current list (EPA, 2011b) of licensed activities as per Schedule 1 of the Protection of the Environment Operations Act 1997 did not identify any licensed polluting activities occurring within or adjacent to the site.

4.9.3 Cattle Tick Dip Sites

A search of the NSW Department of Primary Industry (DPI) Cattle Dip Site Locator tool (http://www.agric.nsw.gov.au/tools/dipsite-locator/) indicated that the closest Cattle Tick Dip Site CARR BROS is approximately 1.05 km north of the north-easterly boundary of the investigation area. This Dip is reported to be currently demolished. Chemicals used at this dip include:

Chemicals used in dip bath	Date first used
ARSENIC	6/38

5. Site Conditions and Surrounding Environment

5.1 Topography

The investigation area rises in the centre of in the investigation area to approximately 20m AHD with minor surface undulations across the site. The allotment slopes at varying rates between approximately 2 - 5%. The site elevation is approximately 10-20m AHD.

5.2 Visible Signs of Contamination

The investigation area was inspected on foot in order to identify any obvious signs of contamination. No indications of obvious contamination were observed during the site inspection. A visual inspection of adjoining land indicated that there were no clearly obvious visible signs of contamination adjoining the site.

5.3 Visible Signs of Plant Stress

There were no visible signs of plant stress observed during the site inspection.

5.4 Presence of Drums, Wastes and Fill Materials

No areas of waste disposal were evident (putrescibles or otherwise) and no indications of imported fill were observed during the site investigation.

5.5 Odours

There were no odours present on the site or when excavating soils during the site investigation.

5.6 Flood Potential

The investigation area is not mapped as a flood planning area and is located outside of the probable maximum flood height as mapped in the Draft Clarence Valley Council Local Environmental Plan (2010).

5.7 Local Sensitive Environments

The investigation area is located approximately 300m east of the border of an allocated SEPP 14 (Coastal Wetlands No. 220a) area (surrounding James Creek). There are no SEPP 26 (Littoral Rainforest) are located in close proximity to the site. The allotment is located approximately 1.7 km south of the Clarence River and approximately 1.3 km west of Palmers Channel.

6. Geology and Hydrogeology

6.1 Soil Stratigraphy

The surface soils of the investigation area are generally grey clayey soils. This soil type is identified as *New Italy* **(ne)** erosional landscape (as described by Morand 1994).

New Italy **(ne)** is described as:

- Moderately deep (100 – 150 cm), poorly/ imperfectly drained Grey Kurosols (Greyed Podzolic Soils) and moderately deep (100 – 150 cm), imperfectly drained Yellow Kurosols (Yellow Podzolic Soils) throughout hillslopes and crests. Shallow (<100 cm), moderately well-drained Orthic Tensols (Siliceous Sands) occur within landscape variant **nea**.

6.2 Location and Extent of Imported and Locally Derived Fill

No imported fill was identified onsite.

6.3 Site Bore Hole Tests

Not applicable to this study as all sampling was taken from surface samples.

6.4 Depth to Groundwater Table

No groundwater investigation is required in this study.

6.5 Summery of Local Meteorology

The average annual rainfall recorded at the Yamba Pilot Station Automated Weather Station is 1456.4 mm, with the highest volume of rainfall falling in January through to June. The driest months are July to December. The average maximum temperature is 23.3°C and the average minimum temperature is 15.5°C.

7. Sampling and Analysis Plan and Sampling Methodology

7.1 Sampling, Analysis and Data Quality Objectives (DQOs)

The objective of this preliminary investigation is to gather information with regard to the type, location, concentration and distribution of contaminants to determine if the site represents a risk of harm to end users and sensitive receptors. To determine this, soil sampling and laboratory analysis has been conducted upon surface soils collected from the site.

7.2 Rationale

Systematic sampling was conducted across the investigation area (refer Fig. 2 for individual sample locations). This investigation area is considered to be 335,700 m^2. Thirty-five (35) individual surface (0 – 200mm) samples were collected using an approximate 85m grid pattern. These samples were homogenised into nine (9) composite samples for analysis. The level of sampling is considered below the minimum sampling density in accordance with NSW EPA (1995) (Table 2). However, given the site history the chosen sampling density is considered appropriate for this preliminary assessment.

All nine composite samples were analysed for a full range of heavy metals (as described in Table 1) and for organochlorine (OC) pesticides (including Aldrin, Cis-chlordane, Trans-chlordane, HCB, DDD, DDE, DDT, Alpha-BHC, Beta-BHC, Delta-BHC, Lindane, Dieldrin, Endrin, Heptachlor, Heptachor epoxide, Alpha-endosulfan, Beta-endosulfan, Endosulfan sulfate, Methoxychlor).

Organophosphate (OP) pesticides (includes Dichlorvos, Phosdrin, Demeton (total), Ethoprop, Monocrotophos, Phorate, Dimethoate, Diazinon, Dapproximatelysulfoton, Methyl parathion, Chloropyrifos, Ronnel, Parathion, Stirofos, Prothiofos, Azinophos methyl, Coumaphos, Fenitrothion, Fenthion, Malathion) were not analysed as the site history did not identify any likelihood of these pesticides occurring and no elevated levels of OC or arsenic were identified at the site (samples are stored for OP analysis if required). The bacterial decomposition of OP pesticide is very rapid and the occurrence of elevated levels of OP's in the environment is rare (i.e. based on over 1000 soils analysed in soils of Northern NSW by EAL).

Polychlorinated Biphenyls (PCBs) were not analysed, as a source of contamination was not identified (i.e. PCB sources identified from electrical supply industry or mining). Poly-Aromatic Hydrocarbons (PAH) and BTEX were not analysed as these organic analytes are typically analysed for service station sites, or at sites with above or under-ground onsite hydrocarbon storage.

Table 2: Minimum sampling points required for site characterisation based on detecting circular hot-spots by using a systematic sampling pattern (NSW EPA, 1995).

Size of Site (hectare) (1 hectare = 10,000m^2)	**Size of Site** (m^2)	**Number of Sampling Points recommended**	**Equivalent Sampling Density** (points per hectare)	Diameter of the **hot spot** that can be detected with 95% confidence (metre)
0.1	1000	6	60.0	15.2
0.2	2000	7	35.0	19.9
0.5	5000	13	26.0	23.1
1	10,000	21	21.0	25.7
1.5	15,000	25	16.7	28.9
2.0	20,000	30	15.0	30.5
3.0	30,000	40	13.3	32.4
4.0	40,000	50	12.5	33.4
5.0	50,000	55	11.0	35.6

7.3 Sampling Methodology

Surface samples (0 – 200mm depth) were collected using a stainless steel spade, with soil being placed in snap lock plastic sample bags. The sampling procedure utilised in this investigation was in accordance with AS 4482.1 – 2005.

All soil samples were placed into an esky with ice bricks, and delivered to the Environmental Analysis Laboratory at Southern Cross University, Lismore. Metals analysis was conducted by EAL and quality control included blanks, duplicates and traceable certified NIST (National Institute of Standards Technology) reference soil in every sample batch. Analysis is conducted using a Perkin Elmer ELANDRC-e ICPMS (Inductively Coupled Plasma Mass Spectrometry). Chain of custody forms, laboratory quality assurance and laboratory quality control documentation are available on request. The analysis of pesticides was subcontracted to the NATA-registered Labmark laboratory (refer to Appendix 3 for laboratory results with all QA/QC results).

8. Basis for Assessment Criteria

The acceptable limits of the parameters tested are based on the NSW DEC (2006) Contaminated Sites - Guidelines for the NSW Site Auditor Scheme (2nd Edition). In particular Column 1 of Table 'Soil Investigation Levels for Urban Redevelopment Sites in NSW'. Column 1 represents Human - Based Investigation Levels (HBIL) for developments being 'Residential with gardens and accessible soil including children's daycare centres, preschools, primary schools, town houses or villas'. The investigation levels adopted for this investigation are presented below in Table 3.

Table 3: Soil investigation levels for urban redevelopment sites in NSW: Column 1 'Residential with gardens and accessible soil including children's day care centres, preschools, primary schools, town houses or villas' (NSW DEC 2006).

Contaminant	Acceptable Limit Column 1 (mg/kg)	Modified Acceptable Limit Column 1 (mg/kg) (divided by 4 for composites of 4 samples)
Arsenic	100	25
Cadmium	20	5
Chromium (VI)	100	25
Copper	1000	250
Lead	300	75
Manganese	1500	375
Nickel	600	150
Zinc	7000	1750
Mercury	15	3.75
OC's (aldrin and dieldrin)	10	2.5
OC's (DDT, DDD, DDE)	200	50

8.1 Background Levels

Metals occur naturally within soils and are a natural constituent of geological materials that erode and assist in the formation of soils. The background levels of metals analysed, obtained from ANZECC and NHMRC (1992) Table 4 'Environmental Soil Quality Guidelines' page 40, are presented in Table 4.

Table 4: Background ranges for potential contaminants.

Pollutant	Background Range (mg/kg)
Arsenic	0.2 – 30
Lead	<2 – 200
Cadmium	0.04 - 2
Chromium	0.5 – 110 (possible underestimate)
Copper	1 - 190
Nickel	2 - 400
Zinc	2 - 180
Manganese	4 – 12,600
Mercury	0.001 - 0.1

9. Results

The results from the soil testing regime are shown below in Table 5, with a copy of the laboratory certificates provided in Appendix 3. The soil sampling numbers correlate with the soil sampling locations as shown in Fig. 2 (Appendix 1).

Table 5: Summary of composite soil analysis results for Lot 104 DP 751388 James Creek Road, James Creek.

Analyte	Composite Sample 1 (SP1-4)	Composite Sample 2 (SP5-8)	Composite Sample 3 (SP9-12)	Composite Sample 4 (SP13-16)	Composite Sample 5 (SP17-20)	Composite Acceptable Limit[1]	Background Range[2]
Metals							
Silver (mg/kg)	0.1	0.1	0.1	0.1	0.1	na	na
Arsenic (mg/kg)	4.1	3.8	4.8	4.0	4.0	<25	0.2 - 30
Lead (mg/kg)	14.1	10.8	13.1	10.4	12.8	<75	<2- 200
Cadmium(mg/kg)	<0.1	0.1	<0.1	<0.1	<0.1	<5	0.04 – 2
Chromium (mg/kg)	5.8	4.4	5.5	6.3	5.8	<25	0.5 - 110
Copper (mg/kg)	3.8	1.9	2.3	3.5	2.2	<250	1 – 190
Manganese (mg/kg)	29.0	20.6	20.0	20.4	33.6	<375	4 – 12,600
Nickel (mg/kg)	1.3	1.0	1.2	1.7	1.5	<150	2 – 400
Selenium (mg/kg)	0.8	0.6	1.0	0.8	0.7	na	na
Zinc (mg/kg)	4.7	2.8	4.8	8.8	6.2	<1750	2 – 180
Mercury (mg/kg)	0.42	0.12	0.14	0.09	0.10	<3.75	0.001 – 0.1
Iron (%)	1.14	1.51	1.77	3.23	1.84	na	na
Aluminium (%)	1.25	0.97	1.10	0.89	1.05	na	na
Pesticides							
Methoxychlor (mg/kg)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<10
Other Organochlorine Pesticides (mg/kg)	<0.05	<0.05	<0.05	<0.05	<0.05	<5.0	<10

Notes

1. Column 1 "Residential with gardens and accessible soil including children's day care centres, preschools, primary schools town houses or villas" (NSW DEC 2006).
2. Environmental Soil Quality Guidelines, Page 40, ANZECC, 1992.

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Table 5: Summary of composite soil analysis results for Lot 104 DP 751388 James Creek Road, James Creek.

Analyte	Composite Sample 6 (SP21-24)	Composite Sample 7 (SP25-28)	Composite Sample 8 (SP29-32)	Composite Sample 9 (SP33-36)	Composite Acceptable Limit[1]	Background Range[2]
Metals						
Silver (mg/kg)	<0.1	0.1	<0.1	0.3	na	na
Arsenic (mg/kg)	3.9	3.3	3.2	7.3	<25	0.2 - 30
Lead (mg/kg)	11.3	11.4	10.7	15.9	<75	<2- 200
Cadmium(mg/kg)	<0.1	<0.1	<0.1	0.1	<5	0.04 – 2
Chromium (mg/kg)	4.4	5.1	5.8	8.6	<25	0.5 - 110
Copper (mg/kg)	1.9	2.5	2.9	2.9	<250	1 – 190
Manganese (mg/kg)	17.3	12.0	17.6	34.3	<375	4 – 12,600
Nickel (mg/kg)	1.2	1.0	1.4	1.4	<150	2 – 400
Selenium (mg/kg)	0.7	0.7	0.8	0.9	na	na
Zinc (mg/kg)	3.4	2.5	6.1	12.4	<1750	2 – 180
Mercury (mg/kg)	0.21	0.10	0.18	0.11	<3.75	0.001 – 0.1
Iron (%)	1.75	1.33	1.75	3.89	na	na
Aluminium (%)	0.89	0.90	0.86	1.16	na	na
Pesticides						
Methoxychlor (mg/kg)	<0.2	<0.2	<0.2	<0.2	<0.2	<10
Other Organochlorine Pesticides (mg/kg)	<0.05	<0.05	<0.05	<0.05	<5.0	<10

Notes

1. Column 1 "Residential with gardens and accessible soil including children's day care centres, preschools, primary schools town houses or villas" (NSW DEC 2006).
2. Environmental Soil Quality Guidelines, Page 40, ANZECC, 1992.

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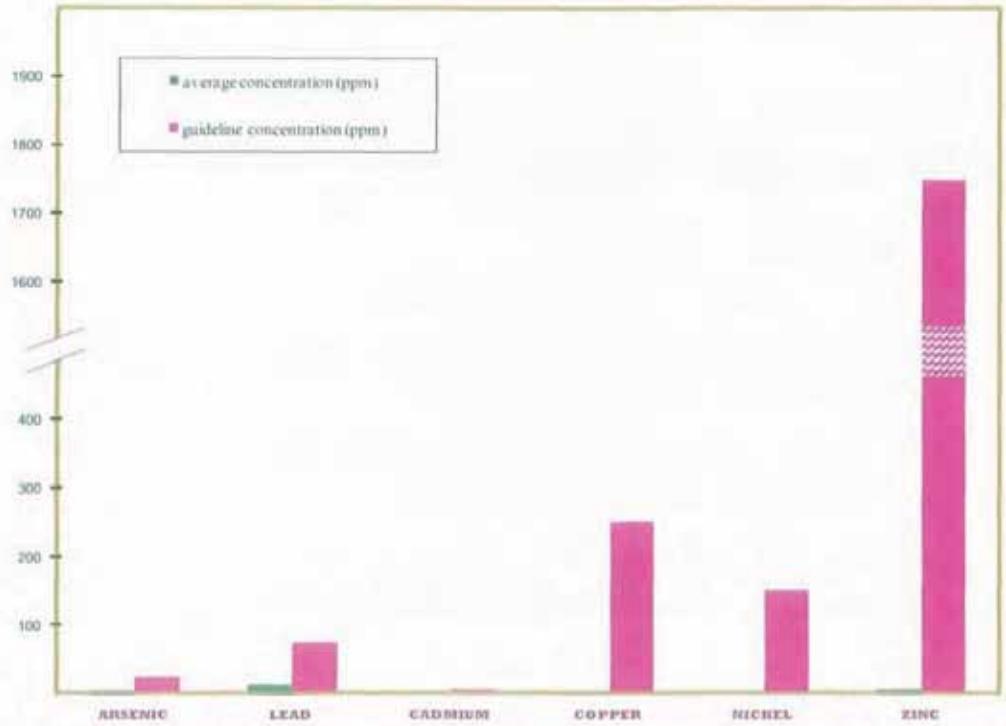
10. Site Characterisation

The potential sources of contamination identified at the subject site are from past agricultural activities historically undertaken.

The results indicate no soil contamination of the site by any of the broad range of metals and pesticides targeted. No pesticides were present above analytical detection limits in the samples analysed. Refer to Table 6 and Graph 1 for summary of all results and direct comparison to guidelines.

Table 6: Ranges for potential contaminants at Lot 104 DP 751388 James Creek Road, James Creek and comparison to relevant guidelines.

Pollutant	Average concentration (mg/kg)	Concentration Range (mg/kg)	Composite Acceptable Limit (mg/kg) for Residential with Accessible Gardens
Arsenic	4.3	3.2 – 7.3	**<25**
Lead	12.3	10.4 – 15.9	**<75**
Cadmium	0.1	0.1 – 0.1	**<5**
Chromium	5.8	4.4 – 8.6	**<25**
Copper	2.7	1.9 – 3.8	**<250**
Manganese	22.8	12.0 – 34.3	**<375**
Nickel	1.3	1.0 – 1.7	**<150**
Zinc	5.7	2.5 – 12.4	**<1750**
Mercury	0.162	0.092 – 0.416	**<3.75**
Organochlorines	..	<0.05-<0.2	**<2.5**



Graph 1: Average concentration of contaminants from individual analysis at Lot 104 DP 751388, James Creek Road, James Creek and comparison to relevant guidelines.

The results of the soil analysis, comparing the laboratory results with the acceptable level for each parameter (Table 5), indicate that the samples analysed do not contain concentrations of the targeted contaminants in excess of the relevant acceptable limits, in accordance with NSW DEC (2006) and NSW EPA (1994).

10.1 Duty to Report

The results of the soil analysis, comparing the laboratory results with the acceptable level for each parameter (Table 5), indicate that the investigated area is not contaminated at levels greater than the acceptable guidelines for the proposed Residential Development. Therefore, it is considered there is no duty to report under the new Duty to Report Guidelines (DECC 2009).

11. Conclusions and Recommendations

The soil-sampling regime was based on a systematic sampling pattern across the investigation area of the allotment requesting a rezoning. The soil analysis confirmed the background site history of no metal or pesticide contamination of the soil within the area investigated.

All sample analysis results had contaminant levels below Column 1 HBIL with all analytes falling within expected background concentrations for this region. Further, no organochlorine pesticides were identified above analytical detection limits in the samples analysed. It is considered a detailed investigation or site remediation is not required. Based on the findings of this preliminary investigation, the site is not considered to represent a significant risk of harm to end users of the proposed rezoning.

References

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Appendices

APPENDICES 15

APPENDIX 1 - FIGURES 16
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Appendix 1 - Figures

Figure 1: Locality Plan (Source: Google maps – http://maps.google.com.au/maps).

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Figure 2: Location of Sample Points (Source: Google Earth).

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Appendix 2 – Site Photographs

Plate 1. Easterly view of Investigation Area.

Plate 2. Westerly view of Investigation Area.

Appendix 3 – Laboratory and Subcontracted Results

Laboratory Results

RESULTS OF SOIL ANALYSIS

35 soil samples supplied by EAL Consulting on the 24th March, 2011 - Lab Job No. B3280
Soil samples supplied were composited by EAL into 9 composite samples for analysis
Analysis requested by Nick Davison, Your Job: Q110779, Harrison, James Creek Rd, James Creek.
(EAL Consulting, Southern Cross University, Military Rd, East Lismore, NSW, 2480)

ANALYTE	METHOD REFERENCE	Composite Sample 1 Samples (1,2,3,4)	Composite Sample 2 Samples (5,6,7,8)	Composite Sample 3 Samples (9,10,11,12)	Composite Sample 4 Samples (13,14,15,16)	Composite Sample 5 Samples (17,18,19,20)	Composite Sample 6 Samples (21,22,23,24)	Composite Sample 7 Samples (25,26,27,28)	Composite Sample 8 Samples (29,30,31,32)	Composite Sample 9 Samples (33,34,35)
	Job No.	B3280/C1	B3280/C2	B3280/C3	B3280/C4	B3280/C5	B3280/C6	B3280/C7	B3280/C8	B3280/C9
MOISTURE %	c	24	24	25	23	23	25	24	23	26
SILVER (mg/Kg DW)	a	0.1	0.1	0.1	0.1	0.1	<0.1	0.1	<0.1	0.3
ARSENIC (mg/Kg DW)	a	4.1	3.8	4.8	4.0	4.0	3.9	3.3	3.2	7.3
LEAD (mg/Kg DW)	a	14.1	10.8	13.1	10.4	12.8	11.3	11.4	10.7	15.9
CADMIUM (mg/Kg DW)	a	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
CHROMIUM (mg/Kg DW)	a	5.8	4.4	5.5	6.3	5.8	4.4	5.1	5.8	8.6
COPPER (mg/Kg DW)	a	3.8	1.9	2.3	3.5	2.2	1.9	2.5	2.9	2.9
MANGANESE (mg/Kg DW)	a	29.0	20.6	20.0	20.4	33.6	17.3	12.0	17.6	34.3
NICKEL (mg/Kg DW)	a	1.3	1.0	1.2	1.7	1.5	1.2	1.0	1.4	1.4
SELENIUM (mg/Kg DW)	a	0.8	0.6	1.0	0.8	0.7	0.7	0.7	0.8	0.9
ZINC (mg/Kg DW)	a	4.7	2.8	4.8	8.8	6.2	3.4	2.5	6.1	12.4
MERCURY (mg/Kg DW)	a	0.42	0.12	0.14	0.09	0.10	0.21	0.10	0.18	0.11
IRON (% DW)	a	1.14	1.51	1.77	3.23	1.84	1.75	1.33	1.75	3.89
ALUMINIUM (% DW)	a	1.25	0.97	1.10	0.89	1.05	0.89	0.90	0.86	1.16
PESTICIDE ANALYSIS SCREEN										
4,4' - DDD (mg/Kg)	c	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4,4' - DDE (mg/Kg)	c	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4,4' - DDT (mg/Kg)	c	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor (mg/Kg)	c	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Other Organochlorine Pesticides (mg/Kg)	c	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

METHODS REFERENCE

a. [1,2]Nitric/HCl digest - APHA 3120 ICPMS
b. [1,2]Nitric/HCl digest - APHA 3120 ICPOES
c. Analysis sub-contracted - results attached

NOTES

DW = Dry Weight

Organochlorine pesticide (OC's) screen: (4,4' DDD, 4,4' DDE, 4,4 DDT, a-BHC, Aldrin, b-BHC, Chlordane, D-bhc, Dieldrin, Endosulfan I, Endosulfan II, Endosulfan sulphate, Endrin, Endrin aldehyde, Endrin ketone, g-BHC (Lindane), Heptachlor, Heptachlor epoxide, Hexachlorobenzene, Methoxychlor, Toxaphene.)

