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Planit Ref: J5957
Dept. Ref: N/A

28 June 2019

Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Request for Site Compatibility Certificate Clause 25 – SEPP (housing for seniors or people with a disability) 2004
49 Elouera Terrace, Bray Park (Lot 18 on DP 627632 and Lot 22 on DP 1170438)

Dear Madam/Sir,

With reference to the above site, please find attached a request for Site Compatibility Certificate for Seniors Housing prepared by Planit Consulting Pty Ltd on behalf of Marjan Management. All of the applicable documentation has been completed in full and accompanies this application.

The Development Application package comprises:

- Completed SCC Application form;
- Payment of application fee (cheque)
- 1x hard copy of SCC request Package (incl. appendices); and
- 1 x Electronic copy of the Development Application Package (thumb drive).

Please proceed to assess the application in accordance with the requirements of the *Environmental Planning & Assessment Act 1979*. If you have any questions relating to the information submitted, please do not hesitate to contact our office on 02 6674 5001.

Yours sincerely

Daniel Mulherin
Town Planner
Planit Consulting







Request for Site Compatibility Certificate

Clause 25 – SEPP (Housing for Seniors or People with a Disability) 2004
at 49 Elouera Terrace, Bray Park being Lot 18 on DP 627632 & Lot 22 on DP 1170438

Prepared for Marjan Management Pty Ltd
By Planit Consulting Pty Ltd

June 2019



This report has been written by

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Project Details

Project Name	**Elouera Terrace Seniors Housing SCC**
Client	**Marjan Management Pty Ltd**
Client Project Manager	**Daniel Mulherin**
Authors	**Daniel Mulherin**
Planit Reference	**J5957**

Disclaimer

Contents

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1 INTRODUCTION

Planit Consulting has been engaged by Marjan Management Pty Ltd (the Applicant) to prepare an application which seeks a Site Compatibility Certificate for land at 49 Elouera Terrace, Bray Park within the Tweed Shire. The Site Compatibility Certificate would relate to a proposed serviced self-contained seniors housing development on the subject land.

Statistics show that over 40% of Tweed Shire's population is aged 55 years or over. This is expected to grow significantly with current trends indicating strongest population growth in the 55 + age groups (**Appendix I**). These statistics indicate that demand for suitable housing opportunity for seniors will continue to rise in the Tweed Shire.

This growing demand for suitable seniors housing is currently falling short on provision, with suitable developable areas (residential land) typically earmarked for standard residential housing typologies. As such, we are seeing a shift to unlock areas of rural lands where these are logically suitable and generally unconstrained to value add, through complementary seniors housing development. The subject site presents this logical expansion to the existing developable area and proposes a development footprint for seniors housing within unconstrained and suitable land.

The following assessment has been carried out in accordance with the provisions of *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004* (Seniors Housing SEPP) and demonstrates the suitability of the site for seniors housing and its opportunity to contribute to the supply of appropriate housing for this growing demographic within the Tweed Shire.

2 SITE & SURROUNDS

2.1 Site Location & Description

The site is commonly referred to as 49 Elouera Terrace, Bray Park (**Figure 1**) and comprises two (2) lots being Lot 18 DP 627632 (**Figure 2**) and Lot 22 DP 1170438 (**Figure 3**). The total area of the site is 35.36 hectares.

Figure 1 – Subject Site (Source: SixMaps)

Figure 2 – Lot 18 DP 627632

Figure 3 – Lot 22 DP 1170438

2.2 Site Context and Surrounding Environment

The subject site is bordered to the northwest by established residential development comprising predominantly of dwelling houses. The sites to the east and north are existing rural farmland and production including agriculture, crop, livestock and general farming operations. The Tweed River tributary sweeps around the southern boundary of the site, with land located opposite this waterway generally rural and large lot residential in nature (**Figure 4**).

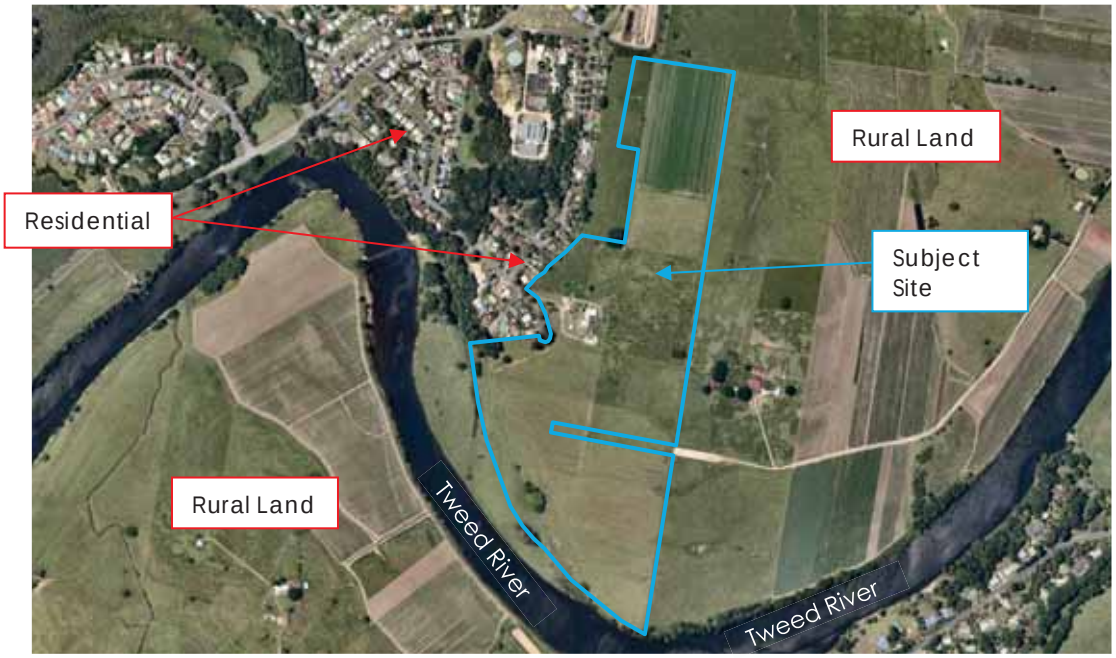


Figure 4 – Site and Surrounding Environment

The site is located approximately 800m south of the minor commercial services of Bray Park and 3.7km south-west of the Murwillumbah commercial centre (**Figure 5**). The immediate commercial services of Bray Park are limited to a butcher, service station (with general store), café and bottleshop. Murwillumbah's town centre comprises a range of major health and social services, community facilities, shops and public transport facilities. A detailed review of the services available to the site is provided in Section 5.2.5 this report.

Figure 5 – Site and Surrounding Environment

2.3 Existing Improvements

The subject site is currently improved by a dwelling house, rural workers dwelling and associated rural structures including sheds, cattle loading gates, tanks, etc (**Figure 6**). Compacted gravel driveways and rural access tracks provide access to and around structures and between paddocks/grazing areas through a number of paddock fences and gates.

Figure 6 – Aerial view of existing structures (Source: Nearmap)

2.4 Topography

The topography of the land is varied with higher sloped areas (Max. 1:3 and 1:8 gradient) generally fronting the Elouera Terrace cul-de-sac. The topography then transitions with the slope gradually lessening to the south and east (**Figure 7** and survey excerpt in **Figure 8**). Lower lying and generally level areas of the site are located along the Tweed River frontage and adjoining the properties due east and north-east.

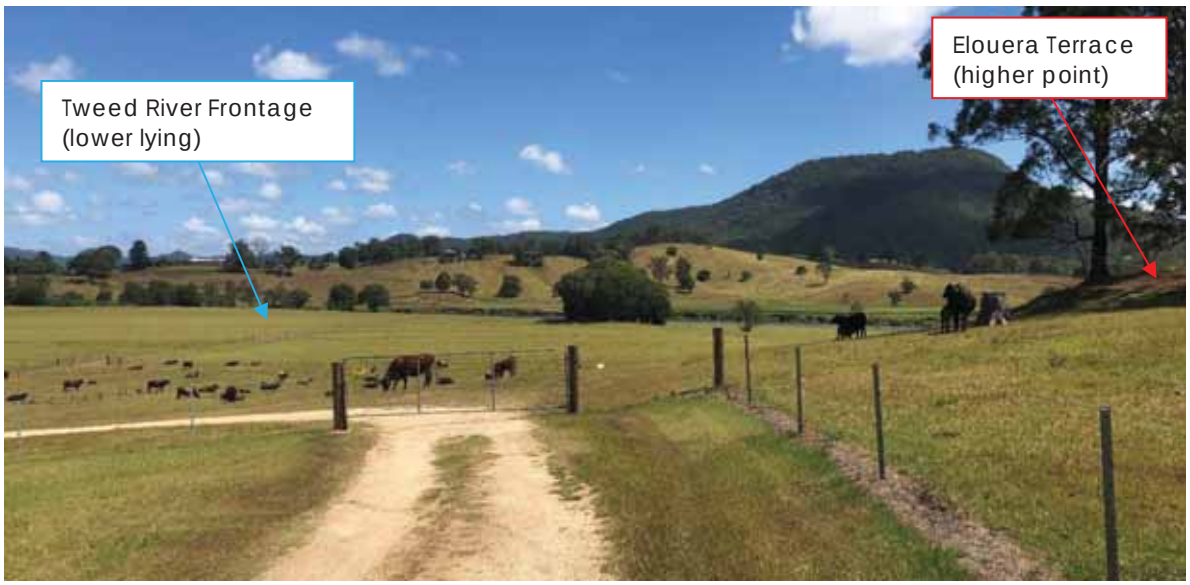


Figure 7 – View of the subject site from internal driveway facing South (Source: Author)

A detailed survey of the site (focussing on the proposed residential zoned land and seniors housing portion) is provided in **Appendix B** with an excerpt in **Figure 8**.

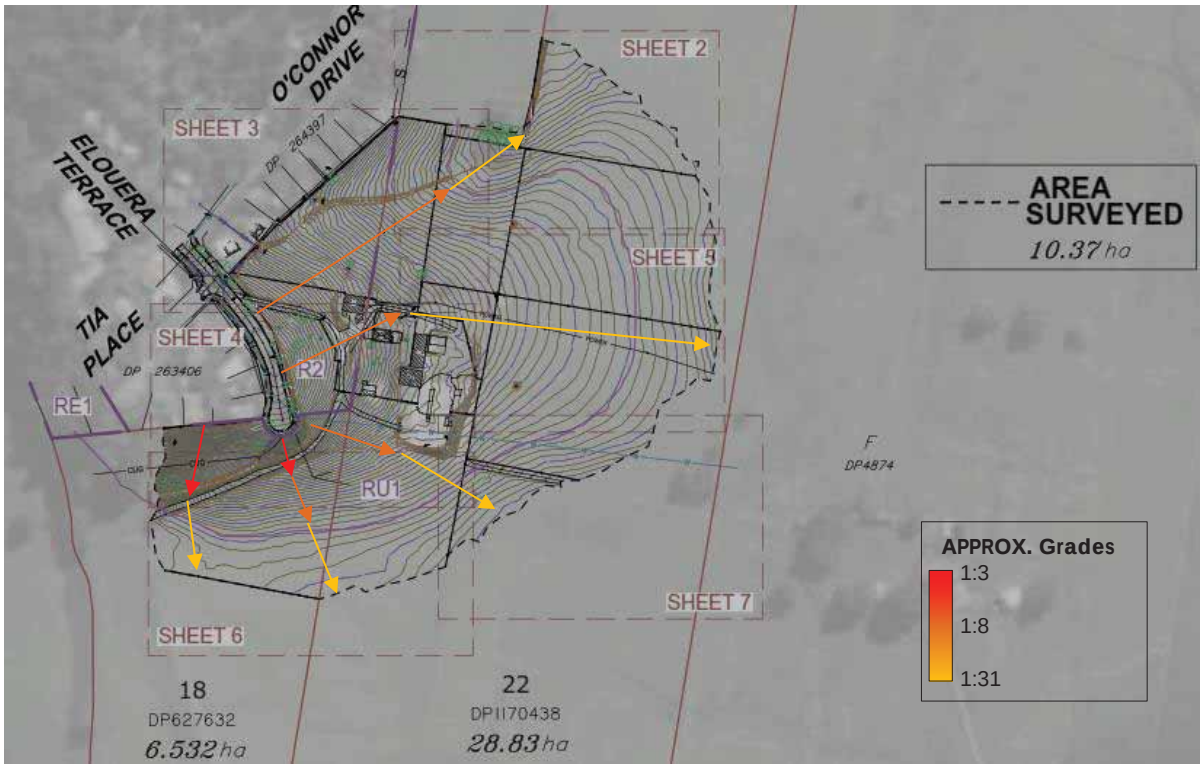


Figure 8 – Detailed Survey Excerpt (Source: Modified from Usher and Company)

2.5 Vegetation

Vegetation is generally limited to grazing areas, individual trees and clusters of trees dispersed over the site; illustrated in **Figures 9** and **10** below.

Figure 9 – Vegetation and grazing areas (Source: Author)

Figure 10 – Tree clusters (Source: Author)

2.6 Mapped Planning Controls & Constraints

The following mapped planning controls and constraints are applicable to the site.

Figure 11 – Zoning Map

Zoning

The subject site is mapped as being within the R2 – Low Density Residential Zone, RU1 – Primary Production; and W2 – Recreational Waterway of the Tweed LEP (**Figure 11**).

Figure 12 – Acid Sulfate Soils

Acid Sulfate Soils

The subject site is mapped as potentially affected by Class 3 (light purple), Class 4 (dark purple) and Class 5 (yellow) Acid Sulfate Soils (**Figure 12**).

Figure 13 – Flood contours and inundation areas

Flood Prone Land

A significant amount of the site is mapped as flood prone (orange in **Figure 13**), and high flow flood prone (grey in **Figure 14**). The site compatibility certificate is sought over land outside the flood prone mapped area. As such, flood is not deemed a major constraint for the intended seniors housing land use. This is discussed further in Section 5.2.