Organophosphorus pesticide (OP's) screen: Bolstar, Chlorpyrifos, Demeton-O, Diazinon, Dichlorvos, Disulfoton, Ethion, Ethoprop, Fenitrothion, Fenthion, Merphos, Methyl azinphos, Methyl parathion, Mevinphos, Naled, Phorate, Ronnel, Tokuthion, Trichloronate.)

na = no guidelines available

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Subcontracting Results

mgt LabMark ENVIRONMENTAL LABORATORIES

Certificate of Analysis

Environmental Analysis Laboratory
Southern Cross University Military Rd
East Lismore
NSW 2480

NATA Accredited
Accreditation Number 1261
Site Number 18217

Attention: Environmental Analysis Laboratory

Report	294752-S
Client Reference	B3280
Received Date	Mar 29, 2011

Client Sample ID			B3280/C1	B3280/C2	B3280/C3	B3280/C4
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-MA33299	S11-MA33300	S11-MA33301	S11-MA33302
Date Sampled			Mar 24, 2011	Mar 24, 2011	Mar 24, 2011	Mar 24, 2011
Test/Reference	LOR	Unit				
Organochlorine Pesticides (OC)						
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDT	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-Chlordane	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-Chlordane	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	83	84	113	76
Tetrachloro-m-xylene (surr.)	1	%	95	95	95	95
% Moisture	0.1	%	24	24	25	23

mgt LabMark ENVIRONMENTAL LABORATORIES

Client Sample ID			B3280/C5	B3280/C6	B3280/C7	B3280/C8
Sample Matrix			Soil	Soil	Soil	Soil
mgt-LabMark Sample No.			S11-MA33303	S11-MA33304	S11-MA33305	S11-MA33306
Date Sampled			Mar 24, 2011	Mar 24, 2011	Mar 24, 2011	Mar 24, 2011
Test/Reference	LOR	Unit				
Organochlorine Pesticides (OC)						
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4,4'-DDT	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-Chlordane	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-Chlordane	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	90	77	81	77
Tetrachloro-m-xylene (surr.)	1	%	94	75	77	80
% Moisture	0.1	%	23	25	24	23

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Client Sample ID			B3280/C9
Sample Matrix			Soil
mgt-LabMark Sample No			S11-MA33307
Date Sampled			Mar 24, 2011
Test/Reference	LOR	Unit	
Organochlorine Pesticides (OC)			
4.4'-DDD	0.05	mg/kg	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05
4.4'-DDT	0.2	mg/kg	< 0.2
a-BHC	0.05	mg/kg	< 0.05
a-Chlordane	0.05	mg/kg	< 0.05
Aldrin	0.05	mg/kg	< 0.05
b-BHC	0.05	mg/kg	< 0.05
d-BHC	0.05	mg/kg	< 0.05
Dieldrin	0.05	mg/kg	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05
Endrin	0.05	mg/kg	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05
g-Chlordane	0.05	mg/kg	< 0.05
Heptachlor	0.05	mg/kg	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2
Dibutylchlorendate (surr.)	1	%	73
Tetrachloro-m-xylene (surr.)	1	%	78
% Moisture	0.1	%	26

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Received:	Mar 29, 2011 12:00		
Due:	Apr 6, 2011 12:12		
Priority:	5 Day		
Contact name:	Environmental Analysis Laboratory		
Client Job No.:	B3280	**mgt-LabMark Client Manager: Leanne Knowles**	

Sample Detail					% Moisture	Organochlorine Pesticides (OC)
Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site #1261						
Sydney Laboratory - NATA Site #1645					X	X
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
B3280/C1	Mar 24, 2011		Soil	S11-MA33299	X	X
B3280/C2	Mar 24, 2011		Soil	S11-MA33300	X	X
B3280/C3	Mar 24, 2011		Soil	S11-MA33301	X	X
B3280/C4	Mar 24, 2011		Soil	S11-MA33302	X	X
B3280/C5	Mar 24, 2011		Soil	S11-MA33303	X	X
B3280/C6	Mar 24, 2011		Soil	S11-MA33304	X	X
B3280/C7	Mar 24, 2011		Soil	S11-MA33305	X	X
B3280/C8	Mar 24, 2011		Soil	S11-MA33306	X	X
B3280/C9	Mar 24, 2011		Soil	S11-MA33307	X	X

Enclosure 16

Contaminated Land Assessment Review GeoLINK dated 4 November 2019

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4 November 2019
Ref No: 3204-1019

Rob Donges
Planning Consultant

Email: rdongesyamba@icloud.com

Dear Rob

James Creek Road Subdivision – Contamination Land Assessment

GeoLINK has undertaken a review of the document titled: *Contaminated Land Assessment, for a Proposed Rezoning at Lot 104 DP 751388, James Creek Road, James Creek NSW*. This report was compiled by EAL Consulting Service in 2011 (EAL), for this proposed subdivision.

This review considered only this report, it makes no comment on the state of the land since 2011, including its current state.

Sampling frequency was lower (approx. 10 sampling points) compared to the 1995 NSW EPA *Contaminated Sites Sampling Guidelines* for the 33.6ha area. The grid pattern provided an equal coverage of the area. Their rationale for sampling less seems reasonable given the perceived consistent land use and the fact that it was only a preliminary site investigation. The soil test results obtained also indicated that the site is not contaminated, based on 2006 guidelines.

The results as they are compared to current guidelines are still below acceptable levels. The new National Environment Protection Council (NEPC) 1999 – *Schedule B(1) Guideline on the Investigation Levels for Soil and Groundwater (*amended 2013*),* specifically the Health Investigation Levels (HILs) Category 'A', were amended since the report was written. The new values in some instances were raised in their acceptable levels, hence making the report still valid.

Organophosphate pesticides were not tested for. EAL's rationale for not testing seemed reasonable given organophosphate life span within the environment and their perceived usage history.

Polychlorinated Biphenyls (PCBs) nor Poly Aromatic Hydrocarbons (PAH) and BTEX (Benzene, toluene, ethylbenzene and xylene) where not tested as industries that are often associated with the production and use of such were not known to of existed onsite. This rationale seemed reasonable.

No pH testing was undertaken within the sample testing. This is thought to be a shortcoming as this land adjoins a Class 5 Acid Sulfate Soils area. This area has a high probability of acid sulfate soil and is known as the Yaegl Nature Reserve.

It is recommended that prior to any excavation commencing on this land that an Acid Sulfate Soil Management Plan be developed to manage any potential or actual acid sulfate soils that may be encountered.

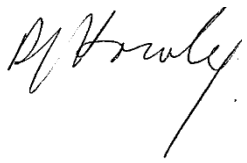
Urban and Regional Planning | Environmental Engineering | Civil Design | Environmental Impact Assessment | Ecological Surveys and Monitoring | Landscape Architecture | Urban Design | Coastline and Waterways Management

As it stands, the 2011 report does not provide this land with any exemption under Resource Recovery Order under Part 9, Clause 93 of the *Protection of the Environment Operations (Waste) Regulation 2014*, The Excavated Natural Material Order 2014. If soils were to be removed from this site, then additional testing in accordance with this Order would have to be undertaken and would have to satisfy this Order prior to being removed.

In summar,y the 2011 report *Contaminated Land Assessment, for a Proposed Rezoning at Lot 104 DP 751388, James Creek Road, James Creek* NSW still has relevance compared to current guidelines. Assuming that no contamination has occurred since 2011 the report would be a valid appraisal of the land exhibiting no contaminates of those substances tested.

If you have any questions or wish clarification, please contact GeoLINK.

Yours sincerely
GeoLINK



David Howley
Senior Environmental Engineer | Soil Conservationist

Enclosure 17

Land Use Conflict Risk Assessment prepared by GeoLINK dated 23 November 2023

Land Use Conflict Risk Assessment

Lot 104 DP751388, James Creek Road Subdivision

Quality solutions. Sustainable future.

GeoLINK
environment | engineering | planning | design

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Prepared for: MPD Investments

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Certification

	Name	Signature	Date
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1. Introduction and Background

1.1 Background

GeoLINK has been engaged by MPD Investments to prepare a Land Use Conflict Risk Assessment (LUCRA) to support a development application (DA) for proposed residential subdivision at Lot 104 DP 751388 James Creek Road, James Creek within the Clarence Valley Local Government Area (LGA).

This report aims to review and consider the potential for land use conflict in the context of surrounding rural zonings and associated land uses and whether interface management is required as part of the proposed subdivision. This LUCRA should be read in conjunction with the Statement of Environmental Effects (SEE) and the associated design plans/ drawings.

A previous DA for a 336 lot subdivision of the subject land was refused by the Northern Regional Planning Panel in July 2023. One of the reasons for refusal was that the Proposal did not incorporate adequate land use buffers in response to adjoining land which could create potential for rural land use conflict and that a 50 m buffer treatment should be applied to all boundaries adjacent to rural zoned land (the north, east and west).

A new subdivision layout is now proposed which has a smaller lot yield of 290 lots and incorporates 50 m buffers for all boundaries to rural land. This LUCRA assesses this revised Proposal.

1.2 Proposal Overview

The Proposal is for subdivision of the site and associated development, including an internal access road that would connect to James Creek Road. The Proposal involves:

- Creation of 290 lots comprising of 280 residential lots, one commercial lot, one childcare centre lot, five open space lots and three drainage reserves plus one large residue lot. Residential lots are offset by 50 m from the northern, eastern, and western boundaries, plus an additional 23 m on the eastern boundary which is provided by the James Creek Road reserve. Lots along the southern boundary are offset from adjacent large lot residential land by approximately 25 m by the road reserve of Austons Lane, including a 5 m dedication of land to Council for this road reserve.
- Construction of infrastructure provisions (including service installations/ connections and road construction).
- The development would be staged chronologically across the five stages (Stage 1A, 1B, 2, 3 and 4) as depicted in Figure 1.1, subject to detailed design and sub-stages.

Access for all proposed lots will be via an intersection to James Creek Road. The internal road network comprises a permeable symmetric layout of through roads, including a main ring road and several smaller loop roads.

Illustration 2.1 and Illustration 2.2 (in **Section 2.1** of this report) provide a site locality map and an aerial image of the site overlaid with the proposed subdivision layout.

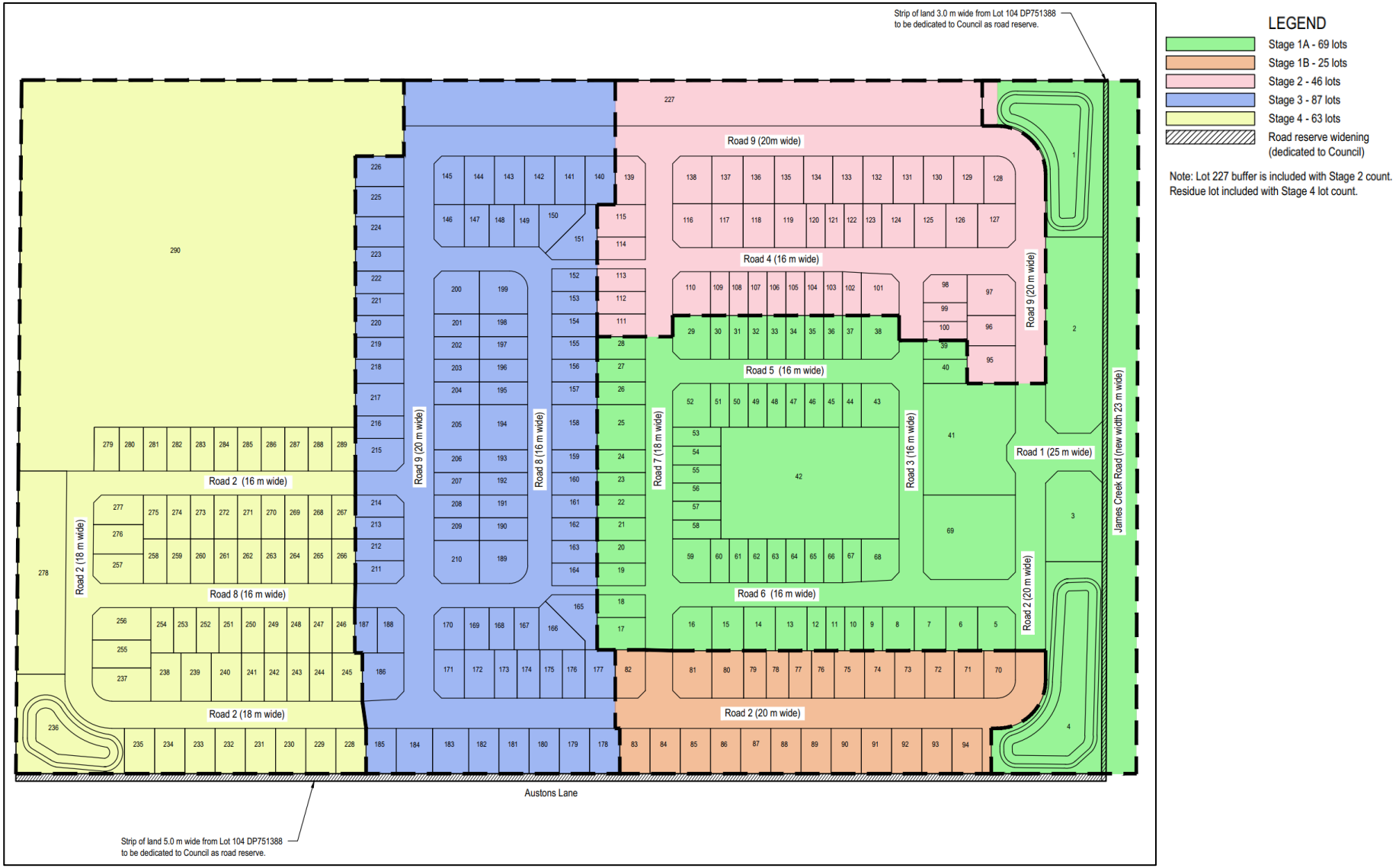


Figure 1.1 Proposed Subdivision Staging and Layout incorporating 50 m buffer to the western, northern and eastern boundaries

1.3 Planning Context

1.3.1 Statutory Controls and Local Environmental Plan

The site is zoned under the Clarence Valley Local Environment Plan 2011 (CVLEP) as follows:

- Zone R1 – General Residential.
- Zone R3 – Medium Density Residential.
- Zone E1 – Local Centre (formally B1 Neighbourhood Centre).

Table 1.1 shows the zone objectives for each of the relevant zones.

Table 1.1 Zone Objectives

LEP Zoning	Zone Objectives
Zone R1 – General Residential	■ *To provide for the housing needs of the community.* ■ *To provide for a variety of housing types and densities.* ■ *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*
Zone R3 – Medium Density Residential	■ *To provide for the housing needs of the community within a medium density residential environment.* ■ *To provide a variety of housing types within a medium density residential environment.* ■ *To enable other land uses that provide facilities or services to meet the day to day needs of residents.* ■ *To enable serviced apartments while maintaining the medium density residential character and amenity of a locality.*
Zone E1 – Local Centre	■ *To provide a range of retail, business and community uses that serve the needs of people who live in, work in or visit the area.* ■ *To encourage investment in local commercial development that generates employment opportunities and economic growth.* ■ *To enable residential development that contributes to a vibrant and active local centre and is consistent with the Council's strategic planning for residential development in the area.* ■ *To encourage business, retail, community and other non-residential land uses on the ground floor of buildings.* ■ *To reinforce and support the central business districts of Maclean, Iluka and Yamba as the commercial centres for those towns.* ■ *To minimise conflict between land uses within the zone and land uses within adjoining zones.* ■ *To enable other land uses that are compatible with, and do not detract from, the viability of retail, business, entertainment and community uses within the zone.* ■ *To reinforce the neighbourhood centres of Coutts Crossing, Glenreagh, Lawrence and Ulmarra as the locations for commercial premises.*

The proposed subdivision has been designed to reflect the objectives of each of the zones and is considered consistent with the relevant zone objectives under CVLEP. The Proposal is permissible with consent.

Surrounding land use zones include a rural, large lot residential, and environmental zones. The site and surrounding zoning provisions are shown in Illustration 2.2.

1.3.2 Development Control Plan

The Clarence Valley Residential Development Control Plan (CVDCP) 2011 supports the provisions of CVLEP and provides a set of development objectives and provisions for development within the Clarence Valley LGA. The relevant provisions of the DCP and how they relate to the proposed development are addressed in the SEE.

The CVDCP (applicable to residential or rural zones) does not contain any specific policies or criteria relating to matters of potential rural land use conflict. Despite the lack of such guidance/ controls in the CVDCP, the accepted guideline to assess land use conflict is the NSW DPI *Living and Working in Rural Areas Handbook* (the Handbook). This is the primary guide to assess proposals when there are residential uses proposed to interface with rural land or agricultural activities. Other supporting guiding documents introduced by DPI since the publication of the Handbook in 2007 are addressed in Section 1.4.

1.3.3 North Coast Regional Plan 2041

The purpose of the North Coast Regional Plan (NCRP) 2041 is the five yearly update to the previous 2036 version. The NCRP is to provide a strategic land use planning framework to guide land use and planning priorities in the North Coast Region to 2041. The Plan informs local strategic planning and local environmental plans.

The NCRP 2041 acknowledges the significant changes that have happened across the North Coast over the past five years. The NCRP recognises the need to respond to key drivers of change, including COVID-19 which will require a stronger focus on facilitating new jobs and housing for a rapidly growing population. The NCRP also aims to avoid new development in high-risk areas prone to bushfire and flooding.

A critical action in the NCRP 2041 is to establish a Regional Urban Development Program to ensure the region can identify a 10-year housing pipeline to accommodate a rapidly growing population.

Key relevant Goals and Objectives include:

- *Goal 1 – Liveable, sustainable, and resilient*
  - *Objective 1: provide well located homes to meet demand.*
  - *Objective 2: provide for more affordable and low-cost housing.*
  - *Objective 8: support the productivity of agricultural land.*
- *Goal 3 – Growth change and opportunity*
  - *Objective 18: plan for sustainable communities.*

Noting the importance and strategic direction given to boosting housing supply, the NCRP 2041 also acknowledges the importance of rural lands and activity on the North Coast and the objective to support productive agricultural lands.

Key priorities for the Clarence Valley include:

- *Promote the sustainable use of regionally important farmland to support agriculture, horticulture, forestry, and aquaculture.*
- *Enable appropriate housing development throughout the LGA, including at Grafton, Clarenza, James Creek, Junction Hill, and West Yamba.*
- *Explore opportunities to provide more affordable housing near supporting infrastructure and services.*

- *Provide a diverse range of housing types with access to facilities and services that meet population and demographic needs.*
- *Protect and enhance the unique character of the LGA's towns and villages.*
- *Incorporate a placemaking approach to create sustainable and liveable communities.*

Importantly, these matters and related Directions and Actions are typically used to guide future urban land use planning and urban land release decisions, such as associated rezoning proposals. In the current context, the subject land at James Creek Road has already been through the strategic planning and rezoning process. It has been identified and designated for urban/ residential development and zoned according. James Creek is also clearly identified in the Plan (the priorities mentioned above) as an area to provide for appropriate housing growth.

The proposed subdivision has been designed to allow for the orderly future development of the site for residential purposes and ensure efficient use of land resources and contribute additional housing supply. The proposed development is permissible and consistent with the strategic context, subject to suitable consideration of proximal rural land/ agricultural activity.

1.3.4 Mid North Coast Farmland Project 2008

The Mid North Coast Farmland Mapping Project followed the Northern Rivers Farmland Protection Project which was completed in March 2005. The project has aimed to identify and protect regionally significant farmland from urban and rural residential encroachment and land use conflict. Additionally, it has aimed to encourage farmland areas to be targeted for land management assistance where suitable through Catchment Management Authority funding.

Regionally significant farmland is defined, for Mid North Coast Farmland Mapping Project, as 'land capable of sustained use for agricultural production with a reasonable level of inputs and which has the potential to contribute substantially to the ongoing productivity and prosperity of a region.'

The resulting maps (see Figure 1.2 for excerpt of relevant map) showed farmland to be protected from urban and rural residential rezoning by the Minister for Planning's former Section 117 Direction under the *Environmental Planning and Assessment Act 1979*. As depicted in Figure 1.2, the subject site of the proposed subdivision is identified as "proposed urban area". Furthermore, the immediately adjacent land is not mapped as "regionally significant farmland" but is mapped as "other rural land". The nearest mapped regionally significant farmland is approximately 290 m to the east, and more than 300 m away from the nearest proposed residential lot (refer to Illustration 2.2).

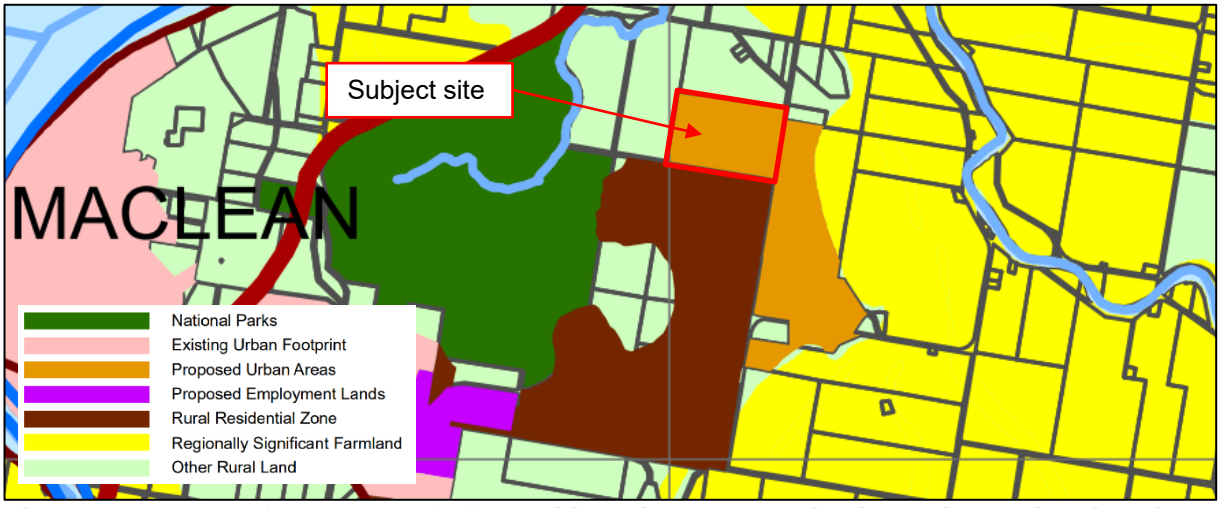


Figure 1.2 Excerpt from Map 1 of 4 from Mid North Coast Farmland Mapping Project (2008)

This acknowledges that at a strategic and statutory level, the site has been declared as suitable for residential purposes and the zoning/ agricultural land mapping reflects this. Nonetheless, the area is yet to commence urbanisation, and rural land and agricultural activities remain present in the surrounding area. Hence, more specific consideration of the potential for rural land use conflict is now given based on the proposed DA for residential subdivision. The purpose of this LUCRA is to assess the potential for land use conflict between existing rural uses/ activities and proposed residential uses, and recommend any necessary measures to help avoid, minimise, or manage this.

1.3.5 State Environmental Planning Policy (Primary Production) 2021

The relevant aims of State Environmental Planning Policy (Primary Production) 2021 (Primary Production SEPP) are:

(b) to reduce land use conflict and sterilisation of rural land by balancing primary production, residential development and the protection of native vegetation, biodiversity and water resources,

(c) to identify State significant agricultural land for the purpose of ensuring the ongoing viability of agriculture on that land, having regard to social, economic and environmental considerations,

Part 2.2 of the Primary Production SEPP provides identification and protection of agricultural land of State and regional significance. Land is State significant agricultural land if it is listed in Schedule 1. However, at the time of writing, Schedule 1 was blank, and the Primary Production SEPP does not identify any land that is afforded such statutory protection due to its agricultural significance.

1.3.6 State Environmental Planning Policy (Resources & Energy) 2021

Biophysical Strategic Agricultural Land (BSAL) is land with high quality soil and water resources capable of sustaining high levels of productivity and has been mapped under the above SEPP which offers protections from mining activity that could impact BSAL land.

BSAL plays a critical role sustaining the State's $12 billion agricultural industry. A total of 2.8 million hectares of BSAL has been identified and mapped at a regional scale across the State. As shown in Illustration 2.2, neither the subject site nor the immediately adjoining land is mapped as BSAL.

1.4 Living and Working in Rural Areas Guideline

The *Living and Working in Rural Areas Handbook* (Learmonth et al. 2007) (the Handbook) publication presents a consolidation of best practices and strategies arising from managing land use conflict on the North Coast of NSW. The Handbook addresses land use conflicts and interface issues arising between agricultural practices and neighbouring residents.

LUCRA's were initially conceived in the Handbook by the Centre for Coastal Agricultural Landscapes in partnership with the Northern Rivers Catchment Management Authority as a tool to better manage potential land use conflicts between residential development and rural activities and environmental attributes/ assets on the NSW North Coast.

The Handbook, in particular *Chapter 6 Development Control*, provides guidance in the assessment and mitigation of potential land use conflict matters and have been used as a resource for this LUCRA. The Handbook outlines principles and measures to avoid or minimise the potential for land use conflict. Land use buffers (physical separation) are a common land use planning tool in reducing potential conflicts through the separation of certain uses. Though it is recognised that the purpose and application of buffers will vary depending upon individual circumstances and merit assessment. The Handbook recommends various general buffer distances (in metres) that may be considered as an

adequate separation between residential areas/urban development and rural activities/ primary industries, with the most relevant to this assessment being:

- Grazing of stock: 50 m.
- Sugar cane, cropping and horticulture: 300 m.
- State and regionally significant farmland: 300 m.

It is important however, to recognise that buffers should not always be the default position and they are part of the toolkit in reducing land use conflict. While buffers can form part of a management response, they do not lessen the need for sound strategic planning and appropriate identification of land release areas and rezoning.

Additionally, generic application of separation/ buffers do not replace the need for individual assessment of a proposal based on the specific characteristics of the site, locality and proposal itself. The site, proposal, and contextual specifics will inform the need for and range of potential management measures, and numeric separation buffers should not necessarily be used as an “easy” default position. Local and site-specific circumstances and application of relevant policies and specific guidelines will guide what measures are ultimately reasonable and appropriate in the circumstances. It is also noted that whilst complying with a default or standard buffer setback can help reduce conflict, it cannot guarantee the avoidance of conflict or interface issues completely. Chapter 3 of the Handbook also describes other management practices that could be used to reduce potential conflicts.

There are also a range of buffer types that can be utilised, in addition to standard physical separation, these include:

- Separation buffers: are the most common and involve establishing a physical separation between land uses where conflict could arise.
- Biological and vegetated buffers: created by vegetation planting and physical landscaping works. These can be a substitute where default physical separation distances cannot be fully achieved and/ or also help with visual amenity and also reduce chemical spray drift and dust.
- Landscape and ecological buffers: refer to the use of existing vegetation to help reduce impact from development and can be used to maintain and protect existing vegetation and habitat.
- Property management buffers: refer to the use of alterative or specialised management practices or actions at the interface between uses where the potential for conflict is high.

It is noted also that where new residential development/ dwellings are proposed on existing land with dwelling entitlement(s), or within land that has been through the strategic planning process and rezoned accordingly to residential, the setbacks and buffers normally required in a predominately rural setting may no longer be necessarily the most appropriate or practical response (if measures are necessary at all based on the site context). In these cases, discretion should be used to determine the level of potential conflict in this context and any necessary conflict avoidance strategies. Variations to buffer recommendations are permissible and ultimately the strategy adopted should consider the site-specific circumstances.

This LUCRA has been prepared given the proposed residential land use of the site and nearby/ adjoining rural land. The purpose of the LUCRA is to identify land use compatibility and any potential conflict between the proposed land use and neighbouring land uses and therefore, assists in the identification of the potential for future land use conflict and any necessary management measures that may be required. The LUCRA aims to:

- assess the effect of the proposed land use on neighbouring land uses;
- identify any potential risk of conflict between the proposed and neighbouring land uses;
- provide an understanding of any likely land use conflict;
- where deemed necessary, address land use issues and risks before a new land use proceeds or before a dispute arises; and
- where required, highlight or recommend strategies to help avoid or minimise conflict.

In order to achieve the aims outlined above, a four-step assessment process has been undertaken as follows:

1. **Information Gathering** – The site biophysical characteristics, the nature of the development proposed, and the surrounding land uses are described.
2. **Risk Level Evaluation** - Each proposed activity is identified, and an assessment of potential land use conflict level is assigned. The higher the risk level, the more attention it will require.
3. **Identification of Risk Mitigation Management Strategies** – Where required, management strategies are identified which can assist in lowering the risk of potential conflict.
4. **Record Results** – Key issues, risk level and recommended management strategies are recorded and summarised.

1.4.1 Factsheet: Landuse Conflict Risk Assessment Guide 2011

The DPI Factsheet *Landuse Conflict Risk Assessment Guide* was published in 2011 to provide guidance on practical measures to use when conducting a LUCRA and is primarily focused on conflicts affecting agricultural developments. The Factsheet identifies rural amenity issues as the most common land use conflict as listed below, followed by environmental protection issues. It also identifies direct impacts from neighbouring land uses on farming operations:

Rural Amenity issues:

- air quality due to agriculture and rural industry (odour, pesticides, dust, smoke and particulates);
- use and enjoyment of neighbouring land (eg noise from machinery); and
- visual amenity associated with rural industry (eg use of netting, planting of monocultures and impacts on views).

Environmental protection issues:

- soil erosion leading to land and water pollution;
- clearing of native vegetation; and
- stock access to waterways.

Impacts from neighbouring land:

- harassment of livestock from straying domestic animals;
- trespass;
- changes to stormwater flows or water availability; and
- poor management of pest animals and weeds.

The Factsheet confirms that it is the right of new rural residents, existing residents and rural producers alike to live in and enjoy rural environments. Furthermore, that to avoid and resolve disputes, information and communication are necessary to achieve informed and reasonable expectations and a mutual understanding of the needs of different lifestyles.

The Factsheet also confirms the important role a LUCRA can play in assessing and managing potential land use conflict. This LUCRA generally follows the suggested structure of the Factsheet which is consistent with the four-step assessment process outlined in The *Living and Working in Rural Areas Handbook*:

1. gather information about proposed land use change and associated activities;
2. evaluate the risk level of each activity;
3. identify risk reduction management strategies; and
4. record LUCRA results.

1.4.2 Primefact: An Interim Guideline: Buffer Zones to Reduce Land Use Conflict with Agriculture 2018

The *Buffer Zones to Reduce Land Use Conflict with Agriculture* (Interim Guideline) was produced by DPI in 2018 to provide further advice about incorporating appropriate buffer zones into developments, with suggested distances provided from which a development should be further evaluated for possible impacts. The Guideline notes the growing potential for community scrutiny of agricultural land uses as residential development continues to expand into areas that have long been associated with primary production, and as land typically used for agriculture purposes may be used less intensively. The Interim Guideline also mentions the NSW 'Right to Farm' Policy. 'Right to Farm' is a broad concept centred on the idea that primary producers should be able to undertake their lawful activities in accordance with accepted industry standards, without undue interference. The consistent application of separation distances is recognised in the Guideline as having a role in implementing this policy.

The Guideline reiterates that land separation continues to be an effective way of minimising potential land use conflict and of enabling primary producers to operate effectively with fewer constraints, while it also plays a key role in farm biosecurity and in managing impacts on the environment from agriculture. The Interim Guideline notes that generally buffers for new residential developments should not rely on adjacent rural landholdings to provide buffer zones to the new development. Though the Interim Guideline also outlines that a site-based merit assessment through the environmental impact assessment process is relevant to assessing a proposal and determining appropriate buffers.

The 2018 Guidelines states that *Living and Working in Rural Areas Handbook* is still the most comprehensive publication pertaining to buffer/ separation distance. However, this interim guideline provides further guidance and updates.

The suggested evaluation distances in the interim guideline between sensitive receptors and agricultural activities relevant to the Proposal are as follows:

- Stock grazing 50 m.
- Stock yards 200 m.
- Outdoor cropping/ sugar cane 300 m.
- Outdoor horticulture 250 m.

It is noted that this Interim Guideline outlines that these are suggested evaluation distances, and not prescriptive buffer or separation requirements. For example, the 200 m distance for stock yards comes from State Environment Planning Policy (Exempt and Complying Development Codes) 2008 (Codes SEPP). The environmental planning instruments or documents referenced in the Interim Guideline in relation to evaluation distances may identify separation distances, or in some cases, such as the Codes SEPP, the identified distances are not recommended separation distances but approval pathway triggers. That is, if a development falls within the distance prescribed in the Codes SEPP, a different planning pathway may apply (for example, a stock holding yard proposed within 200 m of a dwelling that is located on land on the opposite side of a road that separates the landholding, is not exempt development).

2. Information Gathering

2.1 Site and Proposal Overview

Details of the subject site and Proposal are summarised below:

Site details and address	Lot 4 DP751388, James Creek Road, James Creek.
LGA	Clarence Valley Local Government Area.
Zoning	Zone R1 – General Residential; Zone R3; Medium Density Residential; Zone E1 – Local Centre; as per CVLEP.
Development type	Staged residential subdivision and associated works, including low density residential lots, business and childcare lots, a residue lot, and construction of supporting infrastructure.

Illustration 2.1 shows the site locality and Illustration 2.2 shows an aerial image of the site overlaid with zoning and the proposed subdivision layout.

0 1 Km

Site Locality - Illustration 2.1

GeoLINK environment | engineering | planning | design

Land Use Conflict Risk Assessment - James Creek Road Residential Subdivision
3204-1141

Information shown is for illustrative purposes only
Drawn by: AB Checked by: RE Reviewed by: JTS
Source of base data: OpenStreet Map
Date: 07/11/2023
Revision: B

2.2 Site Description

Lot 104 DP 751388 (the site) is rectangular in shape and has an area of approximately 33 ha. It is situated mid-way along James Creek Road in James Creek, bounded by James Creek Road to the east and Austons Lane to the south, with large rural lots to the north and west. The lot to the north is densely vegetated. Approximately 650 m further to the west flows James Creek and approximately 1.3 km to the east flows Palmers Channel. Both waterways flow north, discharging into the Clarence River approximately 1.7 km north of the site.

James Creek is a small, rural locality on the north coast of NSW. The nearest townships are Maclean, Gulmarrad and Yamba, all within 10-15 minutes' drive of the site. Grafton is the nearest larger centre, located 45 minutes' drive southwest.

The site has been historically cleared and modified for agriculture, sugar cane production and cattle grazing. It is currently essentially clear of vegetation other than grass. The crest of a small hill is located slightly to the north-west of the centre of the site. From this crest, the land falls away in all directions with slopes on the site typically in the range of 3% to 10%.

The site is predominantly zoned R1 General Residential, with a portion zoned R3 Medium Density Residential. There is also a small area approximately 2,100 m² zoned E1 Local Centre. This area has the potential to include a neighbourhood shop or similar compatible commercial development.

No natural watercourses or water features occur.

The site occurs on the New Italy (ne) soil landscape (Morand, 2001), characterised by moderately deep, poorly/ imperfectly drained Grey Kurosols and moderately deep, imperfectly drained Yellow Kurosols throughout hillslopes and crests. Shallow (<100 cm), moderately well-drained Orthic Tenosols (Siliceous Sands) occur within rolling to steep low hills forming on the Maclean Sandstone Member of the Walloon Coal Measures.

Photographs of the site are shown at Plate 2.1 through to Plate 2.2.

Plate 2.1 Subject site: Cleared land proposed to be developed and adjacent northern vegetation

Plate 2.2 Subject site: Cleared land proposed to be developed and adjacent northern vegetation

2.2.1 Topography, Climate and Natural Features

The crest of a small hill is located slightly to the north-west of the centre of the site. From this crest, the land falls away in all directions with slopes on the site typically in the range of 3% to 10%. The site ranges in elevation from around 5 m AHD to 21 m AHD.

The site comprises grassland with limited and isolated stands/ scatters of native vegetation.

No natural watercourses or water features occur on the site.

The nearest weather station is located at Harwood Island (Harwood Sugar Mill) (6.6 km away); however, it does not offer the full range of climatic information. The next closest weather station with full statistics is located at Yamba Pilot Station (16 km away). Climate statistics from this weather station are provided at Figure 2.1. Whilst not reflecting the exact on-site/ local weather conditions, the results provide a reasonable indication of the general weather that can be experienced in the broader locality.

Summary statistics YAMBA PILOT STATION

A summary of the major climate statistics recorded at this site is provided below. There is also an extended table with more statistics available. More detailed data for individual sites is available.

Site information

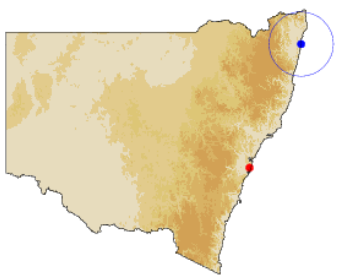
Site name: YAMBA PILOT STATION
Site number: 058012
Latitude: 29.43 °S **Longitude:** 153.36 °E
Elevation: 27 m
Commenced: 1877 **Status:** Open
Latest available data: 05 May 2022

Additional information

Additional site information

Nearest alternative sites

1. 058027 HARWOOD SUGAR MILL (10.6km)
2. 058052 TABBIMOBILE STATE FOREST (27.3km)
3. 058212 EVANS HEAD RAAF BOMBING RANGE AWS (27.8km)



View larger map

0 150 300 500 800m
Elevation - metres

View: Main statistics / All available | Period: Use all years of data | Text size: Normal / Large

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years		Plot	Map
Temperature																	
Mean maximum temperature (°C)	26.8	26.8	26.1	24.3	21.8	19.7	19.1	20.2	22.1	23.4	24.7	26.0	23.4	145	1877 2022		
Mean minimum temperature (°C)	20.3	20.4	19.3	16.5	13.3	10.9	9.8	10.5	13.0	15.5	17.5	19.2	15.5	145	1877 2022		
Rainfall																	
Mean rainfall (mm)	139.5	163.2	191.6	160.4	153.4	136.7	100.3	75.2	58.8	79.6	92.3	117.7	1463.2	142	1877 2022		
Decile 5 (median) rainfall (mm)	112.5	137.6	163.4	136.1	123.2	112.5	65.8	54.4	42.6	65.7	76.2	102.4	1407.3	145	1877 2022		
Mean number of days of rain ≥ 1 mm	10.3	11.0	13.5	11.5	10.5	8.8	7.5	6.6	6.4	7.7	8.2	9.0	111.0	145	1877 2022		
Other daily elements																	
Mean daily sunshine (hours)																	
Mean number of clear days	8.0	6.3	7.8	9.9	10.7	11.5	14.6	16.1	15.2	12.1	9.6	9.4	131.2	54	1944 2010		
Mean number of cloudy days	10.7	10.7	11.7	9.4	10.7	9.5	7.6	6.2	5.6	8.2	9.9	10.0	110.2	54	1944 2010		
9 am conditions																	
Mean 9am temperature (°C)	23.8	23.5	22.6	20.3	16.9	14.1	13.1	14.7	18.0	20.4	21.5	23.0	19.3	58	1907 2010		
Mean 9am relative humidity (%)	78	81	80	79	78	78	74	70	67	69	74	76	75	54	1944 2010		
Mean 9am wind speed (km/h)	13.6	13.8	13.7	12.9	11.9	12.7	12.5	12.7	12.9	13.5	12.9	12.7	13.0	54	1944 2010		
9am wind speed vs direction plot																	
3 pm conditions																	
Mean 3pm temperature (°C)	25.2	25.3	24.4	22.7	20.5	18.5	17.9	18.6	20.1	21.2	22.6	24.0	21.8	55	1944 2010		
Mean 3pm relative humidity (%)	75	75	74	71	67	65	61	60	64	70	72	75	69	54	1944 2010		
Mean 3pm wind speed (km/h)	21.1	20.6	20.6	17.9	15.4	15.4	15.7	18.1	21.2	23.0	21.9	21.5	19.4	54	1944 2010		
3pm wind speed vs direction plot																	

Figure 2.1 Monthly Local Climate Conditions and Statistics

Wind observations for Yamba are shown in the wind roses at **Figure 2.2** and Figure 2.3. Annual wind direction averages predominately tend from the south and southeast, with gentle westerlies also experienced in the morning. Winds predominately tend from south, southeast and northeast in the afternoon. Wind speed is mostly medium, with gentle and gusty conditions also experienced. However, it is noted that this stronger wind gust is likely influenced by the coastal location of the Yamba Station, with wind speeds generally less inland and therefore wind speeds at the site are likely to be low to medium.

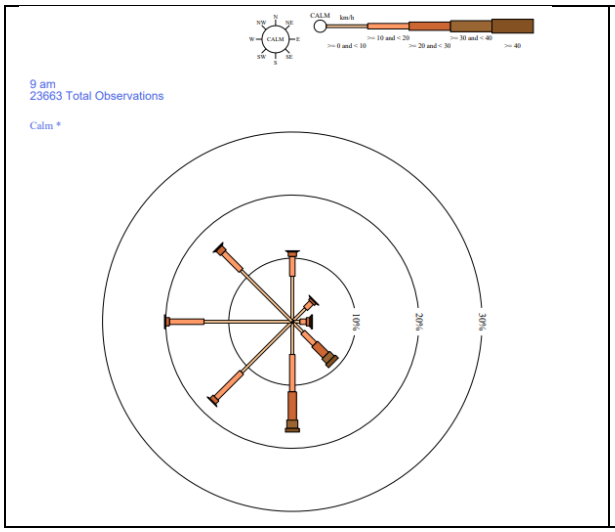


Figure 2.2 Annual Wind Rose 9 am

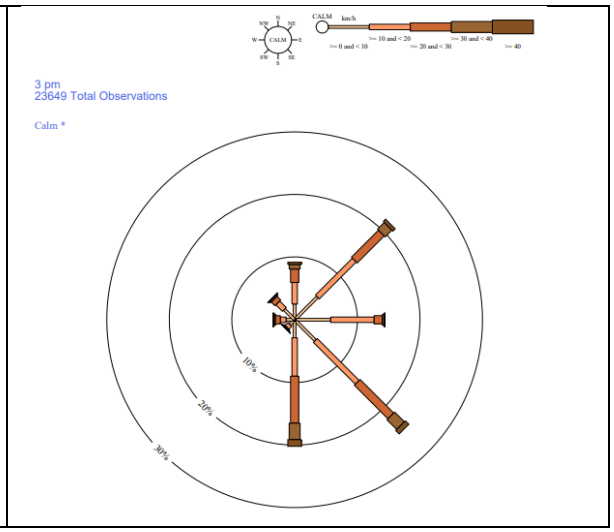


Figure 2.3 Annual Wind Rose 3 pm

2.2.2 Adjoining and Surrounding Land Uses

The site sits on a large property within a largely rural context, with village type and large lot residential urban development present in the locality. Surrounding land is mostly rural in character and comprises grazing land, cropping and horticulture, and interspersed rural dwellings/ hobby farms, with a notable large lot residential development area directly to the south.

The following land uses adjoin the boundaries of the site:

- To the north is a rural property within the RU2 Rural Landscape zone, comprising forested land which extends along the entire northern boundary (refer to Plate 2.3). The nearest dwelling to the north is about 300 m away.
- To the east is James Creek Road. Beyond the road is rural land zoned RU1 Primary Production, comprising open grassland and scattered trees, drainage lines and minor intermitted waterbodies. Further to the east, commencing about 550 m from the site, are crops (sugar cane) and horticulture. The nearest dwelling to the east is approximately 200 m away. There is a domestic scale stockyard/ holding pen located on the eastern side of James Creek Road (refer Plate 2.9 to Plate 2.10 below).
- To the south comprises of R5 Large Lot Residential zone that has been developed accordingly with dwellings. The nearest dwelling in this zone is about 120 m south of the boundary.
- To the west is rural land zoned RU2 Rural Landscape. The adjoining western lot is a medium sized holding of about 33 ha and occupied by a dwelling (about 220 m to the northwest of the subject site). The land is partly forested with remanent vegetation, including a section along the western boundary, and partly grassland used for cattle grazing. Approximately 20-30 cattle have been previously observed grazing the open pasture during a site inspection in April 2022. In a submission to Council from an adjoining land holder, it is advised that this lot forms part of a 700-acre farming operation upon which a herd of 80 breeders together with sugar production is undertaken. Pasture improvement is also already actively undertaken as part of farming activities with plans for further fodder crops and horticulture (e.g. macadamia nuts). Currently, the activity present along the western interface is grazing land, with interspersed/ pockets of trees.
- Further to the west is more rural land and also environmental conservation zoning that covers swampy forests/ wetland areas. A view of historical aerial imagery indicates that the land use activity on this land has not materially changed for decades. This land is more than 250 m from the boundary with the development site, and is largely contained within the Yaegl Nature Reserve,

which would suggest that it is unlikely to be able to support or be used for intensive agricultural activity.

The zoning and land uses present in the surrounding area, including that described above and dwellings surrounding the site, are depicted in Illustration 2.2.

Consultation

Following lodgement of a previous iteration of the development application in April 2023, documentation pertaining to the proposed development was placed on public exhibition. The Proposal attracted a number of submissions, primarily submitted by landholders and residents of the James Creek locality.

A meeting was convened by CVC on the afternoon of Thursday, 18th of May 2023 as an opportunity for the submitters to discuss their specific concerns related to the Proposal with the applicant. This meeting was attended:

Murray Lane, CVC, Manager Development and Land Use Planning.

James Hamilton, CVC, Coordinator Development Services.

Ben Bancroft, CVC, Development Engineer.

Chris Dear, CVC, Development Engineer.

Alex Clark.

Rachel Health, PlanIt, Senior Town Planner (acting on behalf of CVC).

Mike Willoughby, WM Developments, Director/ Engineer for the applicant.

Peter Bell, Place Design Group, Planning Principal for the applicant.

Duncan Thomson, GeoLINK, Principal Environmental Engineer for the applicant.

Michelle Erwin, GeoLINK, Senior Civil Engineer for the applicant.

Several owners of the land adjacent/ close to the subject site.

Representatives of the James Creek Residents Action Group.

After a brief background of the proposal status given by Council, the submitters were given time to voice their concerns regarding the Proposal. This included provision of details of the particular activities carried out on the adjoining land which the adjoining landowners believed to be in conflict with the proposed development on the subject site. Time was also given to consultants engaged by the applicant to explain the proposed design, specifically detailing how the design addressed Council's development criteria, and how the design response would eliminate, minimise or mitigate any impacts to the surrounding environment.

These discussions and the previous DA submissions, particularly those that outlined how adjoining farmland was used, have assisted to inform the current Proposal and design response. Amongst other things, the revised design subject to this DA has incorporated additional setbacks/ buffers from adjacent rural land in response and the LUCRA has been updated having regard to the neighbours' concerns and the types of rural activity they conduct, particularly in regard to the adjoining western rural interface.

Illustration 2.2There are no other sensitive or intensive land use types within 300+ m of the site. Plate 2.3 to Plate 2.10 show the land use characteristics at the west, north and south boundaries of the site, as described above.