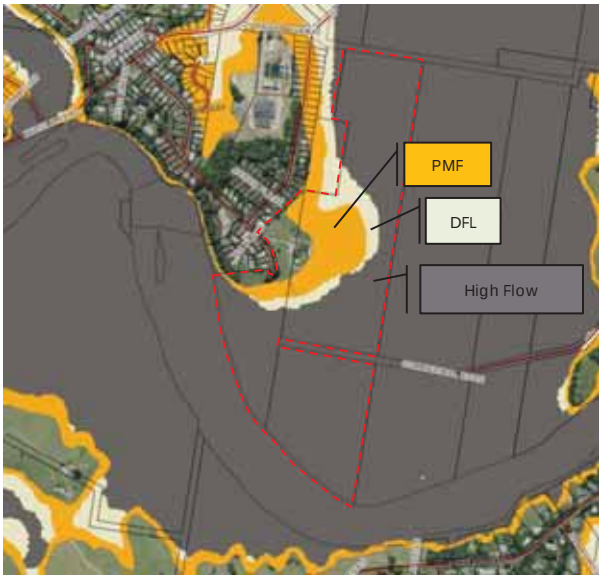


Figure 14 – High Flow, PMF & DFL Flood

Figure 15 – Building Height

Building Height

The subject site is mapped within the building height layer of 9m (J - green) and 10m (K - yellow) shown in **Figure 15**. The proposal will achieve a maximum building height of 8m in accordance with the requirements of the SEPP.

Figure 16 – Bushfire Prone Land

Bushfire Prone Land

The subject site is mapped as being within the vegetation Category 1 (orange), 2 (yellow) and vegetation buffer (red) associated with bushfire prone land (**Figure 16**).

Figure 17 – Drinking Water Catchment

Drinking Water Catchment

Part of the subject site is mapped as being within the Drinking Water Catchment (**Figure 17**). The SCC does not relate to any land within this catchment area.

Figure 18 – Regionally Significant Farmland

Regionally Significant Farmland

Part of the site is mapped as being important farmland identified previously as 'regionally significant farmland' (**Figure 18**). The site was not identified as State significant farmland. Part of the proposed seniors housing land is located within a small portion of this farmland mapped area.

Further detail is provided throughout this proposal and attachments which confirm that the site is suitable for redevelopment, despite this farmland classification.

Figure 19 – Coastal Use Area

Coastal Management Mapping

The site is located within the Coastal Use Area (pink in **Figure 19**) and Coastal Environment Area (blue in **Figure 20**) of the *State Environmental Planning Policy (Coastal Management) 2018* (Coastal Management SEPP). Response to the Coastal Management SEPP criteria is discussed in Section 5.2.

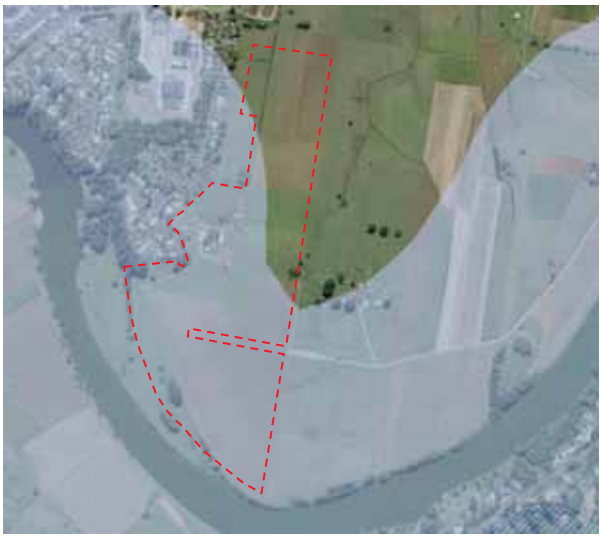


Figure 20 – Coastal Environment Area

The proposal has also considered other relevant mapping, including but not limited to:

- Biodiversity values map; and
- Aboriginal Cultural Heritage Management.

2.7 Site Opportunities/Areas

Considering the above, no major constraints have been identified which would preclude development of the site for future residential and seniors housing intent. The mapped constraints and site investigations have formed the SCC development footprint and defined the built form extent of the seniors housing within this logical expansion to the Bray Park developable area. This has delineated the following areas (**Figure 21**):

- **Residential zoned land** – approx. 1.7ha as zoned (and not forming part of the SCC consent process)
- **SCC footprint** – approx. 6.5ha includes areas for servicing, buffering, stormwater treatment, etc associated with the future development of the site.
- **Seniors housing extent** – approx. 4.5ha within the SCC footprint, this defines the proposed dwelling and design extent.

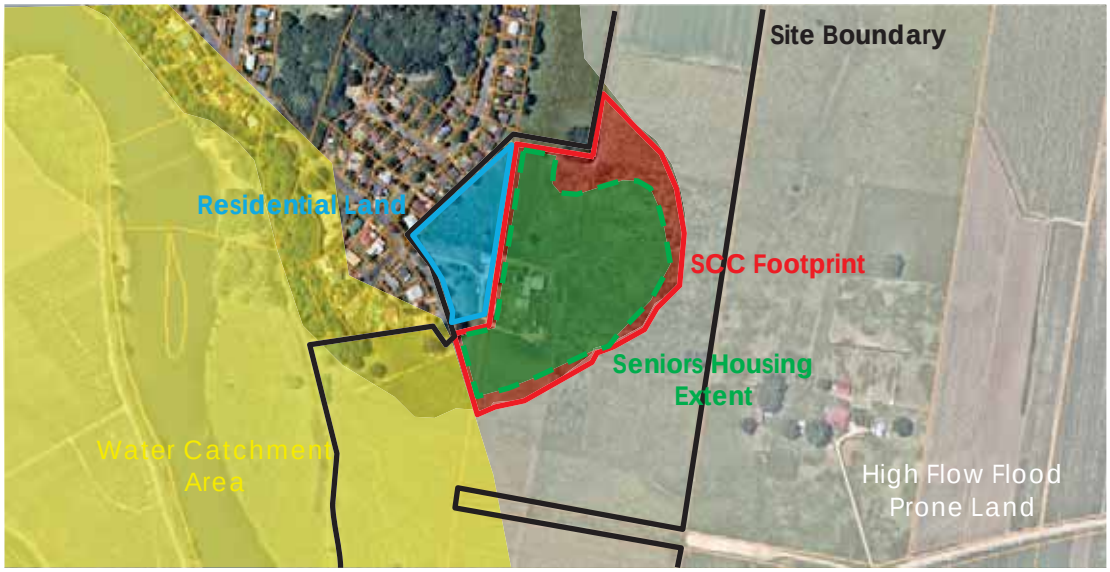


Figure 21 – Site Opportunities and SCC Footprint

3 PROPOSAL

3.1 Proposal Details

This request seeks to permit use of the site for seniors housing within the defined SCC footprint.

Marjan Management Pty Ltd has been liaising with several seniors housing estate providers. These providers (including Oak Tree) have expressed interest in the site potential for seniors housing estates that allow residents to buy and own their home in a peaceful and private community environment. The site presents the opportunity to provide luxurious, yet affordable living opportunity within land lease communities.

The proposed seniors housing development at Elouera Terrace, Bray Park would comprise a range of self-contained dwelling sites and associated health, social and recreational services and facilities. The site may be operated by up to two (2) retirement village entities to provide a range in levels of care and housing options.

A concept plan has been prepared for yield analysis and for the purposes of this request. This plan demonstrates up to 139 serviced self-contained dwellings being accommodated onsite (**Appendix A**). This would significantly contribute to the provision of suitable housing opportunity for Tweed's increasing over 55 + age population.