Plate 2.3 Vegetated land adjoining the northern boundary interface

Plate 2.4 Large Lot Residential Land/ Development to the South

Plate 2.5 Rural land to the west (partly forested section)

Plate 2.6 Rural land to the west (edge of forested area opening to grazing land beyond)

Plate 2.7 Open western interface to cattle grazing land

Plate 2.8 Scattered trees along western boundary with grazing of cattle beyond

Plate 2.9 Cattle yard/ pen east of James Creek Road

Plate 2.10 Cattle yard/ pen east of James Creek Road

2.2.3 Consultation

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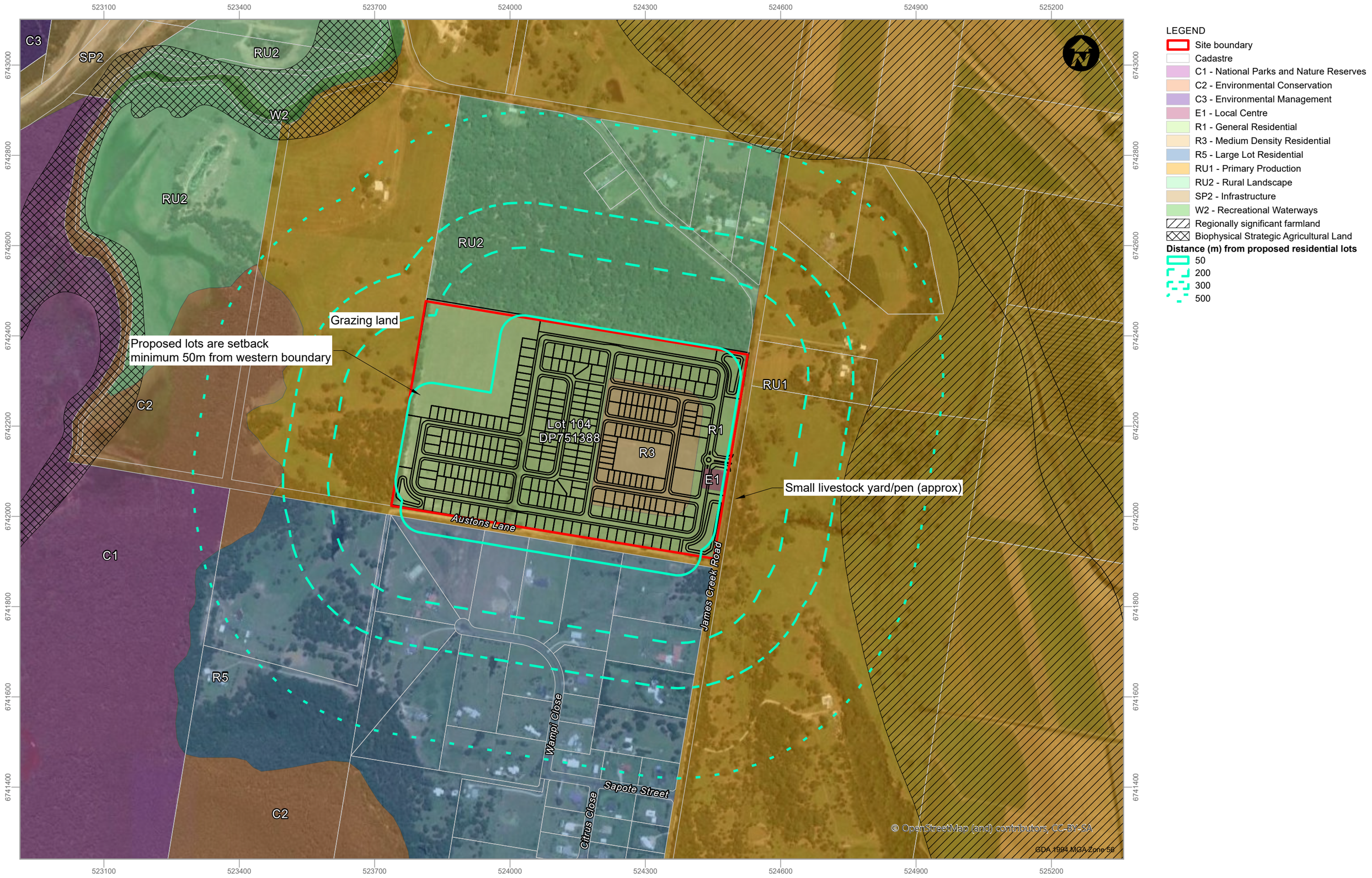

0 150 Metres

Site Zoning and Surrounding Land Use Context - Illustration 2.2

GeoLINK environment | engineering | planning | design

Land Use Conflict Risk Assessment - James Creek Road Residential Subdivision
3204-1141

Information shown is for illustrative purposes only
Drawn by: AB Checked by: AB Reviewed by: JTS
Source of base data: Google Maps
Date: 07/11/2023
Revision: B

2.3 Potential Land Use Conflict

2.3.1 General Potential Rural Interface Conflicts

The proposed development of a site should consider the surrounding land use context and where necessary be designed to minimise instances of incompatibility such that any important agricultural values or farming practices that may occur in an area are not inhibited, or adversely affect the amenity of future residents. Where such instances do arise, measures to ameliorate potential conflicts may be necessary.

Conflict between residential development and agricultural land uses (particularly intensive forms) is most likely to occur where residential land uses directly abut, or are close to, active farmland and primary production such that they are likely to be affected by regular agricultural activities, particularly where these activities may be intensive. Conflict between the proposed residential development of the site and existing agricultural activities is a potential issue at this site given the proximity to adjacent rural land and agricultural activities (i.e. cattle grazing, production of crops or fodder etc). The likelihood is not expected to be high however, given measurements incorporated into the design of the subdivision to control and minimise potential external impacts and also the nature and scale of adjoining agricultural activities and compared to those located further away. Furthermore, the area is zoned for residential/ urban purposes (meaning there is a reasonable expectation for development to occur) and there are no obvious high conflict activities present in close proximity.

Generally, potential conflict can arise from the use of agricultural chemicals, noise, dust and odour generating activities. Adverse impacts of the proposed future residential development of the site on farmland could include traffic, noise (vehicles), trespass, rubbish dispersal, vermin control, sediment and stormwater run-off. Complaints from new residents about proximal and intensive agricultural activities can also cause conflict and put pressure on agricultural uses if they cannot effectively co-exist.

When considering potential land use conflict between residential and agricultural activities it is important to also recognise that all agricultural activities:

- should incorporate reasonable and practicable measures to protect the environment in accord with the *Protection of the Environment Operations Act 1997* (POEO Act) and associated industry specific guidelines; and
- are legally conducted as required by other legislation covering workplace health and safety, and the use and handling of agricultural chemicals.

Nevertheless, certain activities practised by even careful and responsible farmers/ operators may result in a nuisance to adjacent residential areas, for example, unavoidable odour drift and noise impacts. People's sensitivity to potential nuisance/ impacts can also be variable and subjective.

Possible typical conflicts that can arise between agricultural enterprises and residential development are provided in **Table 2.1**.

Table 2.1 Typical Conflicts that can Occur Between Agriculture/ Rural Activities and Nearby Residential Uses

Concern/ Conflict Issue	Common Causes
Noise	■ Dogs, general livestock noise. ■ Equipment, pumps, plant, spray machines, transport. ■ Ancillary equipment associated with on-farm processing. ■ Livestock processing. ■ Extractive industry processes (excavation, blasting etc).

Concern/ Conflict Issue	Common Causes
Odour and Dust	■ Soil disturbance and excavation. ■ Excess/ concentrated manure. ■ Agricultural fertilisers and chemicals. ■ Intensive animal industries. ■ Management and application of effluent to pasture.
Health concerns	■ Chemicals. ■ Spray drift. ■ Smoke.
Water	■ Access. ■ Pumping. ■ Quantity. ■ Runoff and pollution.
Smoke and ash	■ Burning off.
Visual amenity	■ Large structures. ■ Netting. ■ Greenhouses.
Nuisance	■ Stray dogs. ■ Vandalism. ■ Trespass. ■ Noxious and environmental weeds.

The Handbook (in particular Chapter 6 Development Control) provides guidance in the assessment and mitigation of potential land use conflict matters and has been used as a resource for this LUCRA where applicable.

The following additional guidelines and other local Council DCPs have also been considered as reference material and informed this assessment:

- *Buffer Zones to Reduce Land Use Conflict with Agriculture* – NSW Department of Primary Industries (2018).
- *Land Use Conflict Risk Assessment Guide* – NSW Department of Primary Industries (2011).
- *Planning Guidelines: Separation Agricultural and Residentials Land Uses* – The State of Queensland, Department of Natural Resources 1997.
- Lismore Development Control Plan (Chapter 11).
- Nambucca Development Control Plan (Section F1.3).

2.3.2 Site-Specific Observations and Potential Conflicts

Conflict between the proposed residential development of the site and agricultural activities is of low to medium risk/ consequence in this context given the design of the proposed development, the nature and scale of the adjoining agricultural activity, and the known expectation for residential/ urban development to occur given the site zoning and strategic land use planning proposes that has already occurred.

In Summary:

- There is no anticipated risk of rural land use conflict to the north given the adjoining block is heavily forested and no future activity for agriculture use is envisioned (ie. the vegetation is unlikely to be cleared for the purpose of agricultural use). However the design provides for a 50m buffer to this interface nonetheless.

- There is no notable rural land use conflict risk to the south, given the interface with a large lot residential development. Some of these properties may have animals, including limited numbers of livestock for hobby purposes, however this would be more akin to pets and lifestyle/ hobby farm situations given the restrained size of lots (being about 2 ha).

- The eastern interface does not present any immediate rural activity or high risk of conflict. The proposed frontage setback/buffer, James Creek Road, and border vegetation provides adequate separation from grazing land and the cropping land beyond, which is well separated from the site and satisfies the recommended separation buffer in the Handbook. The small cattle yard/ pen located east of James Creek Road would be separated from the development site by more than 80 m, including the 23 m wide road reserve and a further 50 m setback from the nearest lot to the road frontage, and is expected to be used only intermittently. A range of soft landscaping/planting is proposed along the frontage of the development site.

- The western boundary interfaces with open forest and pasture grazing land. The forested section is established and approximately 100 m wide by 200-220 m long (along the boundary). The adjoining landowners advised in their previous DA submission that a rotational grazing system is employed, meaning at times the stocking density can be higher. Furthermore, the adjacent area may be utilised by stock for shelter (in the open forest) or during times of flood, when the lower sectors of the property are subject to inundation/ flooding. Open pasture adjoins the northern half of the western boundary, with cattle able to roam free to the boundary fence. A site inspection in April 2022 confirmed that the primary use appears to be cattle grazing, with around 20-30 cattle observed in the distance. However, the adjoining owner has advised up to 80 head of cattle could be run in this paddock. No significant agricultural activity, odour or noise was observed at the time and there were no cattle yards, sheds, stock transporting infrastructure or other intensively used facilities ancillary to livestock grazing activities present or within view of the western boundary interface. This is understood to not have materially changed. The proposed development provides a minimum 50 m setback to this boundary.

- Information provided in the previous DA submission from the adjoining landowner confirms that, depending on seasonal conditions, they have capacity to run up to 80 breeders over this area, which is part of a total area of 88 ha. Details of the paddock rotation arrangements have been provided by the landowner, who advised that the paddock directly adjoining the proposed subdivision is occupied from approximately eight months of the year, outside of which typical maintenance activities may include fencing, slashing, fertilising, weed management and so on. While the activities within this area would not seem to be intensive nor potentially offensive (in comparison to intensive livestock activities such as dairies, feedlots, pig or poultry farms), there is potential for these activities to affect future adjoining residential uses. It has also been advised the pasture improvement, fodder crops, and weed management via spraying occur.

This rural activity could have the potential to result in the following conflict points with new residential uses (the likelihood of occurrence and potential consequence/ risk of such matters specific to this local context/ interface is assessed in **Section 3**):

Noise:

- Noise emissions can adversely affect residential amenity and enjoyment.
- Noise emissions could occur from livestock, marking and weaning calves, and noise radiated by farm vehicles, machinery, power-tools, gates and other associated/ ancillary farm infrastructure such as pumps, ramps, loading facilities, yards and sheds (of which there are none observed nearby) and vermin control (e.g. use of firearms).

Dust:

- Dust emissions can adversely affect residential amenity and enjoyment. Dry periods, land cultivation/ frequent machinery movements, or potential overstocking of livestock could result in related dust and air quality impacts.

Odour:

- Livestock (including the rare occasion if an animal carcass is present), wet/ boggy areas, and excess accumulation of dung (and flies) can cause potential odour if herds and pastures are not managed appropriately. Fertilizer application could also potentially cause odour. Depending on wind conditions and proximity, these odours can drift and affect residential amenity and enjoyment.

Spray drift and residue:

- Graziers if they are not practicing organic grass-fed production can use chemicals. Farms may use pesticides and herbicides that are applied via spraying. Primarily if and when these are employed, they are done so in ideal conditions i.e. without strong winds, meaning sometimes this may take place at night. However, the potential for off-target movement of agricultural chemicals (spray drift) can be a cause for concern to residents in proximity. Concerns generally relate to agricultural chemical exposure, but also due to detection of odours associated with the chemical. No aerial agricultural spraying is known to occur in the immediate area.

- It has been advised that spot and broadcast spraying is undertaken at the adjoining property. Spraying at pressure increases the proportion of small droplets from a nozzle which are prone to drift via wind. Small droplets can travel long distances in air currents and can cause damage to other crops, and the environment. The adjoining landowner advised they 'regularly' use a pressurised boom spray on a tractor for weed control activities. Boom spraying has the potential to drift depending on the conditions, however given it is being primarily used for targeting ground/weed level chemical application, this reduces the likelihood of direct compared to more elevated or horticultural type spraying. Spot spraying of weeds by low pressure knapsack or hand lance from a vehicle are also common potential spray requirements associated with certain farming activities. This method is targeted and does not present a significant risk of spray drift to the proposed adjoining residential development. There are codes of practice for agriculture and the use of chemicals; however, deviation from codes of practice can occur, and by the same token, complaints may occur despite compliance.

Biosecurity:

- Introduction of diseases and parasites.
- Introduction and spread of weeds.

Domestic Animals:

- Domestic animals, including dogs, may get lost and chase or attack livestock.
- Use of poisons for vermin control may result in accidental poisoning of domestic animals.

Surface water and sediment laden runoff:

- Excessive irrigation or heavy rainfall could cause sediment, fertiliser or chemical laden surface water runoff to occur and impact land and the environment downstream. Alternatively, the proposed urban development will alter land surface characteristics and the hydrological balance on the subject site. The increase of impermeable surfaces and changes to drainage patterns can accelerate soil erosion, siltation and sedimentation, result in rubbish dispersion on adjoining land, and increase the risk of flooding if not appropriately designed and managed. Techniques to alleviate conflict due to downstream effects of the proposed development include suitable erosion,

sediment and stormwater control/ treatment during the construction and operational stages of the development.

Traffic and access:

- Agricultural machinery/ vehicles could cause traffic delays or interruptions if slow moving or heavy vehicles frequent the area/ use the same collector road and if adequate design/ updates are not undertaken. Similarly, new residential development will generate increased traffic movements that may impact primary industry traffic access and movements if appropriate road infrastructure is not provisioned.

3. Land Use Conflict Risk Assessment

3.1 Potential Activities, Issues and Risk

This assessment primarily relates to issues arising from potential conflict between agricultural practices/ activities and the proposed residential subdivision. Potential risks or impacts that may give rise to possible land use conflicts have been considered and evaluated in the context of the site, surroundings and land use policy setting to establish if any minimisation or management measures may be required.

In this instance, the main potential for conflict to arise would be through perceived or actual impacts from adjoining grazing and farming activities, particularly to the west, on future residential uses/ development. All potential conflict points identified in **Section 2.3** have been evaluated for risk in the following sections.

3.2 Risk Evaluation and Ranking

A risk assessment matrix is used in LUCRAs to rank the potential land use conflicts in terms of significance. The matrix assesses the environmental/ public health and amenity impacts according to the:

- probability of occurrence; and
- severity/ consequence of impact.

The procedure of environmental/ public health and amenity hazard identification and risk control are performed in three stages.

1. Environmental/ public health and amenity hazard identification;
2. Risk assessment and ranking;
3. Risk control development.

Procedure:

1. Prepare LUCRA Hazard Identification and Risk Control table/ form.
2. List all hazards associated with each activity.
3. Assess and rank the risk arising from each hazard before “controls” are applied on the LUCRA form.
4. If required, an unacceptable risk rating is indicated, develop controls that minimise the probability and consequence of each risk using the five level methods.
5. Re-rank each risk with the control in place to ensure that the risk has been reduced to an acceptable level. If the risk ranking is not deemed to be acceptable, consideration should be given to whether the proposed activity should be allowed to proceed or whether additional management is required.

3.2.1 Risk Assessment Probability and Severity

Activities with the potential to cause conflict are assessed and ranked using the risk assessment/ ranking matrix shown in Table 3.1.

It is necessary to differentiate between an 'environmental hazard' and an 'environmental risk'. 'Hazard' indicates the potential for harm, while 'risk' refers to the probability of that harm occurring. For example, the presence of chemicals stored in a building is a hazard, but while the chemicals are stored appropriately, the risk is negligible.

The risk ranking matrix yields a risk ranking from 25 to 1. It covers each combination of five levels of 'probability' (as defined in Table 3.2) and five levels of 'severity' or 'consequence', (a number 1 to 5 as defined in Table 3.3) to identify the risk ranking of each impact. For example, an activity with a 'probability' of D (unlikely) and a 'consequence' of 3 yields a risk rank of 9.

A rank of 25 is the highest magnitude of risk that is a highly likely, very serious event.

A rank of 1 represents the lowest magnitude or risk, an almost impossible and very low consequence event.

Generally, a risk rating of 1-10 is considered an acceptable risk that does not need intervention; whilst a risk ranking of 11-25 (highlighted red) is considered an unacceptable risk and likely requires management/ mitigation measures to help avoid or reduce potential risk to an acceptable level.

Table 3.1 Risk Ranking/ Assessment Matrix

PROBABILITY	A – Almost Certain	B – Very Likely	C - Possible	D - Unlikely	E - Rare
CONSEQUENCE					
1 – Severe	25	24	22	19	15
2 – Major	23	21	18	14	10
3 – Moderate	20	17	13	9	6
4 – Minor	16	12	8	5	3
5 – Negligible	11	7	4	2	1

Table 3.2 Probability of Occurrence

Level	Descriptor	Description
A	Almost certain	Common or repeating occurrence.
B	Likely	Known to occur or 'it has happened'.
C	Possible	Could occur or 'I've heard of it happening'.
D	Unlikely	Could occur in some circumstances but not likely to occur.
E	Rare	Practically impossible.

Table 3.3 Measure of the Consequence/ Severity of Impact

Severity	Description and Implications
Severe (Level 1)	■ Severe and/ or permanent damage to the environment. ■ Irreversible even with management. ■ Odours so offensive people are evacuated or leave voluntarily. ■ Many public complaints. ■ Almost certainly contravenes protection of the environment and operations act (POEO act) and the conditions of Council's licenses and permits.
Major (Level 2)	■ Serious and/ or long-term impact to the environment. ■ Long-term management implications. ■ Some public complaints, impacts pass quickly. ■ Likely contravenes POEO act and the conditions of Council's licenses and permits.
Moderate (Level 3)	■ Moderate and/ or medium-term impact to the environment. ■ Some ongoing management implications. ■ Broader public unaware and no, or only few localised, complaints. ■ Impacts generally pass quickly. ■ May contravene POEO act and the conditions of Council's licenses and permits.
Minor (Level 4)	■ Minor and/ or short-term impact to the environment. ■ Can be effectively managed as part of normal operations. ■ No complaints. ■ Does not contravene POEO act or the conditions of Council's licenses and permits.
Negligible (Level 5)	■ Very minor impact to the environment. ■ Can be effectively managed as part of normal operations. ■ No measurable or identifiable impact on the environment.

Each proposed activity is recorded on Table 3.5 and an assessment of potential land use conflict level is assigned accordingly. Ranking is given before and after any relevant ameliorating measures are applied to mitigate the given activity impacts. The higher the risk level, the more attention/ management it will likely require in order to reduce the ranking level. Risk rankings are derived from the risk ranking tables above.

Table 3.4 below provides an overview of the site features and conditions that can influence the potential level of conflict. These potential factors can influence the potential level of conflict and therefore inform the subsequent risk assessment. The areas of potential conflict outlined in Table 3.4 will then be addressed through the risk/ hazard assessment and management measures/ controls outlined in Table 3.5.

Table 3.4 LUCRA Site Assessment and Influential Factors

Site Feature/ Element	Condition/ Comments	Potential for Conflict
Residential Development / Buffer Distances	Default buffer distances to residential development from the following activities identified in the Handbook/ Primefact include: ■ Grazing of stock: 50 m. ■ Sugar cane, cropping and horticulture: 300 m. ■ State and regionally significant farmland: 300 m. ■ Stockyards: 200 m. ■ No horticulture/ plantations/ cropping is present within 300+ m of the proposed residential lots. This satisfies the buffer recommendation. ■ The nearest mapped regionally significant farmland is about 290 m away from the site frontage and more than 300 m from the nearest proposed residential lot. This satisfies the buffer recommendation of 300 m. Refer to Illustration 2.2. ■ A 50 m buffer is proposed from all residential allotments to adjoining rural land to the north, east and west and in the case of the eastern boundary this buffer is further complemented by the 23 m road reserve. This is consistent with the Guidelines. ■ The land to the west is used for stock grazing and associated pasture/ weed management. The inclusion of the 50 m buffer within the development site satisfies the buffer recommendation. This separation buffer should be further enhanced with vegetation to further minimise risk, including potential spray drift.	Adjacent grazing, pasture management, combined with the potential congregation of stock within the forested area and a small stockyard to the east, presents a moderate/ medium potential conflict.
Site Location: Vehicular Access	The subject site would be accessed off James Creek Road. This is the main road that local rural activities use. Hence there could be conflicts between heavy and slow-moving vehicles and future residents' cars. Measures to reduce any potential traffic impacts would be addressed through the design, development and traffic assessment component of this DA, including any necessary road upgrades and intersections.	Low to moderate
Exposure and wind	The majority of wind likely to be experienced in the area (refer to Wind Roses at **Figure 2.2** and Figure 2.3) would be of moderate speed and primarily from the south or east, or north east.	Low-moderate
Run-on and Seepage, Site Drainage and Water pollution	Run-on or seepage on adjoining farmland will be negligible. The land is undulating however there are no defined drainage lines water courses present on site.	Low
Agricultural Chemical Spray Drift	Spot and broadcast spraying occurs on the adjoining property, including via tractor and boom. Given prevailing wind conditions and the 50 m distance buffer significant spray drift is not expected, however could occur and therefore vegetation should be included in the buffer to minimise this risk.	Low-moderate (depending on location and application method)
Odour	With the range of rural activities in the area (e.g. cattle grazing, use of spray implements, fertilizer application) there	Low-moderate

Site Feature/ Element	Condition/ Comments	Potential for Conflict
	is the potential for activities to impact on adjoining residential uses. Areas of surface saturation could increase odour, however wet and low-lying areas are more than 50 m from the proposed residential lots, although cattle do periodically utilise the forested area to the west for shelter and flood refuge. The stock yard/ pen east of James Creek Road does not appear to be of a commercial or intensive scale or used for long-term holding. Provision of the recommended 50 m buffer, combined with the road width and presence of vegetation would adequately reduce the risk of odour.	
Noise	The likelihood of noise impacts from the existing agricultural activities is relatively low given there would be intermittent use of tractors and vehicles, general noise of grazing livestock, and there is a lack of proximal ancillary farm infrastructure (such as sheds, cattle yards and loading infrastructure). The 50 m buffers, combined with vegetation and road reserve, would also ameliorate potential impacts from noise generated as part of agricultural activities on the adjoining property. No significant noise is expected.	Low-moderate
Dust	The main sources of dust from nearby rural activities could include soil cultivation, tractor use, potential over-stocking (though unlikely), and transport movements. These activities in the local context of the adjoining land are not considered high risk in relation to generating airborne particulate matter (dust). Further, wind speeds are not expected to be significant at this location. The dominant wind directions would also minimise direct exposure to potential dust. Potential effects are further reduced with the inclusion of the 50 m separation buffers and a further barrier provided by vegetation that can be implemented along the western buffer.	Low
Residential subdivision design	The residential subdivision has been designed to make efficient use of land resources zoned for such purposes. The layout includes an outer perimeter road along the northern, east and west boundaries, and the provision of a 50 m buffers as per the guidelines, adequately responds to minimising potential impacts. The development will comply with Council policy and satisfies the DCP. All residential dwellings will be adequately setback from street frontages, side and rear boundaries. All lots will be adequately fenced. The development would be adequately engineered and designed to manage traffic and stormwater quality and quantity.	Low

Table 3.5 Hazard Identification, Risk Evaluation, Mitigation/ Control & Ranking

Activity	Identified Potential Issue/ Hazard	Risk Ranking	Mitigating Factors and/ or Control Methods	Residual and/ or Controlled Ranking
Noise (livestock grazing and ancillary farm activity/infrastructure)	Potential noise from livestock, including marking and weaning calves on the western property and from the cattle yard/ pen to the east. Livestock may also utilise the nearby forested area west of the boundary as flood refuge and/ or shelter/ shade. Noise produced by gates, machinery (e.g. chainsaws, power-tools, spray rigs, pumps), farm vehicles (e.g. tractors and ATVs) and other associated/ ancillary farm infrastructure (e.g. pumps, irrigation, cattle ramps, loading facilities, yards and sheds). Potential noise associated with pest/ vermin control and use of firearms, sometimes at night.	C3 = 13 unacceptable.	No significant noise is expected, however common background farm noise would be intermittently present. The immediately adjoining farm activity is not considered high intensity or concentrated, and there is no nearby ancillary farm infrastructure expected to generate high additional noise. Cattle may congregate in the forested area for shelter and flood refuge; however, this would also be on an intermittent, impermanent basis and subject to pasture/ paddock rotation. General cattle noise could at times be considered a nuisance, though is not considered unreasonable or adverse and can generally be tolerated. The small cattle yard/ pen to the east is of a modest scale. Its use is anticipated to be intermittent, and it shows no signs of high use. Occasional livestock noise is not unreasonable and would generally be tolerable in this context. Likewise, noise from vehicles and machinery would be intermittent, although there is potential for tractors to be used at night to achieve suitable conditions to minimise spray drift, impacts on bees etc. The use of firearms is strictly regulated, and users must attend mandatory training and be appropriately licenced. The provision of a 50 m separation buffer as recommended by the guidelines, combined with vegetated enhancement along the west, and the road reserve and a range of soft landscaping along the	C4 = 8 acceptable.

Activity	Identified Potential Issue/ Hazard	Risk Ranking	Mitigating Factors and/ or Control Methods	Residual and/ or Controlled Ranking
			eastern frontage, will effectively reduce potential issues and conflict associated with noise.	
Dust generation	Dust emissions can adversely affect residential amenity and enjoyment. Dry periods, land cultivation/ frequent machinery movements, or overstocking (though unlikely) could result in related dust and air quality impacts.	C4 = 8 acceptable.	Dust generation as a result of agricultural activities on the adjoining property are not anticipated to be of a scale or intensity to result in unacceptable effects on residential premises. Pasture/ paddock rotation (confirmed by landowner) would periodically rest areas and minimise potential damage to/depletion of ground cover/ pasture. The provision of a 50 m separation buffer as recommended by the guidelines, including a vegetated component to the western boundary and general soft landscaping to the eastern would effectively reduce potential issues and conflict associated with possible dust drift.	D4 = 5 acceptable.
Odour	Livestock activity/ presence (including if an animal died nearby), wet/ boggy areas, and excess accumulation of manure can cause potential odour which could drift. There is also the potential that conditions could result in increased fly population. Odours associated with application of herbicides for weed management and/ or fertiliser. It is noted that some agricultural chemicals contain strong odours to enable easy identification over a long distance. This can cause concern even where extremely low levels of chemical may be present.	C3 = 13 unacceptable.	The subdivision design incorporates measures that are appropriate to mitigate any potential impacts from odour as a result of adjoining farming operations, given the scale and intensity of activities. The 50 m separation buffer combined with a vegetated component within the western boundary of the development site will act as a screen and further reinforce the effectiveness of the distance between the source of the potential odour and the receptor. The 50 m buffer to the east and between the cattle yard/ pen is increased another 23 m by the road reserve. It is also set back a further 5-10 m from the road reserve. This, combined with existing vegetation and soft landscaping along the eastern frontage of the development site is sufficient considering the nature and scale of activities at this site.	C4 = 8 acceptable.

Activity	Identified Potential Issue/ Hazard	Risk Ranking	Mitigating Factors and/ or Control Methods	Residual and/ or Controlled Ranking
	Although, no significant odour is expected there is some potential as a result of wet and/ or warm weather conditions, wind direction or when cattle 'camp' in the vicinity of the forested area.		The planted/ vegetated buffer (using appropriate species, including native flowering species can help minimise odour), as recommended, would assist in reducing any potential occurrence of odour. Effective animal carcass disposal carried out in accordance with relevant Department of Primary Industry standards would prevent potential problems associated with odour or other health and environmental impacts.	
Runoff and erosion management during development construction	Potential for sediment laden or contaminated runoff and erosion if not effectively managed during construction.	C3 = 13 unacceptable.	Sedimentation and erosion controls will be implemented for the construction phase of the development.	D4 = 5 acceptable.
Surface water changes and stormwater and management from proposed development	Increase of impermeable surfaces and stormwater runoff and potential risk of erosion during heavy rain events, particularly after dry events Need for appropriate integration and management of stormwater and avoidance of potential impacts to receiving environment and catchment.	C3 = 13 unacceptable.	Stormwater runoff would be captured by drainage system/ infrastructure, with adequate quality and quantity targets achieved. The design of the residential development would address stormwater management and drainage in accordance with Councils Development Control Plan. To prevent offsite issues as a result of increased stormwater generation, a stormwater management strategy has been designed for the proposed development that incorporates the following measures: – Earthworks will reprofile the development site to redirect run-off and reduce the catchment area which flows into neighbouring land. – Substantial stormwater management devices for water treatment, detention and infiltration have been designed to intercept runoff and provide appropriate stormwater management.	D5 = 2 acceptable.

Activity	Identified Potential Issue/ Hazard	Risk Ranking	Mitigating Factors and/ or Control Methods	Residual and/ or Controlled Ranking
			– The design aims to mimic the current situation regarding the physical discharge of surface water across the boundary and physical measures will be incorporated to disburse runoff across a wider area consistent with the existing drainage to avoid concentration of runoff. – The post-development peak flows will be substantially lower than the pre-development peak flows for all design storm events. This will reduce the risk and likelihood of scour and erosion within the downstream farmland and is over-and-above standard requirements. – Stormwater treatment modelling using industry standard MUSIC software indicates that Council's treatment requirements will be met, and pollutant loads leaving the site in the post-development situation will be less than in the pre-development situation. – A long-term water balance simulation indicates that the combination of rainwater reuse, evapotranspiration, and infiltration into the underlying soils from the bioretention basin and infiltration trench, will result in the average annual volume of surface water runoff onto the adjoining property in the post-development situation being within 1% of the pre-development situation.	
Surface water and sediment laden runoff	Potential for sediment laden or contaminated runoff from up-slope agricultural practices into residential areas and impacts on water quality, including stock water, as a result of increased pollutants.	D5 = 2 acceptable.	There are no adverse impacts expected given the topography of the land and setbacks to residential lots.	D5 = 2 acceptable.

Activity	Identified Potential Issue/ Hazard	Risk Ranking	Mitigating Factors and/ or Control Methods	Residual and/ or Controlled Ranking
Rubbish dispersal	Potential for rubbish dispersion onto adjoining land from residential development.	C3 = 13 unacceptable.	The residential subdivision will be serviced by Council's waste collection service. Measures will also be incorporated into the stormwater management system to capture litter and rubbish.	D4 = 5 acceptable.
Use of Agricultural/ Horticultural Sprays	Spray drift associated with weed management and application of herbicides has the potential to adversely affect the comfort, health and safety of persons in non-targeted areas. There can also be perceived risk related to this practice being nearby. The main risk is to the nearby open adjoining western interface where there is open grassland and weed management activities. Given the use of ground pasture/weed chemical application it is assumed that spray drift would generally be limited.	C3 = 13 unacceptable.	All landholders are required to incorporate reasonable and practicable measures to protect the environment in accordance with the POEO Act and associated industry specific guidelines and are subject to workplace health and safety, and guidelines for the use and handling of agricultural chemicals. The 50 m separation buffer as recommended and inclusion of vegetation in the buffer between farming activities to the west and the nearest proposed residential lots (those located within the stage 4 area of the development) would act as an effective barrier to assist in reducing/ capturing potential occurrences of spray drift. The separation to the east, combined with existing vegetation and proposed soft landscaping, is considered reasonable and would provide for additional buffer effectiveness.	C4 = 8 acceptable.
Threats to biosecurity	■ Introduction of diseases and parasites. ■ Introduction and spread of weeds.	C3 = 13 unacceptable.	■ Adequate boundary/ exclusion fencing during construction and operation of the development (the site will be fenced with dog-proof fencing). ■ In NSW everyone has a general biosecurity responsibility under the *Biosecurity Act 2015* to prevent, minimise and avoid the risk of from weeds. ■ During construction only clean machinery would be brought to site, disturbed ground would be stabilised progressively, and appropriate management measures implemented to prevent the possible spread/tracking of soil and weeds.	D4 = 5 acceptable.

Activity	Identified Potential Issue/ Hazard	Risk Ranking	Mitigating Factors and/ or Control Methods	Residual and/ or Controlled Ranking
Domestic animals	■ Domestic animals, including dogs, may get lost and chase or attack livestock. ■ Potential accidental poisoning of domestic animals from use of poisons for vermin control (eg 1080). ■ Use of firearms associated with vermin control and euthanasia of sick or dying animals.	C3 = 13 unacceptable.	■ The residential estate will be fenced with dog-proof fencing along the west, north, and south boundaries. ■ All residential lots/ rear yards would be securely fenced. ■ There are Council policies for ownership of pets and associated responsibility (registration/ microchipping etc). ■ The use of both poisons associated with vermin control and firearms is strictly regulated and users must attend mandatory training and be appropriately accredited/ licenced. ■ The use of some pesticides/ poisons requires mandatory community notification to be undertaken to inform the public and minimise potential accidental poisoning occurring.	E3 = 6 acceptable.
Traffic and access	Potential conflicts between farm/ heavy vehicles and residential vehicular access and generation along James Creek Road.	C3 = 13 unacceptable.	James Creek Road is proposed to be widened/ upgraded at site frontage. The intersections with the future urban area will be designed to meet engineering standards to adequately and safely cater for the expected traffic generation, accounting for both existing traffic and traffic post development.	D4 = 5 acceptable.

4. Discussion, Conclusion and Recommendations

The land use conflict risk assessment presented in **Section 3**, particularly Table 3.5, has identified and evaluated a range of potential land use conflicts between the future residential development of the subject site and surrounding land uses in the rural landscape, notably proximal cattle grazing and land/pasture management activities on adjoining land to the west.

While land in the broader locality contains active farmland including cropping activity, this is primarily located over 500 m to the east and northeast and satisfies the separation recommendations of the Handbook in these directions. The current proximal/ adjoining farmland and rural activity is cattle grazing and associated land/pasture management activities to the east (on the opposite side of James Creek Road) and adjoining the western boundary.

Most of the potential conflicts identified in this LUCRA are of low risk, with some being moderate when unmitigated. The following matters were identified as being ranked as potentially unacceptable (though still not significant) prior to taking into account mitigating factors and/ or control methods. These include the following matters associated with adjoining grazing/ land management activity and the interface with the proposed residential development:

- Noise.
- Odour.
- Runoff and erosion management during development construction.
- Surface water changes and stormwater and management from proposed development.
- Use of Agricultural/ Horticultural sprays.
- Threats to biosecurity.
- Domestic animals.
- Traffic and access
- Rubbish Dispersal.

Of the above, water runoff, stormwater/ erosion management, threats to biosecurity, domestic animals, and traffic/ access can be managed through common/ standard measures that do not involve or require buffers or alternative buffer solutions (e.g. vegetated buffers). These matters have been assessed in Table 3.5 as being manageable, with an acceptable residual risk, based on design outcomes and engineering requirements that would be required as part of the subdivision design and Proposal anyway (i.e. to address relevant LEP and DCP provisions).

Potential impacts from adjoining agricultural activities, including possible noise, dust, spray drift from weed/pasture management, and odour were not considered high risk or considered to be unmanageable. Yet even with low or moderate risk there is still the potential for conflict when introducing new low density residential uses in proximity. The inclusion of the 50 m separation buffer within the development site to adjoining rurally zoned land, including the main grazing activity, is consistent with the Handbook's recommended 50 m grazing land setback and would reduce potential impacts from the cattle grazing and associated activities on future residential receivers. The buffer to the western interface should be complemented and enhanced by implementation of a vegetated element/screen. Furthermore, the additional 23 m road corridor east of the site and existing and proposed vegetation enhances this buffer to the eastern interface with James Creek Road and grazing land beyond.

The proposed arrangement is considered to be acceptable and justified as follows:

- There is no notable risk of agricultural land use conflict along the site's northern or southern boundary.

- Proximal surrounding agricultural activities have been assessed and do not pose a significant risk of conflict. Minor to moderate risk is present, yet is reasonably manageable.

- More intensive plant-based agriculture and cropping, as well as mapped regionally significant farmland (east of the site and James Creek Road), is well separated from the site, satisfying the Handbook and guideline recommendations and objectives.

- A minimum 50 m buffer is provided from adjoining rural land to the west, north and east. This is consistent with the guidelines for grazing land. In the case of the eastern interface, the buffer also includes open space areas which will be landscaped/planted and is increased further by the 23 m wide James Creek Road reserve. This is considered reasonable to minimise potential issues associated with grazing and land management activities to the east and with intermittent use of the small cattle yard/ pen which is only expected to be used for periodic short holding and or loading/ unloading of stock.

- The adjoining western interface, whilst rurally zoned and used for agriculture activity, is not considered to be (historically or presently) subject to intensive agriculture, however that does not necessarily mean the land could not potentially be used for more intensive purposes. Cattle grazing and land management activities (e.g. pasture and weed management) have occurred historically and are currently present. This is generally at the lower end of the impact/risk scale, with potential increased moderate risk associated with times of higher herd numbers and land management, including weed spraying by tractor boom and pasture improvement / fodder if this occurred nearby. Hence the 50 m buffer separation as per the Handbook for grazing land, augmented with a minimum 20 m wide vegetation buffer, is recommended. This is consistent with guidelines to reduce potential impacts of adjoining activities on residential properties, including the intermittent use of the forested area by stock for refuge, possible spray and odour drift, and some contingency for other potential future activity.

  The arrangement is also acceptable given the lack of farm infrastructure in this location that could otherwise potentially concentrate potential impacts (e.g. noise or odour associated with yards, feed troughs, or loading/ transport facilities). The separation buffer will also include a perimeter road reserve of 18 m wide and dwelling setback requirements that would result in houses being setback an additional 6 m (resulting in an overall dwelling setback of around at least 56 m) from the immediate western boundary/ interface. Given this, where people will live and recreate outside of their houses (in their rear yards) will be more than 50 m from the grazing land boundary interface, providing reasonable separation. The vegetated buffer would provide an additional mitigating element and result in a buffer and vegetated screen to reasonably minimise the potential for conflict with adjoining current, and potential future, activities. In this context, this is an acceptable interface management response.

  It is noted that the proposed development is to be staged and that risk would generally decrease with corresponding increased separation. The main conflict risk to the west is therefore associated with residential lots in proximity to the boundary, hence the inclusion of a 50 m buffer. On this basis, and given Stages 1A, 1B, 2 and 3 (as shown in Figure 1.1) are setback a minimum of approximately 220 m from the western boundary, implementation of the vegetated element in the western 50 m setback buffer during Stage 4 is considered acceptable as the other development stages are well separated from this boundary interface. It has been advised by the proponent that this staged approach would assist to ensure that the civil works, such as construction of the western perimeter road and associated batters, can be effectively coordinated with successful establishment of the vegetation plantings. However, it is noted that the vegetated buffer element once established, would complement the development more broadly at completion.

- The land east of James Creek Road (within around 250 m) does not appear to be used for intensive agriculture. Cattle grazing and ancillary activities have occurred historically and are currently present. This is generally low impact, potentially moderate at worst, due to the presence

of small stockyard/ loading infrastructure setback from James Creek Road and possible pasture/weed management. This is considered acceptable given the 50 m buffer/ setback incorporated into the development site and the 23 m wide road reserve. For comparison purposes, the Lismore DCP recommends that residential dwellings and other incompatible land use sites adjoining grazing land should have a minimum 50 m setback from cattle yards, shearing sheds, stock transporting infrastructure and other intensively used facilities ancillary to grazing activities. This would be achieved and exceeded. Whilst the Handbook recommends a buffer of 200 m from stockyards, this is related to more commercial or intensively used yards, rather than small scale ancillary grazing infrastructure that is periodically used, hence the Lismore DCP is a reasonable guide in this instance and justifies the arrangement. Overall, the setback separation from the eastern interface exceeds the 50 m grazing buffer and is complemented with some present roadside vegetation and a comprehensive soft landscaping/planting strategy along the development site frontage. This would be sufficient to effectively reduce potential impacts of adjoining grazing activities on residential properties, including periodic pasture management and the intermittent use of ancillary farm/ stock infrastructure that could periodically concentrate some potential impacts (e.g. noise or odour associated with cattle loading facilities and feed troughs). It is also noted that the presence of James Creek Road in between the properties would further reduce the perception of potential agricultural activity due to noise associated with traffic movements.

- The strategic, local, and site-specific circumstances justify development of the land for residential purposes and whilst there are some active rural/ agricultural interfaces, those nearby are limited to grazing and land management activities. These are not considered significant risks, nor does the immediate adjoining land represent significant or protected farmland, or widespread/ intensive agricultural activity. Therefore, the activity that is present at the relevant interfaces is considered manageable.

Overall, the identified potential risks are generally low to moderate and can be reasonably managed with buffers to reduce risk to an acceptable level. This LUCRA has demonstrated that subject to the incorporation of buffers, proposed soft landscaping, and recommended vegetation screening, the proposed development would be acceptable, and is not expected to increase, substantially alter, or likely cause, unacceptable or significant land use conflict. Some limited risk associated with immediately adjoining grazing and farming activities is present. However, the establishment of a 50 m setback within the development site, to all rural land (over 70+ m to the east including the road reserve), combined with a specific integrated vegetated screen to the west and landscaping planting to the north and east, would help ameliorate the risk to an acceptable level. Stormwater and traffic management would be subject to engineering design solutions which are required as part of the normal DA process and would achieve satisfactory outcomes.

The Proposal therefore is consistent with the intent and relevant objectives of the Handbook and reference material.

It is noted that a number of factors, but not limited to, have led to this conclusion, including:

- Low to moderate intensity cattle grazing generally presents low potential risk of conflict with such activities generally tolerable but can be subjective, noting that future residents should recognise they are purchasing in a broader rural context.
- Nearby agricultural spraying is done periodically by tractor or vehicle via a boom or spot spraying. Given the use of ground pasture/weed chemical application it is assumed that spray drift would generally be limited.
- Very fine or fine droplets pose the highest risk of spray drift; being the main factor for controlling drift potential. The higher droplets are released, the greater potential for drift. Given the adjacent land use undertake periodic use of ground pasture/weed application and consequently the relatively low height at which spray is released the risk of spray drift would be reduced.

- Noise associated with agricultural activity which may lead to potential land use conflict in the locality would be intermittent background noise from animals, tractors and other machinery.

Recommendations:
The arrangements of setbacks/ separation buffers between the proposed lots and adjacent farming/ grazing activity are considered acceptable, subject to inclusion of soft landscaping/plantings along the eastern and northern interface generally as per the landscape plan prepared by Place Design Group, and a specific minimum 20 metre wide planted/ vegetated buffer established and maintained along the western boundary (within the development site, and accounting for the stormwater basin footprint where planting in/around this area may need to be adapted to ensure appropriate stormwater basin design/function).

The western vegetated buffer, to be established during Stage 4 of the development, is to be generally consistent with the following principles/ criteria (adapted from *Planning Guidelines: Separation Agricultural and Residentials Land Uses* – The State of Queensland, Department of Natural Resources 1997 and Nambucca (Table F2) Development Control Plan):

- During construction of Stage 4, establish a minimum 20 m wide planted/ vegetated buffer along (within) the western boundary of the development site (the minimum width of a vegetation buffer is that of the canopy at maturity).
- Vegetation planting needs to commence early in the development process, noting vegetation takes time to establish and mature. Management of this vegetation is to be implemented to ensure survival and effective establishment.
- Contain random plantings of a variety of tree and shrub species of differing growth habits and mature heights at spacings of 4–5 m for a minimum width of 20 m (e.g. ground covers, low, mid-storey, and canopy species, fast growing pioneers and slower growing species) – refer to Lismore (Chapter 11) and Nambucca (Table F2) Council Development Control Plans for guides to buffer planting species.
- Include a diversity of species, including those with long, thin and rough foliage.
- Provide a permeable barrier which allows air to pass through the buffer. A porosity of 0.5 is acceptable (approximately 50% of the screen should be air space).
- Foliage is to achieve reasonable coverage from the base to the crown.
- A mixture of fast-growing pioneer species and slower growing, longer-lived species should be used.
- Trees at least 10 m in height at maturity are to be included.
- Does not compromise Asset Protection Zones or conflict with the requirements of *Planning for Bushfire Protection 2019*. This includes, but is not limited to, avoidance of tree canopy overhang (accounting for growth to/at maturity) of residential property boundaries and perimeter roads.

A detailed landscape plan, prepared by a suitably qualified person, is to generally be in accordance with this recommendation.

References

Living and Working in Rural Areas. A handbook for managing land use conflict issues on the NSW North Coast, Centre for Coastal Agricultural Landscapes, 2007. Learmonth, R., Whitehead, R., Boyd, B., & Fletcher, S.

Factsheet: Land Use Conflict Risk Assessment Guide, 2011. NSW Government Department of Primary Industries.

Planning Guidelines: Separating Agricultural and Residentials Land Uses, 1997. The State of Queensland, Department of Natural Resources.

Primefact: Buffer Zones to Reduce Land Use Conflict with Agriculture, 2018. NSW Government Department of Primary Industries.

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The dimensions, number, size and shape of lots shown on drawings are subject to detailed engineering design, final survey and Council conditions of consent.

Topographic information presented on the drawings is suitable only for the purpose of the document as stated above. No reliance should be placed upon topographic information contained in this report for any purpose other than that stated above.