Ancillary facilities will also be provided onsite to increase liveability, including:

- Multipurpose function / recreational hall including an eating and dining space
- Recreational spaces including a swimming pool, bowling green and tennis court
- Garden areas with BBQ and seating facilities
- Visitor car parking, and
- Village bus services

The concept layout for the seniors housing estate has been designed considering the site attributes and constraints to determine the SCC footprint. Individual allotments range from 150m^2 for higher care services to 250m^2 as per the standard Oak Tree care model. Oak Tree provide lifestyle retirement villages throughout Australia and are included in the design, construction, establishment and ongoing operational phases, to ensure the residential product achieves their exceptional standard of product and amenity. The layout and design provide adequate dwelling and open spaces for future residents.

The preliminary layout has considered the public and internal road network and indicatively provides a functional network in terms of width, gradients, manoeuvrability, access and egress. Significant buffer areas have been provided to adjoining land uses to minimise land use conflict and protect areas of agricultural significance. These areas are within the SCC footprint and provide suitable location for services (such as stormwater treatment), landscaping and open space as an interactive and functional development buffer.

The final dwelling yield and development layout would be determined as part of any development application assessment, subsequent to receiving a Site Compatibility Certificate.

3.2 Operation

In accordance with the definition for self-care seniors housing, there is a requirement to provide on-site support services, including:

- Meals provided on a communal basis or to a resident's dwelling,
- Personal care,
- Home nursing visits, and
- Assistance with housework.

These services will be made available in the form of:

a) Home Delivered Meals: Whilst having a self-care atmosphere and life-style, an alternative source of meals will be made available onsite to all residents. Meals will be provided by private catering organisations within the Tweed Shire that offer good quality affordable meals on a delivered basis. Arrangement for the purchase and provision of these meals will be co-ordinated by the onsite management team.

b) Residents in the development will have a wide range of choice. They can cater for their own needs, use the meal service arranged by management, use the onsite eating and dining facilities or they can source the meals themselves through other local providers.

c) Personal Care and Home Nursing: Arrangements will be made by management to provide personal care and nursing services to residents. An onsite care manager will arrange and coordinate the provision of these services. These services will be provided to residents within their own homes on an as needs basis.

d) Residents of the proposed development will also have access to other medical services in the nearby commercial centres or at the Murwillumbah District Hospital, Tweed Hospital (and future Kingscliff Hospital) if required.

e) Home Help and Assistance with Housework: Arrangements will be made by the management team to provide home help services to residents, including cleaning, building and site maintenance and landscaping. Home help services will be provided on a fee for service basis.

f) Security: The concept layout has been designed to minimise potential security risks onsite, including perimeter roads and lots fronting open space areas to maximise passive surveillance and minimise concealment opportunity. Indicative roads and pathway widths have been designed to promote ease of movement throughout the site, especially for those who may be mobility impaired. The management team would ensure appropriate emergency equipment, procedures, communication systems and personnel are provided and available onsite for the use of all residents.

g) Private Transport: The proposed development will provide a shuttle bus service that will transport residents to and from the site to the Murwillumbah commercial centre at least twice daily. This shuttle bus will have a minimum carrying capacity of 10 passengers and will pick up / drop off residents from designated zones within the site. A pick up / drop off zone has been indicated on the Concept Plan adjacent to the proposed community facilities centres. There is opportunity for additional pick up / drop off zones to be provided throughout the site to minimise travel / walking distances.

Services / Disclosure Statement:

All Seniors Housing developments in New South Wales come under the control of the Retirement Villages Act and Regulations. The Act provides for each operator of such a development to adhere to strict guidelines in the disclosure material given to persons making enquiries regarding any such development.

The provisions are both stringent and demanding and dictate that such material must be presented in a standard format, set out as per the regulations. Non-compliance carries heavy penalties.

A detailed Support Services Plan will be required to be prepared, which details in full the services provided onsite. This Support Services Plan would form part of the development application and occupation certificate requirements.

3.3 Access, Parking & Manoeuvrability

The site will be accessed via Elouera Terrace via a new roadway proposed as part of a residential subdivision of the zoned residential land in the central western portion of the site. Multiple access points may be accommodated onsite as demonstrated with the concept layout. The internal roadway network will comprise major (8.5m wide road reserve) and minor (6m wide road reserve) access roads to promote ease of movement throughout the site whilst maintaining a slow / safe traffic environment. All dwelling sites will have direct access to this roadway network.

An onsite parking space will be provided for each individual dwelling. Additional visitor car parking will also be provided and has been indicatively allocated adjacent to the community facilities centres and throughout the site. Parking for emergency vehicles and a private bus is provided.

Pedestrian pathways will be provided throughout the site, promoting physical activity and pedestrian connectivity with the surrounding recreational areas and commercial centres.

3.4 Landscaping / Open Space Provision

The proposal attempts to maximise landscaping opportunities within the site and integrate with the surrounding urban streetscape, agricultural land and natural landscapes. Appropriate and complementary plant species will be used throughout the development including native plants and groundcovers to create an attractive living environment.

It is envisioned through further Land Use Conflict Resolution Assessment (LUCRA) investigations at the DA stage, that detailed recommendations on the transitional area between the seniors housing and rural lands will be developed. Preliminary discussions and site investigations with Tim Fitzroy (Environmental Health consultant) are beginning to guide some considerations on potential recreational interface and buffer, allowing open space to connect with the rural lands and natural open space outlooks of the site.

4 PERMISSIBILITY STATEMENT - SENIORS HOUSING SEPP

The following comments are provided to demonstrate the permissibility of seniors housing on the site under the Seniors Housing SEPP.

4.1 Clause 4 – Land to which Policy applies

> *(1) General*
> *This Policy applies to land within New South Wales that is land zoned primarily for urban purposes or land that adjoins land zoned primarily for urban purposes, but only if:*
> *(a) Development for the purpose of any of the following is permitted on the land:*
> *(i) Dwelling-houses,*
> *(ii) Residential flat buildings,*
> *(iii) Hospitals,*
> *(iv) Development of a kind identified in respect of land zoned as special uses, including (but not limited to) churches, convents, educational establishments, schools and seminaries, or*
> *(b) The land is being used for the purposes of an existing registered club.*

The site contains 'land that is zoned primarily for urban purposes' and 'land that adjoins land zoned primarily for urban purposes'. The SCC footprint is zoned RU1 Primary Production under the Tweed LEP 2014 and adjoins R2 land. Dwelling houses are a permitted land use within the RU1.

The provisions of this SEPP therefore apply.

> *(2) Land that is not zoned primarily for urban purposes*
> *For the avoidance of doubt, land that is not zoned primarily for urban purposes includes (but is not limited to) land that is within any of the following zones under another environmental planning instrument:*
> *(a) a zone that is identified as principally for rural uses,*
> *(b) a zone that is identified as principally for urban investigation,*
> *(c) a zone that is identified as principally for residential uses on large residential allotments (for example, Zones R5 Large Lot Residential and RU6 Transition referred to in the standard instrument for principal local environmental planning instruments prescribed by the Standard Instrument (Local Environmental Plans) Order 2006).*

The RU1 zone is principally for rural uses. The SCC footprint relates to this part of the site and is thereby 'not zoned primarily for urban purposes'. The provisions of Clause 4(1) remain applicable.