Enclosure 18

Statement of Landscape Intent prepared by Place Design Group dated 23 November 2023

The Village at James Creek

Statement of Landscape Intent

Prepared For:
MPD Investments Pty Ltd

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China
South East Asia

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Project	The Village at James Creek
Report title	Statement of Landscape Intent
Document number	230219
Prepared for	MPD Investments Pty Ltd
Authors	Naomi Cole
Revision number	F
Revision issue date	23 November 2023
Approved	Peter Bell, Clint Wood
Reason for revision	Development Application

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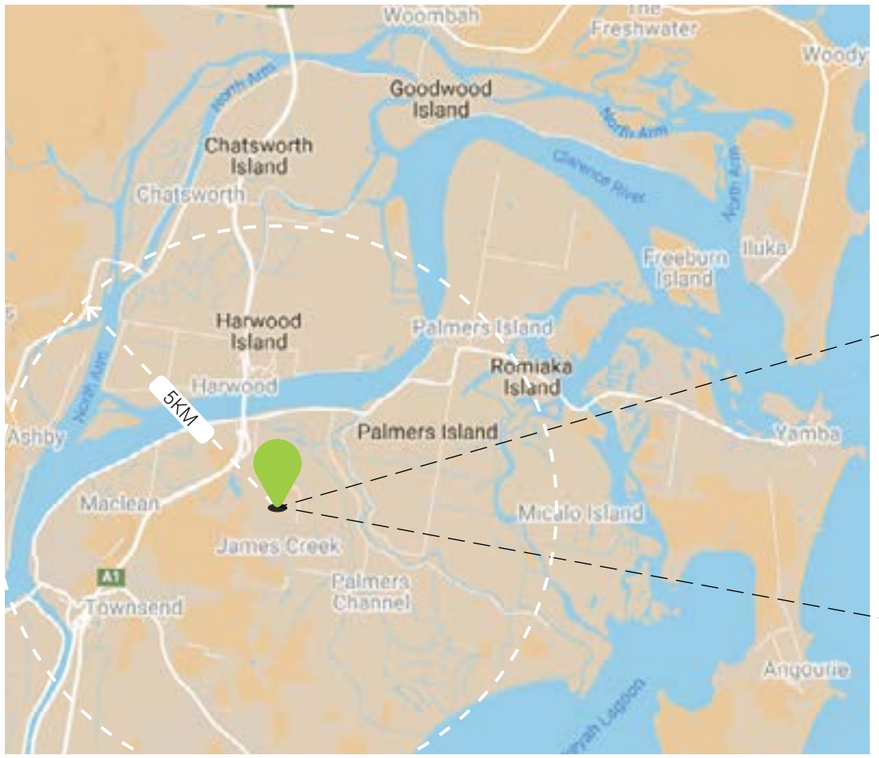
01

SITE CONTEXT

1.1 Location



James Creek

1.2 Site Photos

01 *View from James Creek Road*

02 *View from James Creek Road*

03 *View from James Creek Road*

04 *View from Austons Lane*

Key Plan

02

OVERALL LANDSCAPE DESIGN

2.1 Landscape Masterplan

LEGEND

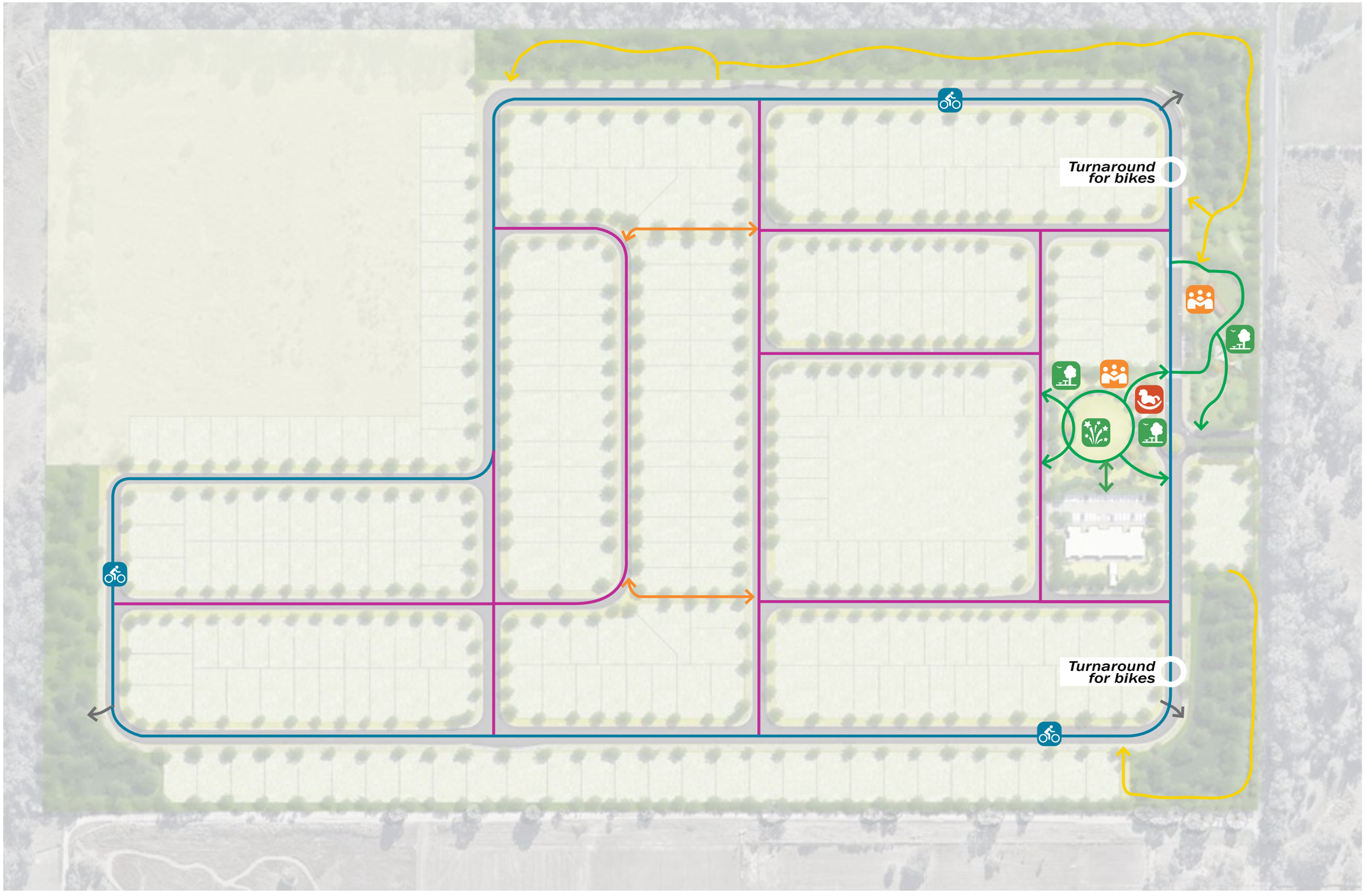
1. Entry boulevard
2. Village Green and Playground
3. Northeast park & basin
4. Southeast park & basin
5. Perimeter community loop for bike & pedestrian recreation
6. Pedestrian linkage between lots. 1500mm high pool fence to adjacent lots
7. Entry Park with Community Facilities
8. Planting batter to Austons Lane
9. Existing trees to be retained
10. Fencing on boundary
11. Feature fencing on road frontage
12. Informal path around basins

N

0 50 100 150M

SCALE 1:2500 @ A3

2.2 Circulation & Recreational Analysis



Legend

- Perimeter shared path for pedestrian & bike
- Community footpath
- Informal footpath
- Pedestrian linkage between lots
- Parkland path
- Gated Maintenance Access to Bio-basin
- Community open space
- Playground
- Village green
  Event lawn
- Seating & rest

N

0 50 100 150M

SCALE 1:2500 @ A3

03

DETAIL DESIGN

3.1 Detail Plan 1 - Entrance

01 Planted entry with boulevard trees

02 Pedestrian crossing linking parks and lots

03 Central island with low level planting to maintain sightlines

04 Planted mounding to frame entry view
Opportunity for low level entry feature/ signage

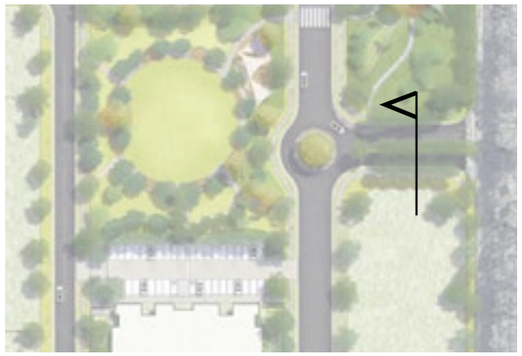
05 Shared path for pedestrian & bike recreation

06 Shade tree and low planting in roundabout to maintain sightlines

SCALE 1:750 @ A3

3.2 Detail Plan 1 - Entrance Section

Note:
Refer engineering drawings for detailed information



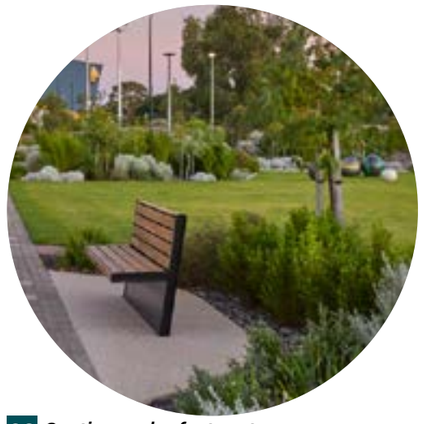
Key Plan

01 Buffer planting
02 Street tree in planter
03 Median with feature boulevard tree
04 Estate fence within lots

0 1 2 3 4 5M
SCALE 1:100 @ A3

3.3 Detail Plan 2 - Village Green

01 *Village green*



02 *Seating under feature trees*

03 ***Playground***
Under shade

04 ***Swings***

05 ***Spinner Bowl / Carousel***

06 ***Exercise Station***

3.4 Detail Plan 3 - Entry Parkland

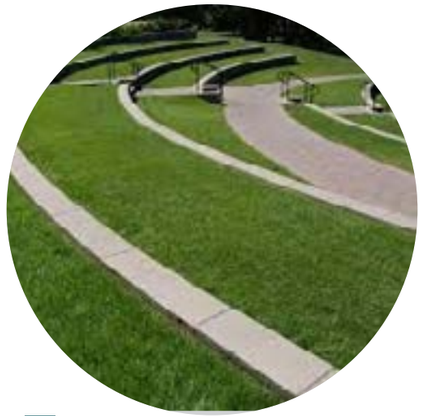
01 *Parking to be provided to AS2890*

02 *Entry feature to entry corner*

03 *Grassed mounding*

04 *Shade over BBQ/ Rest Area*

05 *Community facility*
Refer separate page



06 *Opportunity for informal gathering area/ amphitheatre*

3.5 Community Facilities Character Images

A central feature of the entry park design is the inclusion of a large open structure that can accomodate smaller individual groups as well as large community gatherings.

The structure will be open sided with fixed furniture, with roof enclosure that will provide shade and weather protection.

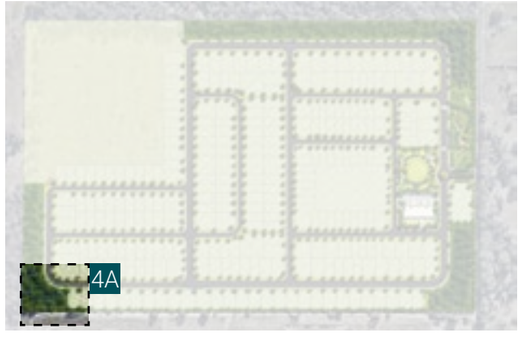
It will be designed to be a flexible space catering to the estate residents as well as the broader community beyond the site.

3.6 Detail Plan 4 - Southwest Bio basin

4A ***Southwest park***

0 10 20 30 40 50M

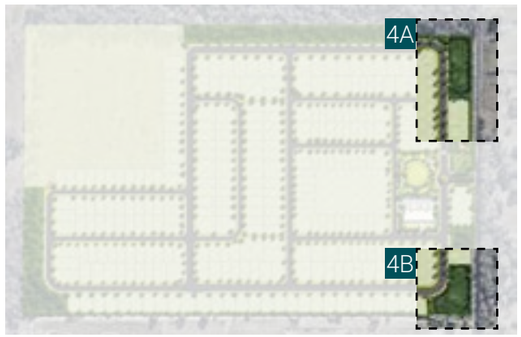
SCALE 1:1000 @ A3



Key Plan

3.7 Detail Plans 5 - Eastern Bio basins

5A ***Northeast park***



Key Plan

5B ***Southeast park***

SCALE 1:1000 @ A3

3.8 Bio Basin Character Images

01 *Informal walking path*

02 *Bio Basin*

03 *Community lawn*

3.9 Fences

- 1.8m High mesh fence to rural neighbouring properties
- Good neighbour fence to Auston's Lane
- Feature fence to James Creek Road
- Feature fence to childcare centre

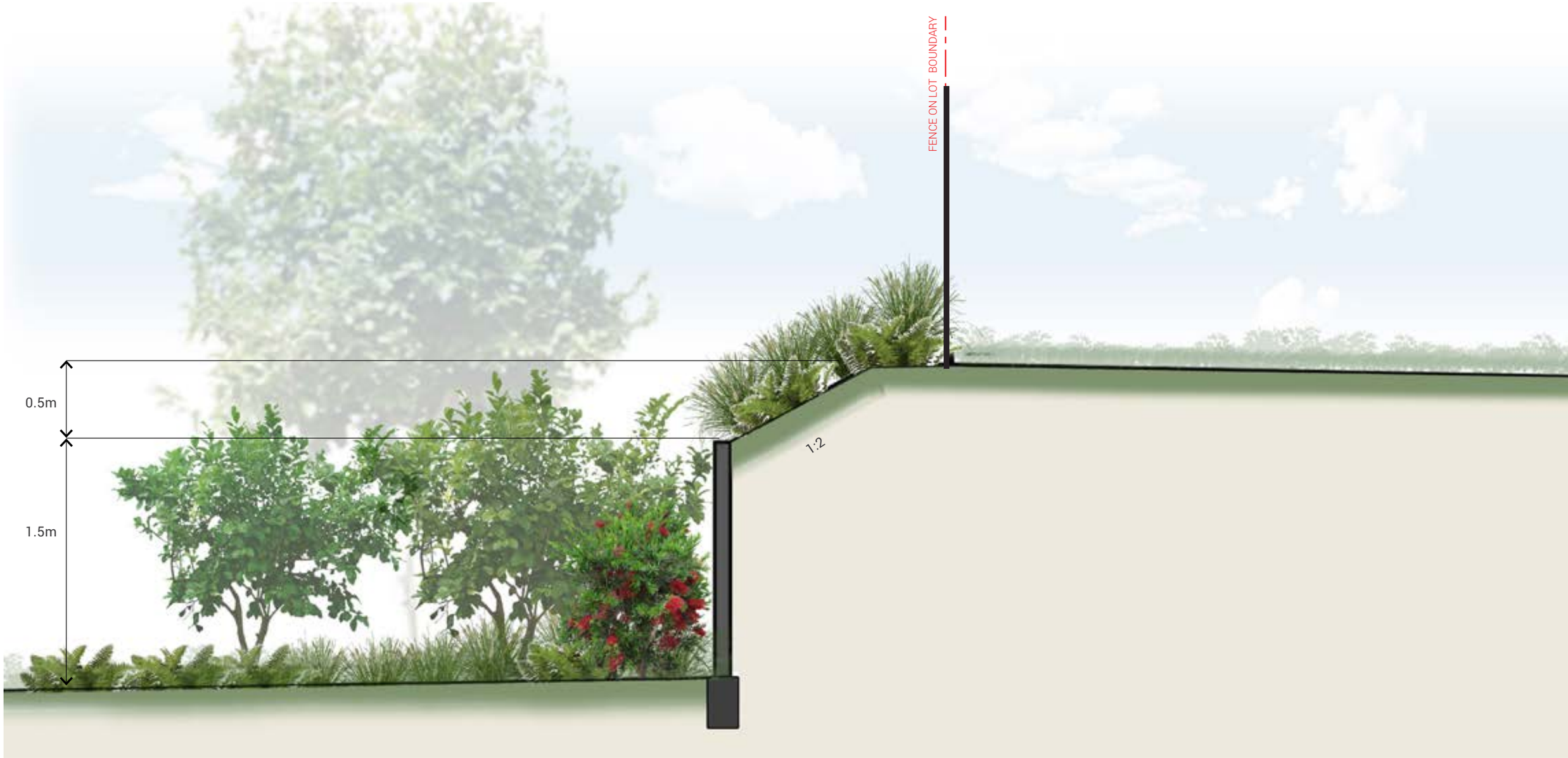
3.10 Retaining Walls - Plan

Maximum retaining locations within lots

Refer typical section

3.11 Retaining Walls - Typical Section

Note:
Refer engineering drawings for detailed information



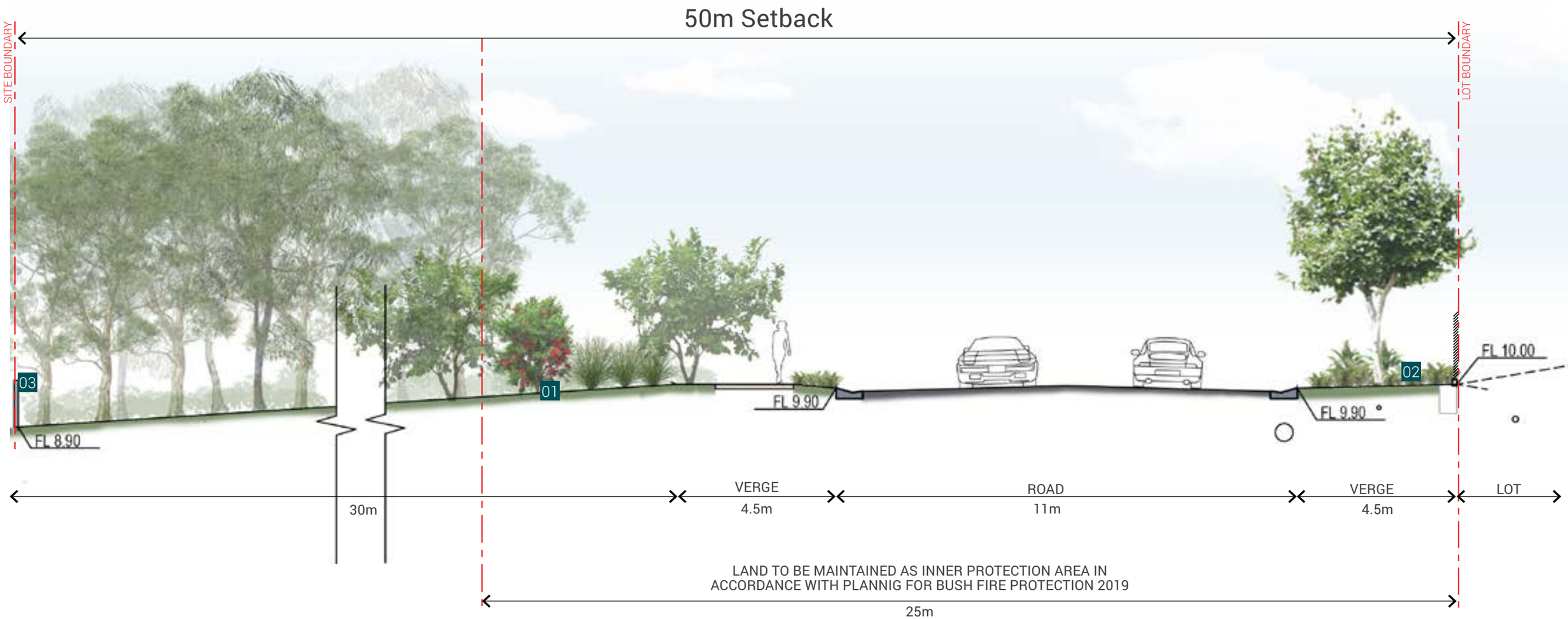
SCALE 1:25 @ A3

04

SECTIONS

4.1 Section 1 - Northern Boundary

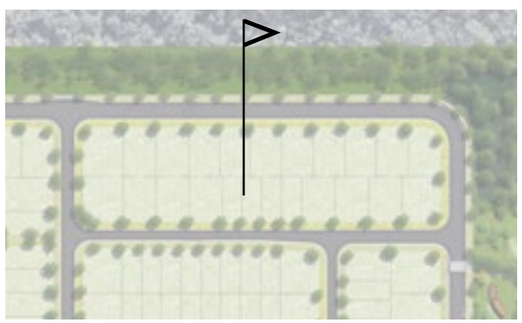
Note:
Refer engineering drawings for detailed information



01 Batter into existing surface

02 Street tree and footpath

03 1.8m PVC coated chain mess fence to site boundary within planting

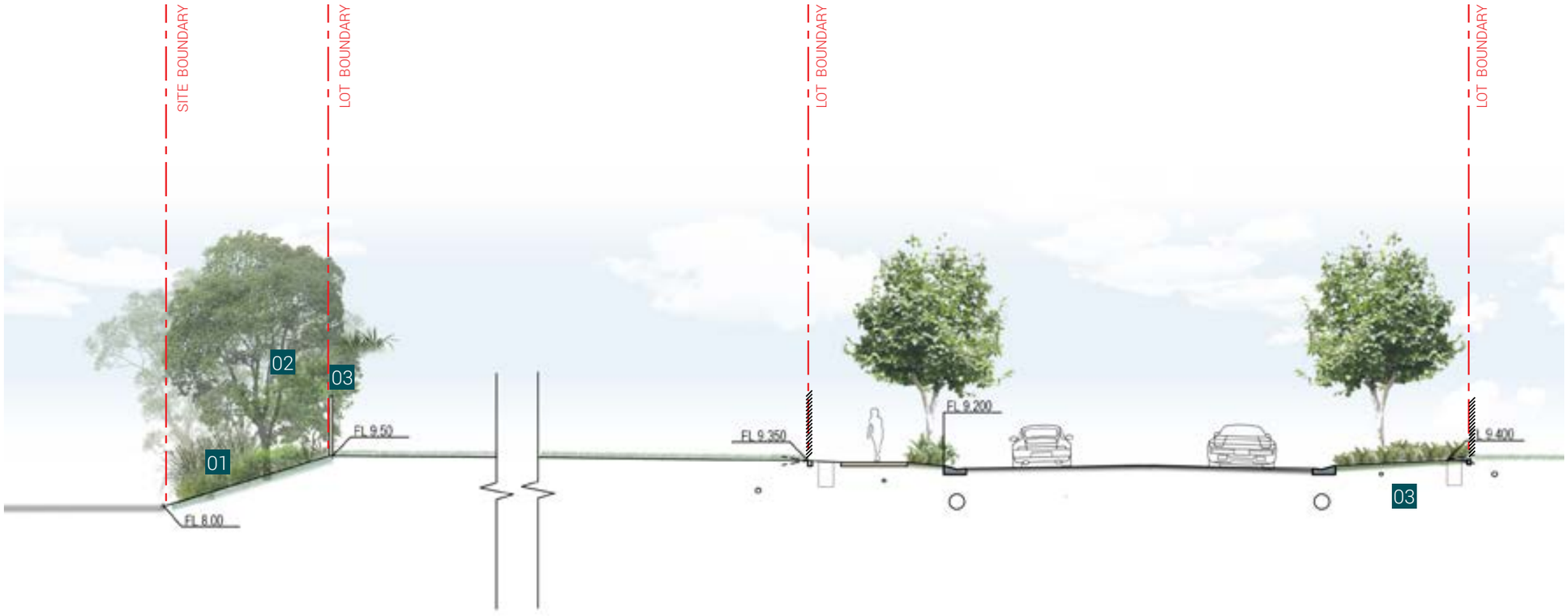


Key Plan

0 1 2 3 4 5M
SCALE 1:100 @ A3

4.2 Section 2 - Southern Boundary

Note:
Refer engineering drawings for detailed information



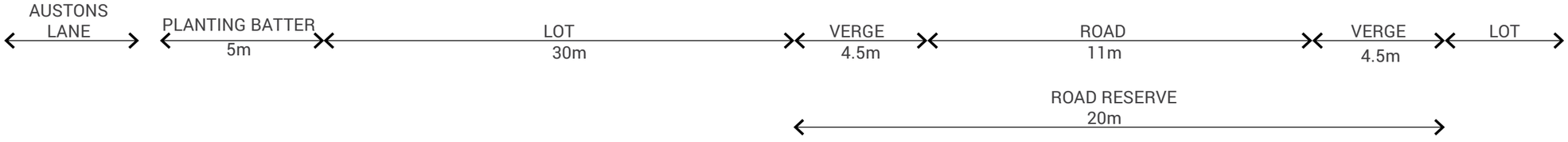
Key Plan

01 Batter to existing road with native planting species

02 Screening trees and layered planting

03 Good neighbour fence to lot boundary

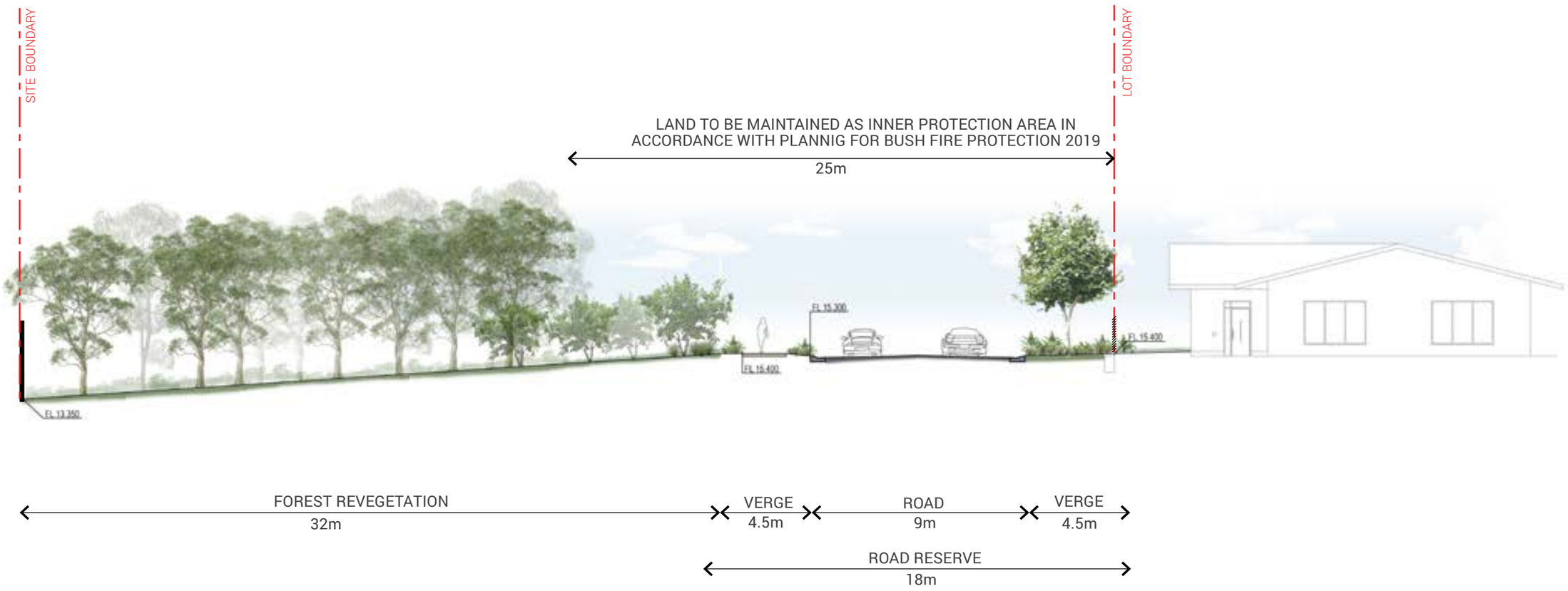
04 Street tree and footpath

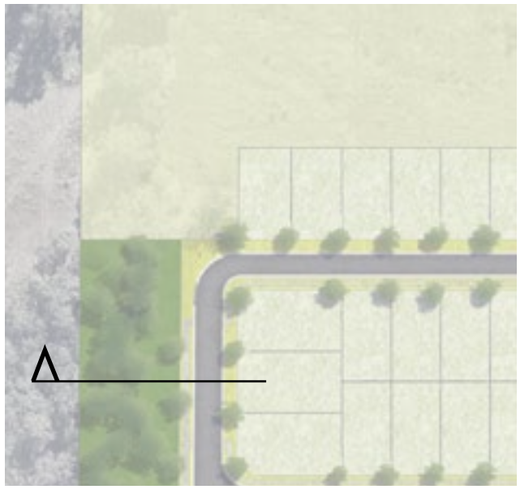


SCALE 1:150 @ A3

4.3 Section 3 - Western Boundary

Note:
Refer engineering drawings for detailed information





Key Plan

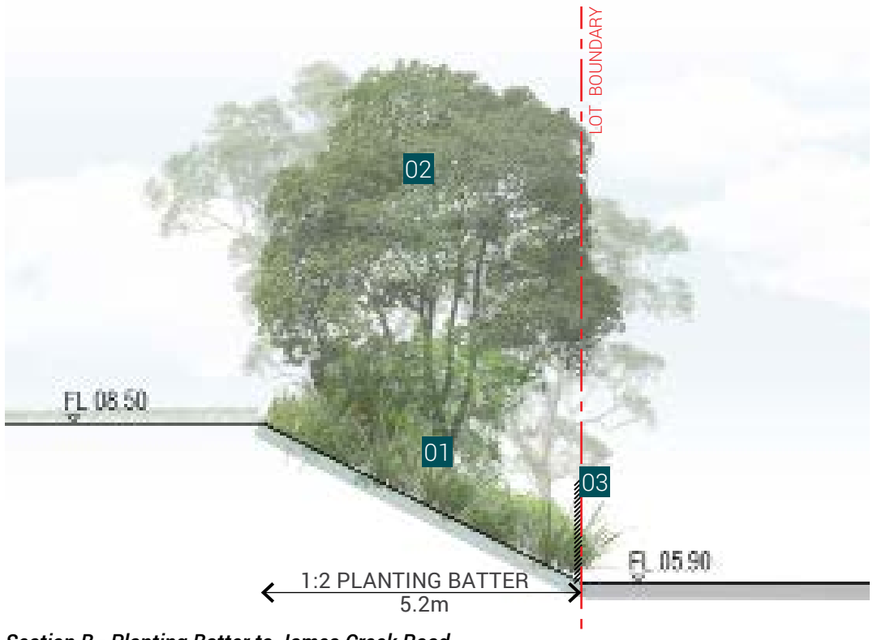
0 2 4 6 8 10M
SCALE 1:200 @ A3

4.4 Planting Batter to Austons Lane & James Creek Road

Note:
Refer engineering drawings for detailed information

Section A - Planting Batter to Austons Lane

Elevation A - Planting Batter to Austons Lane



Section B - Planting Batter to James Creek Road

01 Planting batter with low maintenance native planting species

02 Screening tree

03 1.8m high open metal good neighbour fence

04 Existing trees to be retained
Individual treatment may be required

0 1 2 3 4 5M
SCALE 1:100 @ A3

05

PLANTING

5.1 Planting Palette - Street

TREES

Botanical Name	Common Name
Cupaniopsis anacardioides	Tuckeroo
Tristaniopsis laurina	Kanooka Gum
Waterhousea floribunda	Weeping Lilly Pilly

Tristaniopsis laurina
Kanooka Gum

Waterhousea floribunda
Weeping Lilly Pilly

Cupaniopsis anacardioides
Tuckeroo

SHRUB & GROUNDCOVER

Botanical Name	Common Name
Acmena smithii 'Allyn Magic'	Allyn Magic
Callistemon viminalis 'little john'	Little John
Crinum pedunculatum	Swamp lily
Dianella caerulea	Blue Flax Lily
Lomandra hystrix 'Katie Belles'	Katie Belles
Lomandra longifolia 'Nyalla'	*Nyalla*
Myoporum ellipticum	Coastal Boobialla
Syzygium australe	Brush cherry
Westringia hybrid 'Blue Gem'	Blue Gem
Westringia fruticosa 'Mundi'	Mundi

Acmena smithii 'Allyn Magic'
Allyn Magic

Syzygium australe
Brush cherry

Callistemon viminalis 'little john'
Little John

Westringia fruticosa 'Mundi'
Mundi

Westringia hybrid 'Blue Gem'
Blue Gem

Dianella caerulea
Blue Flax Lily

Lomandra longifolia 'Nyalla'
Nyalla

Lomandra hystrix 'Katie Belles'
Katie Belles

Crinum pedunculatum
Swamp lily

Myoporum ellipticum
Coastal Boobialla

5.2 Planting Palette - Park Trees

Botanical Name	Common Name
Corymbia citriodora	Spotted Gum
Ficus brachypoda	Edible fig
Ficus microcarpa	Indian Laurel Fig
Leptospermum petersonii	Lemon-scented Tea Tree
Lophostemon confertus	Queenland Brush Box
Syzygium oleosum	Blue Lilly Pilly
Tristaniopsis laurina	Kanooka Gum

TREES

Corymbia citriodora
Spotted Gum

Ficus brachypoda
Edible fig

Ficus microcarpa
Indian Laurel Fig

Tristaniopsis laurina
Kanooka Gum

Syzygium oleosum
Blue Lilly Pilly

Leptospermum petersonii
Lemon-scented Tea Tree

Lophostemon confertus
Queenland Brush Box

5.3 Planting Palette - Park Shrub & Groundcover

Botanical Name	Common Name
Austromyrtus dulcis	Midgen berry
Banksia robur	Swamp Banksia
Callistemon viminalis 'little john'	Little John
Hovea longifolia	Hovea purple bush pea
Leptospermum 'Pink Cascade'	Pink Cascade
Leptospermum polygalifolium	Tea Tree
Lomandra hystrix 'Katie Belles'	Katie Belles
Syzygium australe	Brush cherry
Westringia hybrid 'Blue Gem'	Blue Gem

SHRUB & GROUNDCOVER

Syzygium australe
Brush cherry

Banksia robur
Swamp Banksia

Callistemon viminalis 'little john'
Little John

Lomandra hystrix 'Katie Belles'
Katie Belles

Westringia hybrid 'Blue Gem'
Blue Gem

Hovea longifolia
Hovea purple bush pea

Leptospermum polygalifolium
Tea Tree

Leptospermum 'Pink Cascade'
Pink Cascade

Austromyrtus dulcis
Midgen berry

Melaleuca linariifolia
Claret Tops

5.4 Planting Palette - Southern Batter to Austons Lane

TREES

Botanical Name	Common Name
Eucalyptus populnea	Poplar Box

Eucalyptus populnea
Poplar Box

SHRUB & GROUNDCOVER

Botanical Name	Common Name
Grevillea rosemarinifolia 'Crimson Villea'	Crimson Villea
Lomandra fluviatilis 'Shara'	Shara
Lomandra labill 'Evergreen Baby'	Evergreen Baby
Lomandra multiflora 'Frilly Lace'	Frilly Lace
*Pennisetum alopecuroides*Common	Swamp Foxtail Grass
Poa labillardieri	Common Tussock-grass

Grevillea rosemarinifolia 'Crimson Villea'
Crimson Villea

Poa labillardieri
Common Tussock-grass

Pennisetum alopecuroides
Common Swamp Foxtail Grass

Lomandra fluviatilis 'Shara'
Shara

Lomandra labill 'Evergreen Baby'
Evergreen Baby

Lomandra multiflora 'Frilly Lace'
Frilly Lace

Grevillea
'Bronze rambler'

5.5 Planting Palette - Bio Basin

TREES

Botanical Name	Common Name
Melaleuca linariifolia	Paperbark

Melaleuca linariifolia
Paperbark

SHRUB & GROUNDCOVER

Botanical Name	Common Name
Baloskion tetraphyllum	tassel rope-rush
Dianella longifolia var longifolia	Pale Flax-lily
Lomandra hystrix 'Katie Belles'	Katie Belles
Lomandra longifolia 'Katrinus Deluxe'	Katrinus Deluxe
Pennisetum alopecuroides 'Purple Lea'	Purple Lea
Lomandra fluviatilis 'Shara'	Shara
Banksia robur	Swamp Banksia
Carex appressa	Tall Sedge
Carex fascicularis	Tassel Sedge
Ficinia nodosa	Knobby Club Rush

Baloskion tetraphyllum
tassel rope-rush

Dianella longifolia var longifolia
Pale Flax-lily

Lomandra hystrix 'Katie Belles'
Katie Belles

Lomandra longifolia 'Katrinus Deluxe'
Katrinus Deluxe

Pennisetum alopecuroides 'Purple Lea'
Purple Lea

Lomandra fluviatilis 'Shara'
Shara

Banksia robur
Swamp Banksia

Carex appressa
Tall Sedge

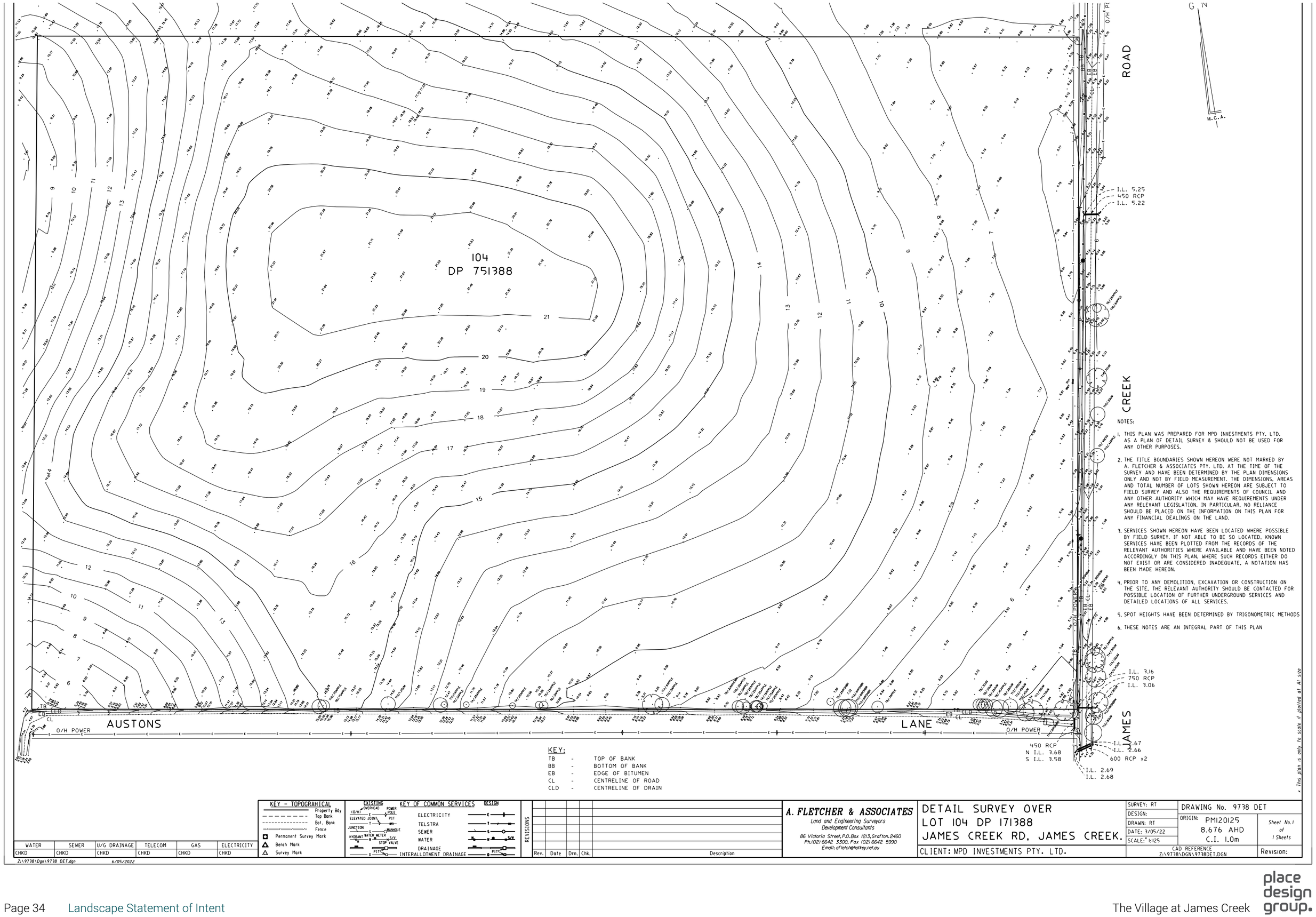
Carex fascicularis
Tassel Sedge

Ficinia nodosa
Knobby Club Rush

06

APPENDIX

6.1 Site Survey



NOTES:

1. THIS PLAN WAS PREPARED FOR MPD INVESTMENTS PTY. LTD. AS A PLAN OF DETAIL SURVEY & SHOULD NOT BE USED FOR ANY OTHER PURPOSES.
2. THE TITLE BOUNDARIES SHOWN HEREON WERE NOT MARKED BY A. FLETCHER & ASSOCIATES PTY. LTD. AT THE TIME OF THE SURVEY AND HAVE BEEN DETERMINED BY THE PLAN DIMENSIONS ONLY AND NOT BY FIELD MEASUREMENT. THE DIMENSIONS, AREAS AND TOTAL NUMBER OF LOTS SHOWN HEREON ARE SUBJECT TO FIELD SURVEY AND ALSO THE REQUIREMENTS OF COUNCIL AND ANY OTHER AUTHORITY WHICH MAY HAVE REQUIREMENTS UNDER ANY RELEVANT LEGISLATION. IN PARTICULAR, NO RELIANCE SHOULD BE PLACED ON THE INFORMATION ON THIS PLAN FOR ANY FINANCIAL DEALINGS ON THE LAND.
3. SERVICES SHOWN HEREON HAVE BEEN LOCATED WHERE POSSIBLE BY FIELD SURVEY. IF NOT ABLE TO BE SO LOCATED, KNOWN SERVICES HAVE BEEN PLOTTED FROM THE RECORDS OF THE RELEVANT AUTHORITIES WHERE AVAILABLE AND HAVE BEEN NOTED ACCORDINGLY ON THIS PLAN. WHERE SUCH RECORDS EITHER DO NOT EXIST OR ARE CONSIDERED INADEQUATE, A NOTATION HAS BEEN MADE HEREON.
4. PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED FOR POSSIBLE LOCATION OF FURTHER UNDERGROUND SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.
5. SPOT HEIGHTS HAVE BEEN DETERMINED BY TRIGONOMETRIC METHODS
6. THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN

KEY:

TB	-	TOP OF BANK
BB	-	BOTTOM OF BANK
EB	-	EDGE OF BITUMEN
CL	-	CENTRELINE OF ROAD
CLD	-	CENTRELINE OF DRAIN

KEY - TOPOGRAHICAL

- Property Bdy
- Top Bank
- Bot. Bank
- Fence
- Permanent Survey Mark
- Bench Mark
- Survey Mark

KEY OF COMMON SERVICES

EXISTING		DESIGN
OVERHEAD POWER POLE	ELECTRICITY	
ELEVATED JOINT PIT	TELSTRA	
JUNCTION MANHOLE	SEWER	
HYDRANT WATER METER S/V STOP VALVE	WATER	
PITS	DRAINAGE	PITS
	INTERALLOTMENT DRAINAGE	

WATER	SEWER	U/G DRAINAGE	TELECOM	GAS	ELECTRICITY
CHKD	CHKD	CHKD	CHKD	CHKD	CHKD

REVISIONS

Rev.	Date	Drn.	Chk.	Description

A. FLETCHER & ASSOCIATES
Land and Engineering Surveyors
Development Consultants
86 Victoria Street, P.O.Box 1213, Grafton, 2460
Ph.(02) 6642 3300, Fax (02) 6642 5990
Email: afletch@hotkey.net.au

DETAIL SURVEY OVER
LOT 104 DP 171388
JAMES CREEK RD, JAMES CREEK.

CLIENT: MPD INVESTMENTS PTY. LTD.

SURVEY: RT	DRAWING No. 9738 DET
DESIGN:	ORIGIN: PM120125
DRAWN: RT	8.676 AHD
DATE: 3/05/22	C.I. 1.0m
SCALE: 1:1125	Sheet No.1 of 1 Sheets
CAD REFERENCE Z:\9738\DGN\9738DET.DGN	Revision:

Z:\9738\Dgn\9738 DET.dgn 6/05/2022

* This plan is only to scale if plotted at A1 size

place
design
group.

Enclosure 19

Geotechnical Report prepared by Regional Geotechnical Solutions dated 29 July 2021

REGIONAL GEOTECHNICAL SOLUTIONS

Manning-Great Lakes
Port Macquarie
Coffs Harbour

RGS32811.1 - AB

29 July 2021

MPD Investments
19 Yamanie Court
NERANG QLD 4211

Attention: Mike Willoughby

Dear Mike

RE: Proposed Residential Subdivision – Lot 104 DP 751388, James Creek Road James Creek

Preliminary Geotechnical Assessment

1 INTRODUCTION

Regional Geotechnical Solutions Pty Ltd have undertaken a preliminary geotechnical assessment of Lot 104 DP751388, James Creek Road James Creek.

It is proposed to subdivide the existing lot into 342 residential lots. The site encompasses approximately 33.5ha. The development will include internal roads off James Creek Road and the allocation of building envelops for future residential construction. The development is in the preliminary planning stages at this point. At this stage bulk earthworks with cuttings up to 5m are anticipated.

The purpose of the assessment was to provide comments and recommendations on the following:

- Subsurface conditions including – Soil origins, soil types, thickness of topsoil, presence of fill, and groundwater conditions;
- Excavatability of subsurface profile; and
- Suitability of material as reuse for fill.

2 METHODOLOGY

Fieldwork for the assessment was undertaken by an engineering geologist from RGS on 12 July 2021 and included the following:

- Observation of site features and surrounding features relevant to the geotechnical conditions of the site;
- The drilling of five (5) boreholes to depths of up to 5m with a ute mounted drill rig; and

- Dynamic Cone Penetrometer (DCP) testing adjacent to each of the boreholes to refusal encountered at depths ranging from 1.2m to 1.7m.

Engineering logs of the boreholes are attached. Test locations are shown on the attached Figure 1 and were obtained by taped measurements to prominent site features.

3 SITE CONDITIONS

3.1 Surface Conditions

The site is located on a hill within undulating residual topography. Site slopes are gentle and range from about 2-8°. Site boundaries are delineated by James Creek Road to the east, Austons Lane to the south and dense vegetation to the west and north. Vegetation across the site comprises of grass. James Creek is located approximately 500m to the west.

An aerial photograph that shows the location of the site and the site setting is reproduced below.

Aerial photograph obtained from Google Earth that illustrates the site location and setting. The site boundaries are shown by a red box.

Site photographs are presented below.

Looking southwest across the site. The site is grassed with gentle slopes.

The cuttings from BH5 encountered topsoil, overlying alluvial and residual soils

3.2 Subsurface Conditions

The 1:100,000 Grafton Area Coastal Quaternary Geology map indicates that there is a small quaternary valley fill deposit at the eastern boundary of the site. The 1:250,000 Maclean Geology Map indicates that the site is underlain by the Marbury Formation comprising sandstone and siltstone with some coal.

The materials encountered within the boreholes undertaken during the investigation are summarised in Table 1. Further details are presented on the attached engineering logs.

Table 1: Summary of Subsurface Materials

Material Name	Material Description	Depth to Base of Material Layer (m)				
		BH1	BH2	BH3	BH4	BH5
Topsoil	Silty CLAY, medium plasticity	0.15	0.3	0.2	0.2	0.2
Alluvial Soil	Silty CLAY, medium plasticity, firm to stiff	--	--	1.0	--	0.5
Residual Soil	Silty CLAY, and Sandy CLAY, medium to high plasticity, fine to medium grained sand, stiff to hard.	≥ 5.0	2.8	≥ 5.0	1.5	≥ 5.0
Extremely Weathered Sandstone	SILTSTONE/SANDSTONE, fine to medium grained, hard/friable	--	≥ 5.0	--	≥1.8*	--

Note: ≥ Indicates that base of material layer was not encountered
* Indicates that the test was terminated due to practical refusal of auger drill
-- Indicates that the material was not encountered at the test location

Groundwater not encountered within any of the boreholes drilled. Groundwater levels do fluctuate due to inclement weather, seasonal variations, or due to reasons that may not have been apparent at the time of the site investigation.

4 GEOTECHNICAL CONSTRAINTS AND CONSIDERATION

The site is generally underlain by stiff to hard residual clays overlying weathered siltstone/sandstone. Some alluvial soils were encountered in the southwestern and north-eastern corners of the site. Weathered rock was encountered in BH2 (northwest corner) at a depth of 2.8m and in BH4 (southeast corner) at a depth of 1.5m.

The alluvial soils encountered in BH3 and BH5 were assessed to be of firm to stiff strength. An allowance may need to be made for these areas to be over excavated.

4.1 Excavation Conditions

Based on the concept drawings it is understood that excavations of up to 5m generally over the western half of the site will be required as part of the proposed bulk earthworks. Some localised deeper excavations may be required for the installation of services.

These excavations will encounter stiff to hard residual clays. Extremely weathered siltstone may be encountered around the northwest corner of the site from a depth of about 3m. The weathered rock encountered was very low strength as such excavations of these materials are likely be achievable with medium sized excavators. Ripping tynes may be required where higher strength rock is encountered.

Auger refusal was encountered in the weathered sandstone within BH4 (southeast corner), is it understood that deep excavations may also be required in this area, ripping tynes or rock hammers may be required in this area.

Groundwater seepage is not anticipated based on the conditions encountered within the boreholes.

Excavation work must be undertaken in accordance with the Safe Work Australia '*Excavation Code of Practice (January 2020)*'

4.2 Fill Materials and Offsite Disposal

Materials recommended for use as engineered fill include good quality well graded granular materials free of deleterious materials and having a maximum particle size of 200mm. Locally sourced or site won ripped weathered rock would also be suitable.