> *(2A) For the avoidance of doubt, land that is not zoned primarily for urban purposes includes (but is not limited to) land to which Warringah Local Environmental Plan 2000 applies that is located within locality B2 (Oxford Falls Valley) or C8 (Belrose North) under that plan.*

N/A

> *(3) Nothing in subclause (2) or (2A) operates to make any land not referred to in those subclauses land that is zoned primarily for urban purposes.*

N/A

> *(4) Land that adjoins land zoned primarily for urban purposes*
> *For the purposes of this Policy, land that adjoins land that is zoned primarily for urban purposes includes (but is not limited to) land that would directly adjoin land that is zoned primarily for urban purposes but for the presence of a public road to which there is direct vehicular and pedestrian access from the adjoining land.*

The site directly adjoins land zoned R2 Low Density Residential. Thereby the provisions of this SEPP remain applicable.

> *(5) Application of Policy to land zoned for special uses and existing registered clubs*
> *For the purposes of this Policy (and for the avoidance of doubt), a consent authority must not treat:*
> *(a) land on which development for the purposes of special uses is permitted, or*
> *(b) land that is being used for the purposes of an existing registered club, as being land zoned primarily for urban purposes unless it is satisfied that most of the land that it adjoins is land zoned for urban purposes.*

N/A – The site is not land zoned for a special use or existing registered club.

> *(6) Land to which Policy does not apply*
> *This Policy does not apply to:*
> *(a) land described in Schedule 1 (Environmentally sensitive land), or*
> *(b) land (other than land to which Warringah Local Environmental Plan 2000 applies) that is zoned for industrial purposes, or*
> *(c) (Repealed)*
> *(d) the land to which Sydney Regional Environmental Plan No 17—Kurnell Peninsula (1989) applies, or*
> *(e) the land to which State Environmental Planning Policy (Western Sydney Parklands) 2009 applies.*

N/A – The SCC proposed land is not identified as land to which the policy does not apply.

Although mapped over the site, the SCC footprint does not contain mapped high flood hazard areas and land within a water catchment consistent with the description listed under Schedule 1. The SCC footprint is thereby not 'land to which the Policy does not apply' and the Policy remains applicable. Specifically, the SCC footprint excludes 'environmentally sensitive land' areas and does not propose development within this land.

> *(7) Nothing in subclause (6) (a) or Schedule 1 operates to preclude the application of this Policy to land only because:*
> *(a) the land is identified under State Environmental Planning Policy No 71—Coastal Protection, or*
> *(b) in the case of land that is used for the purposes of an existing registered club—the land is described in another environmental planning instrument as:*
> *(i) private open space, or*
> *(ii) open space where dwellings or dwelling-houses are permitted.*

The site is located within the NSW coastal zone, however the provisions of SEPP 71 – Coastal Protection have been repealed. Rather, the proposal addresses the considerations of the Coastal Management SEPP 2018 and is deemed suitable development within this area.

4.2 Clause 13 – Self Contained Dwellings

The proposed seniors housing is consistent with the definition of 'serviced self-care housing' as defined:

> ***Serviced self-care housing***
> *In this Policy, serviced self-care housing is seniors housing that consist of self-contained dwellings where the following* services are available on the site: meals, cleaning services, personal care, nursing care.

The proposal seeks to establish up to 139 self-contained dwellings on site. Services consistent with the requirement of serviced self-care housing will be provided onsite as detailed within *Section 3* of this request.

4.3 Clause 17 – Development on Land adjoining land zone primarily for urban purposes

> *(1) Subject to subclause (2), a consent authority must not consent to a development application made pursuant to this Chapter to carry out development on land that adjoins land zoned primarily for urban purposes unless the proposed development is for the purpose of any of the following:*
> *(a) a hostel,*
> *(b) a residential care facility,*
> *(c) serviced self-care housing.*

The proposal is for serviced self-care housing as discussed above.

> *(2) A consent authority must not consent to a development application made pursuant to this Chapter to carry out development for the purposes of serviced self-care housing on land that adjoins land zoned primarily for urban purposes unless the consent authority is satisfied that the housing will be provided:*
> *(a) for people with a disability, or*
> *(b) in combination with a residential care facility, or*
> *(c) as a retirement village (within the meaning of the Retirement Villages Act 1999).*

The proposal will be operated as a retirement village. Operational details of the seniors housing will be required at development application stage and would demonstrate compliance with the Retirement Villages Act 1999.

5 STATEMENT ADDRESSING SITE COMPATIBILITY CRITERIA - SENIORS HOUSING SEPP

5.1 Clause 24 – Site compatibility certificates required for certain development applications

> *(2) A consent authority must not consent to a development application to which this clause applies unless the consent authority is satisfied that the relevant panel has certified in a current site compatibility certificate that, in the relevant panel's opinion:*
>
> *(a) the site of the proposed development is suitable for more intensive development, and*
>
> *(b) development for the purposes of seniors housing of the kind proposed in the development application is compatible with the surrounding environment having regard to (at least) the criteria specified in clause 25 (5) (b).*

This request seeks a Site Compatibility Certificate from the Northern Regional Planning Panel.

The 35.36 hectare site contains (and adjoins) existing residential land and is located approximately 3km southwest of the Murwillumbah commercial centre. The site sits at the extremity of unconstrained, developable land of Bray Park, with land to the south, east and north otherwise heavily constrained (primarily flood constrained).

The SCC footprint provides the opportunity to affect a transition between residential land to the west and rural lands to the south and east. The proposal will be low rise in design with a landscaped buffer and interface with the rural area, and outlooks to the Tweed River and scenic landscape. The land is relatively level and comprises a large, vacant, cleared, developable area, while retaining ample area to continue farming and agricultural uses over the balance of the site. The site is serviced by all essential utility infrastructure as detailed within the engineering servicing assessment prepared by Planit Consulting in **Appendix E**.

The site is zoned for residential and rural purposes with part of rural land proposed herein as suitable for more intensive development. This area earmarked for the SCC footprint clearly defines the developable boundary of Bray Park, based on the constraints and opportunities of the land. While allowing for ample land to be retained and enhanced for rural operations. There are no environmental constraints on the land that would preclude development on the proposed part of the site for seniors housing. The site is mapped as important farmland and previously identified as regionally significant farmland under the *Northern Rivers Farmland Protection Project - Final Recommendations 2005.* It is acknowledged that this restricts rezoning of the site, while consideration of and SCC proposal remains a suitable approval pathway. Assessment against the important farmland interim variation criteria is provided within the Agricultural Land Assessment prepared by Maleleuca Group in **Appendix C**.

The site is considered to be suitable for more intensive development. It has been identified that services are (or will be) provided to meet the seniors housing needs. This is proven by the Oak Tree development model and success. The Applicant has had consultation and interest in the unique seniors housing opportunity of Elouera Terrace, Bray Park, sparked by the rural/residential setting, natural landscape outlooks and interface exclusive to the site. The site provides opportunity to meet the Tweed's ageing population demand, which is not being specifically catered for elsewhere. The proposal increases population within a small portion of the wider Murwillumbah area and is expected to stimulate the economy of the area and complement the surrounding residential nature, while providing housing diversity.