Site won residual clay and weathered rock may be reused as controlled fill at the site. However, the use of reactive clay soils will result in higher foundation costs due to the shrink-swell potential and subsequent increase in characteristic free surface movement (ys) values. No testing on soil reactivity has been undertaken at this stage. Shrink swell issues can be managed by using site won clays in the lower layers and using a granular fill in the upper 1.0m to 1.5m.

Where offsite disposal of material, or reuse of material at an alternative site is proposed it should be assessed in accordance with the requirements of the '*Department of Environment and Climate Change NSW Waste Classification* Guidelines *Part 1 Classifying Waste*' (July 2009) and / or the EPA Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014. As a preliminary guide the alluvial/residual and weathered rock profile is likely to be classified as Virgin Excavated Natural Material. Some testing would have to be undertaken once materials have been stockpiled to assess this. It is recommended that following topsoil stripping that a Geotechnical Engineer be engaged to confirm that the material across the site has not previously been disturbed.

5 LIMITATIONS

This report comprises the results of an investigation carried out for a specific purpose and client as defined in the document. The report should not be used by other parties or for purposes or projects other than those assumed and stated within the report, as it may not contain adequate or appropriate information for applications other than those assumed or advised at the time of its preparation. The contents of the report are for the sole use of the client and no responsibility or liability will be accepted to any third party. The report should not be reproduced either in part or in full, without the express permission of Regional Geotechnical Solutions Pty Ltd.

Geotechnical site investigation is based on data collection, judgment, experience, and opinion. By its nature, it is less exact than other engineering disciplines. The findings presented in this report and used as the basis for the recommendations presented herein were obtained using normal, industry accepted geotechnical design practises and standards. To our knowledge, they represent a reasonable interpretation of the general condition of the site. Under no circumstances, however, can it be considered that these findings represent the actual state of the site at all points.

The recommended depth and properties of any soil, rock, groundwater, or other material referred to in this report is an engineering estimate based on the information available at the time of its writing. The estimate is influenced and limited by the fieldwork method and testing carried out in the site investigation, and other relevant information as has been made available. In cases where information has been provided to Regional Geotechnical Solutions for the purposes of preparing this report it has been assumed that the information is accurate and appropriate for such use. No responsibility is accepted by Regional Geotechnical Solutions for inaccuracies within any data supplied by others.

If site conditions encountered during construction vary significantly from those discussed in this report, Regional Geotechnical Solutions Pty Ltd should be contacted for further advice.

This report alone should not be used by contractors as the basis for preparation of tender documents or project estimates. Contractors using this report as a basis for preparation of tender documents should avail themselves of all relevant background information regarding the site before deciding on selection of construction materials and equipment.

If you have any questions regarding this project, or require any additional consultations, please contact the undersigned.

For and on behalf of **Regional Geotechnical Solutions Pty Ltd**

Prepared by

Louis Davison

Geotechnical Engineer

Reviewed by

Adam Holzhauser

Associate Geotechnical Engineer

Attachments: Figure 1
Borehole Logs

REGIONAL GEOTECHNICAL SOLUTIONS	**Client:**	MPD Investments	Job No.	RGS32811.1
	Project:	Proposed Residential Subdivision Lot 104 DP 751388, James Creek Road JamesCreek	Drawn By:	LD
			Date:	30-Jul-21
	Title:	Borehole Location Plan	Drawing No.	**Figure 1**

ENGINEERING LOG - BOREHOLE

REGIONAL GEOTECHNICAL SOLUTIONS

BOREHOLE NO: BH1

CLIENT: Mike Willoughby | **PAGE:** 1 of 1

PROJECT NAME: Proposed Subdivision | **JOB NO:** RGS32811.1

SITE LOCATION: Lot 104 DP 7511388 James Creek Road, James Creek | **LOGGED BY:** DR

TEST LOCATION: Refer to Site Plan | **DATE:** 12/7/21

DRILL TYPE: RGS Drill Rig | **EASTING:** | **SURFACE RL:**

BOREHOLE DIAMETER: 100 mm | **INCLINATION:** 90° | **NORTHING:** | **DATUM:** AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered					CL	0.15m **TOPSOIL:** Silty CLAY, medium plasticity, dark brown.	M		DCP (0-m)	4	TOPSOIL
						CH	**Silty CLAY:** medium to high plasticity, grey/pale brown mottled, trace of fine grained sand.	M < w_P	VSt		3 3 3 4 3 3 3 4	RESIDUAL HP=250kPa
				1.0			Iron stained bands, grey				12 10 19 20	HP=250kPa
		1.50m					1.50m		H / Fb			
		DS				CH	**Sandy CLAY:** medium plasticity, grey/white, ironstaining bands, sand is fine to medium grained.	M < w_P				
		2.00m		2.0			Orange/red					
							2.50m					
						CH	**Silty CLAY:** medium plasticity, grey and trace of some fine grained sand.	M < w_P	VSt / H			
				3.0			Hard siltstone layer @3.1m, dark brown, very low strength.					
							3.50m					
						ML	**Clayey SILT:** low plasticity, brown, returned as powdery silty gravel.		H / Fb			
				4.0								HP=200kPa
							4.50m					
						CL	**Silty CLAY:** medium plasticity, grey with ironstainined bands.	M < w_P	VSt / H			
				5.0			5.00m					
							Hole Terminated at 5.00 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

RG LIB 1.05.0.GLB Log RG NON-CORED BOREHOLE - TEST PIT RGS32811.1 LOGS.GPJ <<DrawingFile>> 21/07/2021 10:17 10.02.00.04 Datgel Lab and In Situ Tool

ENGINEERING LOG - BOREHOLE

REGIONAL GEOTECHNICAL SOLUTIONS

BOREHOLE NO: BH2

CLIENT: Mike Willoughby | **PAGE:** 1 of 1

PROJECT NAME: Proposed Subdivision | **JOB NO:** RGS32811.1

SITE LOCATION: Lot 104 DP 7511388 James Creek Road, James Creek | **LOGGED BY:** DR

TEST LOCATION: Refer to Site Plan | **DATE:** 12/7/21

DRILL TYPE: RGS Drill Rig | **EASTING:** | **SURFACE RL:**

BOREHOLE DIAMETER: 100 mm | **INCLINATION:** 90° | **NORTHING:** | **DATUM:** AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered					CH	**TOPSOIL:** Silty CLAY, medium plasticity, dark brown, some organics.	M		DCP (0-m)	2	TOPSOIL
							0.30m				2	
						CH	**Silty CLAY:** medium to high plasticity, dark grey/dark brown.	M < w_P	St		3	RESIDUAL HP=200kPa
											2	
											2	
									VSt		4	HP=300-350kPa
							Grey with red ironstaining				4	
				1.0			1.00m				5	
						ML	**Sandy SILT:** low plasticity, grey, sand is fine to medium grained, trace of gravel.	D	H / Fb		4	
											6	
							Dark brown, returned as gravelly silt with some sand from 1.5m - 2.5m				6	
				2.0							7	
											10	
							Grey silty clay band	M < w_P			16	
							2.80m				20	
		3.00m		3.0		ML	**Gravelly SILT:** low plasticity, dark brown, trace of fine grained sand.	D	H / Fb			EXTREMELY WEATHERED SILTSTONE
		DS 3.20m					Some carbonacious siltstone gravels throughout					
				4.0								
				5.0			5.00m					
							Hole Terminated at 5.00 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

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REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH3

CLIENT: Mike Willoughby | **PAGE:** 1 of 1

PROJECT NAME: Proposed Subdivision | **JOB NO:** RGS32811.1

SITE LOCATION: Lot 104 DP 7511388 James Creek Road, James Creek | **LOGGED BY:** DR

TEST LOCATION: Refer to Site Plan | **DATE:** 12/7/21

DRILL TYPE: RGS Drill Rig | **EASTING:** | **SURFACE RL:**

BOREHOLE DIAMETER: 100 mm | **INCLINATION:** 90° | **NORTHING:** | **DATUM:** AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered					CL	**TOPSOIL:** Silty CLAY, medium plasticity, dark brown, some organics.	M		DCP (0-m)	2	TOPSOIL
						CL	0.20m **Silty CLAY:** medium plasticity, brown/grey mottled.	M ~ w_P	St		2 2 2 2 2 2 2 2 2 2 3	ALLUVIAL/SLOPEWASH HP=120kPa
				1.0		CH	1.00m **Silty CLAY:** medium to high plasticity, grey, red mottled.	M < w_P	St		2 3 5 6 12 18 20	RESIDUAL HP=150kPa
				2.0			Some weathered sandy ironstone bands		VSt			HP=250kPa
				3.0			Some ironstone gravels					
				4.0			Dark red	M < w_P	VSt			RESIDUAL
				5.0			Becoming silty 5.00m					
							Hole Terminated at 5.00 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

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REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH4

CLIENT: Mike Willoughby | **PAGE:** 1 of 1

PROJECT NAME: Proposed Subdivision | **JOB NO:** RGS32811.1

SITE LOCATION: Lot 104 DP 7511388 James Creek Road, James Creek | **LOGGED BY:** DR

TEST LOCATION: Refer to Site Plan | **DATE:** 12/7/21

DRILL TYPE: RGS Drill Rig | **EASTING:** | **SURFACE RL:**

BOREHOLE DIAMETER: 100 mm | **INCLINATION:** 90° | **NORTHING:** | **DATUM:** AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered					CL	**TOPSOIL:** Silty CLAY, medium plasticity, dark brown, organics.	M				TOPSOIL
						CL	0.20m **Silty CLAY:** medium plasticity, dark brown/brown.	M ~ w_P	St	HP	120	RESIDUAL
						CL	0.40m **Silty CLAY:** medium plasticity, pale brown/yellow mottled, trace of ironstone gravel.	M < w_P	St	HP	150	
				1.0		CL	0.80m **Sandy CLAY:** medium plasticity, brown/orange/red.	M < w_P	VSt / Fb			
							1.50m **SANDSTONE:** extremely weathered, fine to medium grained, orange grey, very low strength.	M	H			EXTREMELY WEATHERED SANDSTONE
				2.0			1.80m Auger refusal on extremely weathered sandstone Hole Terminated at 1.80 m					
				3.0								
				4.0								
				5.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

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REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH5

CLIENT: Mike Willoughby | **PAGE:** 1 of 1

PROJECT NAME: Proposed Subdivision | **JOB NO:** RGS32811.1

SITE LOCATION: Lot 104 DP 7511388 James Creek Road, James Creek | **LOGGED BY:** DR

TEST LOCATION: Refer to Site Plan | **DATE:** 12/7/21

DRILL TYPE: RGS Drill Rig | **EASTING:** | **SURFACE RL:**

BOREHOLE DIAMETER: 100 mm | **INCLINATION:** 90° | **NORTHING:** | **DATUM:** AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	0.50m DS 0.70m		0.0		CL	**TOPSOIL:** Silty CLAY, medium plasticity, dark brown, some organics. 0.20m	M		DCP (0-m)	1 1 2 2 3 2 4 6 10 12 16 20	TOPSOIL
						CL	**Silty CLAY:** medium plasticity, grey, brown. 0.50m	M ~ w_P	St			ALLUVIAL
				1.0		CL	**Silty CLAY:** medium to high plasticity, pale brown/pale grey mottling.	M ~ w_P	St / VSt			RESIDUAL HP=150-200kPa
							Pale grey with ironstone banding		VSt / H			HP=200-350kPa
				2.0			Pale grey					
				3.0								HP=400kPa
												HP=400-450kPa
				4.0				M < w_P	H / Fb			
												HP=450kPa
				5.0			5.00m Hole Terminated at 5.00 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

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Enclosure 20

AHIMS Search Results dated 21 October 2021

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : 1621035

Client Service ID : 632444

Place Design Group Pty Ltd

Level 4, 7 Short Street
Southport Queensland 4215

Attention: Madison Ruygrok

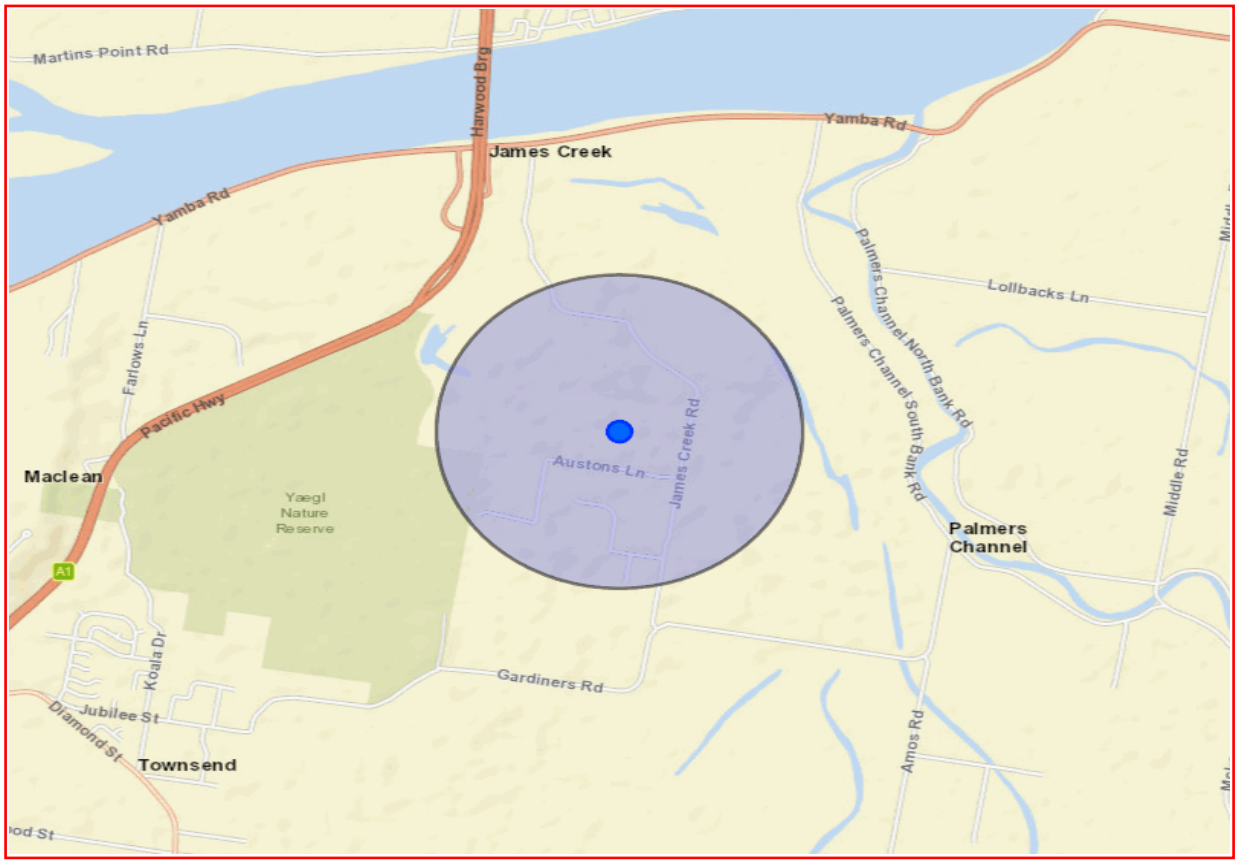
Email: madison.r@placedesigngroup.com

Date: 21 October 2021

Dear Sir or Madam:

AHIMS Web Service search for the following area at Address : JAMES CREEK ROAD JAMES CREEK 2463 with a Buffer of 1000 meters, conducted by Madison Ruygrok on 21 October 2021.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

Enclosure 21

Aboriginal Cultural Heritage Assessment prepared by Ron Heron dated July-August 2009

ANNEXURE E

Aboriginal Cultural Heritage
Site Assessment

Prepared for Harrison Shepherd Pty Ltd
Professional Surveyors, Consultants and Town Planners
Incorporating Mr. Peter Williamson
PO Box 397
Yamba NSW 2463

Re: Rezoniong application from Rural to Resendential
DP 751388
Lot 104, James Creek Road NSW 2463

July-August
2009

By Ron Heron

Table of Contents

1.) Introduction

2.) Description of Impact/ Previous Land use.

3.) Location of site.

4.) The Proposed Development.

5.) Description of Impact.

6.) Aboriginal Cultural Values Assessment.

7.) Aboriginal Community Consultation.

8.) Methodology.

9.) Results.

10.) Conclusion.

11.) Recommendations.

Appendix:-MAPS.
Figure 1 An aerial photograph of the subject land.
Figure 2 A topograhical map showing the location of the land.
Figure 3 A map showing the location of the site and surrounding area.

1. Introduction.

In late May 2009, I was requested to conduct an Aboriginal Cultural Heritage Site Assessment for Harrison Shepherd Pty Ltd .

The purpose of this Aboriginal cultural heritage site assessment is to ascertain if there were any Aboriginal sites of significance present, to record them, and to recommend ways to avoid destruction of these sites and to consult with Yeagl Aboriginal Land Council about the Aboriginal cultural heritage site assessment and to see if there is any knowledge of sacred sites that exists within the study area.

2. Description of the Study Area.

The Study Area is a large portion of land that is designated for sub divisions and has had extensive land clearing.Some of the flora that would have previously been present would have been (Stringy Bark, Bloodwood, Eucalyptus tetra donta, Wiggly Gums, Apple Gums,Wattles)/Grasses (Kooch kikuyu Blade grass Cane grass Barbed wire grass) and other small native flora and introduced noxious weeds. The land is sloped on a small gradient of approximately 5-10 degrees on the northern side of the property.

Previous Land use.

The property was used for small crop growing and we did find evidence of land clearing.

3.) Location of the site.

The proposed development site is located within the Clarence Valley Council LGA also within the Yeagl Country boundary. South of Maclean along James Creek Road Lot 104 James Creek 2463, Development proposal No# 751388. *(See map figure 1,2,3)*

TRIBAL BOUNDARIES

THE YAYGIR BOUNDARY

The tribal areas and the nature of differences among the dialects spoken within the area being studied are very complex. Defining tribal boundaries within the study area is therefore a continuous issue. Crowley (1978), for example, disputes the description by Smythe (1978) of the Yaygir area, suggesting that it is too small. 'The actual Yaygir area extended from the coast inland as far as Cowper on the Clarence River rather than just Maclean, south to Coffs Harbour rather than to just Wooli and north to Evan's Head rather than to just the mouth of the Clarence. This data comes from my own fieldwork on Yaygir (Crowley 1978:254).

My understanding is that the Yaygir area extends from the coast inland as far as Ulmarra , which is further than either Smythe or Crowley claim. Crowley's southern boundary of Coffs Harbour is too far south and the northern boundary of Evan's Head is too far north. However, Smythe describes the area as extending from the mouth of the Clarence River in the north to Maclean in the west and Wooli in the south. I was able to establish from my interviews with some of the Yaygir people that their tribal area extended from the small town of Corindi Beach in the south to Black Rocks in the north which is in between the towns of Evan's Head and Iluka, north of the Clarence River.

4. Proposed Development.

The proposed development is to become urban development by sub dividing the land and implementing all that urban development entails e.g (Roads, Electricity Sewage etc.)..

5. Description of Impact.

After conducting the field site survey I observed the ground and sandy found that the clayish soil would have been to hard and unsuitable and it would be very unlikely any burials would been present. After research and consultation with Yaegl Land Council and after the site assessment I have come to the conclusion that other sites of significance such as Dreamtime story affiliation Bora rings middens and Campsites have not been recorded or known by modern local Yeagl Aboriginals or seem to have any knowledge of previous occupation within the study area with this in mind there should be no impact on Aboriginal Sites of Significance.

6. Aboriginal Cultural Values Assessment.

After conducting literature review and researching through my personal records and with consultation with the Yeagl community no evidence of any sites of significance such as Campsites, Middens, Burials, Bora rings and Stoneaxe factories or quarries could be located.The proposed development site holds no Aboriginal cultural value to the local Aboriginal people of today.

7. Aboriginal Community Consultation.

Aboriginal Community Consultation with Yeagl Local Aboriginal Land Council was conducted by verbal discussions about the site assessment and location of the site and if anyone knew of any Aboriginal sites of significance existed on or in close proximity to the site, none were known. Everyone was pleased to be consulted on such matters and have no objections to the development going ahead.

8. Methodology.

Firstly a review of Aboriginal Archaeological reports from National Parks and Wildlife Services was conducted of the area and surrounding area. A Heritage Study by D. Byrne (1986) "Aboriginal Archaeological Sites in the Shire of Maclean" was the only report that could be located and yielded useful information. I researched through my own personal files searching for any information containing cultural knowledge of the study area.

A field survey was conducted on Tuesday 28th July, This was carried out on foot, Walking in West to East transects, from South to North ,The purpose of the field survey was to search all over the ground surface to ascertain if there were any Aboriginal sites of significance present and to record them.

The location of the study area the terrain, the soil consistency and the flora and fauna was also taken into consideration to determine if there were any Aboriginal sites of significance present.

The field survey was conducted to also search for artefacts such as stone implements by keeping a keen trained eye on the ground and collecting samples especially any foreign stones as the stones that are naturally from the site were not used in the making of stone implements.

9. Results.

My findings after and researching through my personal records and a conducting literature review and with consultation with the Yeagl community no evidence of any sites of significance such as Campsites, Middens, Burials, Bora rings, and Stoneaxe factories or quarries could be located.

No Human Burials or bones were found because I don't think this site would be suitable for a Traditional Aboriginal Burial due to location and the hardness of the soil. So after Researching and Yeagl consultation and fieldwork no evidence could be found of any large Aboriginal Sites of Significance. .

10. Conclusion.

I was asked to do a Aboriginal cultural heritage site assessment of Lot 104 James Creek road NSW 2463 to ascertain if there were any Aboriginal sites of significance present, to record them, and to recommend ways to avoid destruction of these sites and to consult with Yeagl Aboriginal Land Council about the Aboriginal cultural heritage site assessment and to see if there is any knowledge of sacred sites that exists within the study area. Upon completion of the field study and research and consultation, no other evidence could be found of sites of significance and I don't see any reason that the development can not go ahead.

11. Recommendations

The proposed development has had extensive land clearing therefore it is expected that the proposed development would not impact on Aboriginal Heritage or Cultural values, However if any material of Aboriginal origin be located whilst excavation or ground disturbance is taking place, work should cease and the Project manager and the Aboriginal cultural officer should be notified immediately.

References

Byrne. D., 1986 Aboriginal Archaeological Sites in the Shire of Maclean: *A Heritage Sudy. A Report prepared for Maclean Shire Council.*
Department of Environment and Conservation (NSW) 2004/5 National Parks and Wildlife Act 1974: Part 6 Approvals *Interim Community Consultation Requirements for NSW.*
Heron. R., 1990 My People, My Culture, A study of the Aboriginal People on the Lower Clarence River.
Smith. J. and Crowley. B., 1978 Tribal Boundaries of New South Wales.
NSW Dept of lands

Enclosure 22

Yaegl Local Aboriginal Land Council letter dated 6 November 2023

YAEGL LOCAL ABORIGINAL LAND COUNCIL
Hillcrest Community Hall
Jubilee St, MACLEAN 2463
P.O. Box 216, MACLEAN2463
Ph: (02) 66146718
Email: Yaegl@internode.on.net
ABN: 20 613 104 780

To Darryll Smidt
Registered Surveyor &Director on Behalf of
MPD Investments Pty Ltd
21 Dobell Avenue
Paradise Point QLD 2416

.

Updated impact Assessment carried out by Ron Herron in 2009 and attended for an updated Aboriginal Heritage impact assessment- at James Creek Road James Creek Lot 104 DP751388 on the 6/11/2023.
By Diedrie Randall &Dale Mercy to do a site walkover.
Once there has been a disturbance there is likely to be objects or material evidence relating to Aboriginal habitation of the area where upon you will need to engage Aboriginal sites officers.
Defined by the National Parks and Wildlife Act 1974[NPWAct]

CEO
Mr Robin Heath