A detailed review of the heads of consideration under Clause 25(5)(b) is provided below, expanding on the comments made above and demonstrating the suitability of the site for more intensive development and its compatibility with the surrounding environment.

5.2 Clause 25 – Application for site compatibility certificate

> *(5) The relevant panel must not issue a site compatibility certificate unless the relevant panel:*
> *(a) has taken into account the written comments (if any) concerning the consistency of the proposed development with the criteria referred to in paragraph (b) that are received from the relevant General Manager within 21 days after the application for the certificate was made, and*

Noted.

> *(b) is of the opinion that the proposed development is compatible with the surrounding land uses having regard to (at least) the following criteria:*
> *(i) the natural environment (including known significant environmental values, resources or hazards) and the existing uses and approved uses of land in the vicinity of the proposed development,*

The mapped site attributes and constraints have been discussed under Section 2 of this request. These matters are listed below and discussed in the context of a proposed seniors housing development on the land.

5.2.1 The Natural Environment

a. **Flooding:** The site is mapped within Council's Flood Planning Area Map. The SCC footprint sits above Council's flood planning level and remains outside mapped high flow flood areas. The proposal will sit partially within PMF mapped land. The Tweed DCP requires high level road evacuation route(s) to land above PMF (being Elouera Terrace and central western portion of the site) for 'sensitive development' (such as seniors housing). Elouera Terrace and the external road network sits above the flood planning level. The entire internal and connecting road network to Elouera Terrace will likewise be above the Design Flood Level (DFL) thereby achieving this requirement.

b. **Acid Sulfate Soils:** The site is mapped as potentially containing Class 3, 4 & 5 Acid Sulfate Soils. An assessment for acid sulfate soils may be required at development application stage and would identify if further management of potentially contaminated soils is required. The proposed development would focus work primarily within the Class 5 areas. Suitable attenuation (such as soil sampling, imported fill, removal of effected soils from the site, avoiding deep surface disturbance, etc) will be addressed and provided as required through subsequent DA and construction stages.

c. **Agricultural Land:** The 35.36 hectare site generally adjoins the Tweed River and agricultural land to the south-west, south and east. The site also adjoins urban land to the north-west. The proposal relates to a small developable area (4.5ha) directly adjoining the urban land due north east. The proposed development area has low agricultural value, with the area currently abutting existing and future urban land with no effective buffering or attenuation to agricultural lands. The intended development of this portion of the site can utilise unconstrained land while providing an effective buffer and transition to the agricultural land. The proposal retains a significant area (approx. 30ha) which will continue to operate for agricultural activity, this is the land identified as highest quality agricultural land and otherwise constrained of development potential (primarily flood related). The retained agricultural land adjoins the Tweed River and agricultural land due southwest, south, east and north-east.

d. **Bushfire Prone Land:** The Special Fire Protection Purpose controls under Planning for Bushfire Protection 2006 are technically applicable given that the proposal seeks to establish seniors housing on a site with land mapped as bushfire prone. The portion of land to be developed however, is completely free of any mapped bushfire prone land or vegetation. This land is generally unconstrained and suitable for more intensive development. A preliminary bushfire hazard assessment has been undertaken and is provided in **Appendix F**. Specific design requirements such as hydrant locations, building design and service provision can be addressed at DA stage.

e. **Contamination:** Site investigations and sampling have been undertaken by ENV Solutions detailing contamination considerations over the site. The investigations did not identify significant constraint over the site. Minor contaminants (such as spilled diesel fuels, oil stains and previous lead based paints consistent with the age of the dwellings and rural operations) are noted, and will be appropriately dealt with at detailed development application stages, through relevant recommendations and controls outlined within the contamination assessment. Please refer to the contamination assessment in **Appendix D**

f. **Vegetation and Ecology:** The site is not identified as containing native or ecologically significant vegetation and value within the SCC footprint. The proposal will incorporate streetscape landscaping and vegetated buffering as suitable as an extension to the surrounding environment.

5.2.2 Existing and Approved Adjoining Uses

The site has a total area of 35.36ha and is largely unimproved with the exception of a residential dwelling and rural sheds in the site's north-west including a worker dwelling. Fencing is provided around the site boundaries, paddocks and existing dwelling.

The site has frontage to, and is accessed from, Elouera Terrace. Elouera Terrace functions as a local collector road providing low volume public and private transport connectivity to Kyogle Road via Bellevue Avenue. Kyogle Road provides direct linkage to Uki and Kyogle (south-west) and Murwillumbah through to the Tweed Heads and the M1 Motorway (north-east).

Urban land surrounding the site is currently characterised by single to two storey dwellings on standard residential blocks, dual occupancies, a church, local shops and water treatment facility. The water treatment facility is located approximately 200m from the SCC footprint and suitably buffered by existing residential development, roadway, vegetation and topography. There are no acoustic, odour or visual amenity impacts on the SCC footprint as a result of the water treatment facility.

Use of the site for seniors housing would be compatible with the surrounding land uses, benefitting from the existing and future services in the area and contributing to housing diversity and lifestyle choice. No site constraints exist which would preclude development for seniors housing.

> *(ii) the impact that the proposed development is likely to have on the uses that, in the opinion of the relevant panel, are likely to be the future uses of that land,*

Council's local environmental plan and urban growth strategy are the local planning instruments guiding the existing and future use of the site. In addition, the North Coast Regional Plan provides focus goals in relation to important farmland, with interim variation criteria which has addressed in detail in **Appendix J.** A review of these planning documents is provided below.

5.2.3 North Coast Regional Plan 2036

The focus goals under the Regional Plan which are directly applicable to this planning proposal request are:

- Goal 1: The most stunning environment in NSW;
- Goal 2: A thriving, interconnected economy;
- Goal 3: Vibrant and engaged communities; and
- Goal 4: Great housing choice and lifestyle options.

Goal 1. The most stunning environment in NSW

The Regional Plan lists important planning principles to ensure the protection and improvement of the Region's highly valued environment. It recognises that most urban settlements on the North Coast are separated by 'green breaks', giving the Region a distinctive character.

Principle 1: Direct Growth to Identified Urban Growth Areas seeks to protect these 'green breaks' and enable efficient infrastructure and service delivery and use by directing growth to mapped growth areas.

The Regional Plan does provide some flexibility, to allow variations to these mapped growth boundaries where they meet strict *Urban Growth Area Variation Principles* and considered through a rezoning process. While the SCC process does not require rezoning, it is important for the proposal to consider the logical expansion of development and impact on existing and future use of the land.

This land contains residential zoned land within the growth area as well as the SCC footprint seeking to extend outside this. It is acknowledged that the growth area aligns with the existing zoned land for Bray Park. Our submission demonstrates however that the use of the site as seniors housing:

- would not impact on workable important agricultural land
- would not significantly reduce the inter-urban / green break and character of Bray Park
- can be suitably serviced without burdening existing infrastructure and would be responding to a housing and demographic need for the area.

The proposal is consistent with the Urban Growth Area Variation Principles as outlined under **Appendix J** of this report and achieves the intent of Goal 1 under the Regional Plan.

Goal 2. A thriving, interconnected economy

The site contains 1.5ha of urban zoned land which follows the linear lines from existing residential zoned land due north and west. The .5ha SCC footprint proposal results in the logical rounding off of urban use based on the site constraints and opportunities. This includes opportunity for an effective buffer between urban and rural lands. While the site sits at the perimeter of developable land, the services provided on site and connectivity maintained with services in the area will support the thriving economy of Murwillumbah and the Tweed. The rural lands will be retained and buffered, defining a clear boundary and interface between developable land and continued farmland. The land owner is a 3rd generation farmer of the site and supports the proposal, acknowledging the improved buffer and outcome as conducive to the low intensity grazing purposes.

The site is mapped as Regionally Significant Farmland and Goal 2 under the Regional Plan seeks to ensure important mapped farmland is protected for long-term agricultural production. The proposal logically rounds off the developable area of Bray Park, while protecting the agricultural operation of the remaining site area.

The Regional Plan does note that some mapped farmland may not be suitable for agricultural production and therefore includes interim variation criteria to allow an alternative land use to be considered, prior to a more detailed review of the Northern Rivers Farmland Protection Project (2005) being undertaken. The proposal meets the requirements of the variation criteria, confirming that an alternative use on the land will not have a detrimental impact on the area's farmland resources (refer to **Appendix J**).

Seniors housing is an important residential accommodation option particularly in an ageing demographic such as Tweed Heads, providing an alternative and affordable living arrangement. Such a use on the unconstrained and logical developable area of this agricultural site can therefore create new housing opportunity while not impacting on wider agricultural practices.

The proposal is consistent with Goal 2.

Goal 3: Vibrant and engaged communities

Goal 3 acknowledges the Region's identity as being shaped by its culture, environment and communities and seeks to ensure growth in the Region respects and builds upon and around this legacy.

Actions under Direction 18 indicate that Aboriginal cultural heritage assessments are to be undertaken to ensure impacts to Aboriginal cultural heritage are minimised and appropriate heritage management mechanisms are identified.

The land has historically been cleared and used for low scale grazing and is surrounded by urban infrastructure. The likelihood of the site containing significant aboriginal items is low. Measures to protect cultural significance can be determined under any future DA that seeks to undertake works onsite. Alternatively, further detailed investigation could be undertaken as part of this planning proposal process to determine the significance of the land and if further site-specific provisions or development controls are required to manage it.

Direction 21 seeks to ensure the cost-effective and efficient use of infrastructure by directing development towards existing infrastructure. The site is located on the periphery of the Bray Park residential area. Power, water, sewer and telecommunication services are currently available to the property.

Preliminary engineering assessments have been undertaken to confirm that the land can be serviced by all necessary utility infrastructure and roadways, at no additional cost to Council or the State government.

The proposal is consistent with Goal 3.

Goal 4: Great Housing Choice and Lifestyle Options

Goal 4 recognises that household sizes and make up is changing and that different approaches to housing delivery is required on the North Coast.

Seniors housing providers such as Oak Tree offer tried and proven housing models for retirement villages. The Oak Tree model allows independence and housing diversity while engaging the community interests and providing lifestyle opportunities, facilities and activities.

While not within an existing settlement area or urban growth area, this SCC seeks to demonstrate that the site is suitable for seniors housing and its development would be contiguous to the existing growth area of Bray Park.

The site's development as seniors housing would create new housing diversity and affordability opportunity, meeting the needs of the community and consistency with the directions and actions under Goal 4.

The proposal is consistent with the Regional Plan. There are no directions or actions under this Plan which preclude the land being considered for more intensive land uses

5.2.4 Tweed LEP 2014

As discussed above the portion of the site to which this application relates is zoned RU1 Primary Production under the Tweed LEP 2014. Seniors housing is prohibited development within the RU1.

The objectives of the RU1 are:

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*
- *To encourage diversity in primary industry enterprises and systems appropriate for the area.*
- *To minimise the fragmentation and alienation of resource lands.*
- *To minimise conflict between land uses within this zone and land uses within adjoining zones.*
- *To protect prime agricultural land from the economic pressure of competing land uses*

The combined 35.36ha sites are bound to the north-east by urban development and zoned residential land. This limits agricultural opportunity on the portion of land proposed for seniors housing, due to potential land use conflict (chemical spraying, odour, dust, etc.). Primarily the portion of land in question has been developed and used for residential and storage purposes. This portion of the site in this regard has low agricultural production value.

The lower lying areas to the south and east of the SCC site provide a natural topographical slope away from the urban land due west. The development of the site will include appropriate landscaped and open space interface buffer between the seniors housing and agricultural lands. Development of the site for seniors housing utilises the last unconstrained land opportunity abutting the urban area, and would be a logical rounding off to the existing urban boundary. This is illustrated in **Figure 22**.

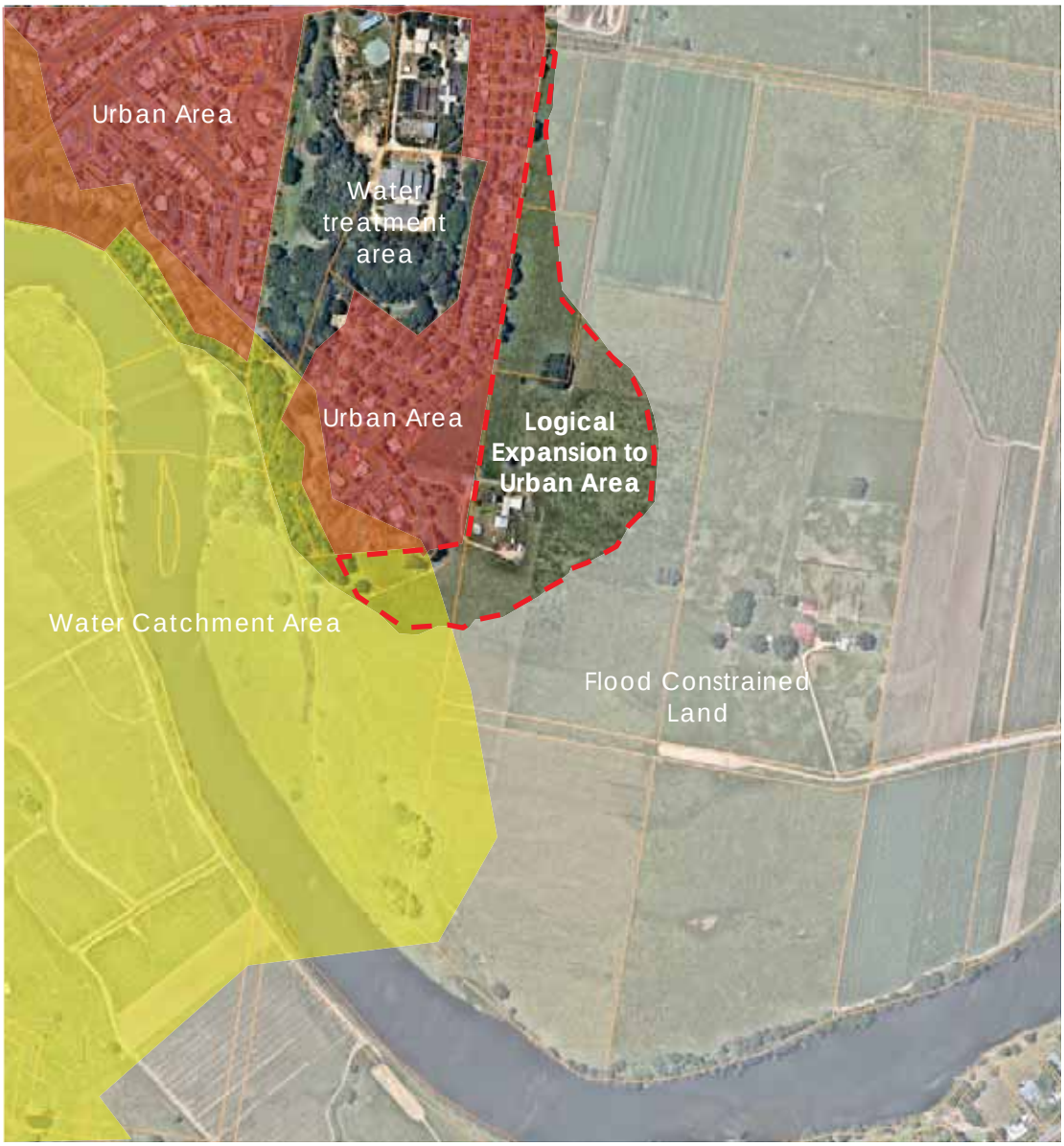


Figure 22 – Urban Areas and Logical Expansion

The proposed seniors housing development will protect natural resources onsite, utilise existing public infrastructure and provides services and facilities on-site as available, and will be compatible with the bulk, scale and character of the area.

Although the RU1 zone does not permit seniors housing, the use of this site for this purpose would not be inconsistent with the zone objectives. The proposal clearly delineates the developable opportunity of the site. The proposal is positioned outside constrained land, consolidating this constrained land as a single agricultural area for continued farming use. The proposal will contribute to the future protection and preservation of agricultural operations on suitable land.

5.2.5 Tweed Urban and Employment Lands Release Strategy 2009

The intent of the Tweed Urban and Employment Lands Release Strategy 2009 (the Strategy) is to guide the location and type of future urban and employment development within the Shire up to 2031. The Strategy sets out local growth management arrangements for key localities throughout the Shire,

considering the key issues for these areas to accommodate additional growth and their desired future character.

The Strategy indicates designated areas for residential release identified to provide dwelling opportunity over the regions projected demand. The key urban 'release areas' within proximity of the site are primarily Areas 1, 2 and 3, being East Kielvale (1) and West Murwillumbah (2 & 3). The Strategy recognises however that this over supply does not reflect the availability of 'appropriate housing' when considering the projected household types and ageing demographics. Specifically, the Strategy acknowledges the current and projected age distribution with accentuation on the high proportion of over 55 aged persons. Therefore, it is understood that a greater supply of seniors housing will be required to accommodate this growing population group, with no guarantee this will be accurately reflected within release area developments. Further, the cost and time of delivery of seniors housing (which is typically less profitable in comparison to standard residential typology) does not guarantee provision will meet current or projected demand.

The Strategy notes that a broader mixt of dwelling types can be provided by enabling such development through the planning system. These would require investigations to identify suitable locations, design and development requirements and potential constraints. Under the methodology for plotting mapped constraints to determine site suitability, it is noted the portion of the site proposed for SCC remains generally unconstrained. Further, the intention of the Seniors Housing SEPP is to identify suitable land for seniors housing opportunities, allowing permissibility to be investigated over the subject site.

This site sits within the Bray Park (West Murwillumbah) locality which has been identified under the Strategy as a key urban locality and growth area within Tweed Shire, however it is noted that the site and SCC footprint are not identified 'release areas'. The key development issue identified for the West Murwillumbah area is 'traffic capacity as vehicles funnel back into town and across the Murwillumbah Bridge'. In response, the proposal comprises serviced self-contained seniors housing and will offer facilities such as a bus service to Murwillumbah shopping district and onsite services (as appropriate) such as a club house, recreational areas, food service, medical service etc. This will reduce standard vehicle trips and demand for the proposal below those typically expected of residential development and unlikely to require network upgrades. A detailed assessment of traffic impact has been undertaken to confirm the suitability of the proposal and is provided in **Appendix G**.

Other noted considerations include water and sewerage services available to the locality and likely augmentation works. The proposal would propose a pump out system to the existing Murwillumbah STP which it is understood is currently being investigated for capacity and upgrade. The Applicant has undertaken preliminary consultation with Tweed Council along suitable augmentation options and will continue to consult with Tweed as they investigate their network. The development of the site would be reasonably subject to developer contributions and works at the developers cost. Capacity and augmentation will continue to be investigated and addressed as part of subsequent development application stages.

The key issues identified for the West Murwillumbah area under the Strategy can be appropriately managed through detailed design and operational specifics. Despite not being identified as a specific 'release area', use of the site for seniors housing would be consistent with the objectives of the Strategy in providing affordable and diverse housing options. Given that the current zoning for the site generally restricts use on the land to agricultural purposes, the future use of the land is likely to remain predominantly vacant if seniors housing is not permitted. Therefore, the site will remain underutilised.

> *(iii) the services and infrastructure that are or will be available to meet the demands arising from the proposed development (particularly, retail, community, medical and*

> *transport services having regard to the location and access requirements set out in clause 26) and any proposed financial arrangements for infrastructure provision,*

The site is located close to a number of existing and future commercial centres and recreational areas that are able to meet the demands arising from the proposed development. This is discussed in more detail below.

- Retail and Community Services

Murwillumbah is an established and growing major regional centre for the Far North Coast Region and its commercial centre is located approximately 3.6km north-east of the site. The city centre has a broad range of retail, commercial and community services including supermarkets, post office, banking, welfare and educational facilities, post offices, food and drink premises and clothing outlets as well as social and recreation facilities such as sporting clubs, golf club, hotels and cultural and community centres.

South Tweed Heads provides a major commercial centre located approximately 30km from the site to the north-east and also encompasses the full range of retail and community services. Uki provides a unique commercial centre located 11km due southwest. Additional commercial centres in the area include Kingscliff, Casuarina and Cabarita Beach via Tweed Valley Way and the Gold Coast via the M1 Motorway and all within 35km.

Onsite services including home delivered meals, communal eating and dining facilities, personal care and home help assistance (ie. cleaning, general maintenance, etc.) will contribute to seniors liveability on the land. These services are discussed within Section 3 of this report.

- Medical Services

The Murwillumbah District Hospital is located approximately 4.7km north-east of the site (9 minutes drive). A number of medical services are located in the commercial centres of Murwillumbah including general practices, dentists and specialist health facilities. A management / care team operating within the proposed seniors housing development will also be available to provide medical and health support when required.

- Recreational Facilities

Recreational facilities onsite will include recreational halls, swimming pools, bowling greens, BBQ and communal areas, etc. The Oaktree model provides communal facilities, social activities and organised outings that allow residents to participate and remain as active as they choose. The management team provides a comprehensive schedule including fitness classes, sports facilities and links these with local community events such as Makers and Finders Markets and Cooly Rocks.

Wider recreational facilities located close to the site include the Tweed coastline and beaches, Tweed River adjoining the site, jockey club, bowling greens and clubs, Murwillumbah Golf Course and club, tennis courts and club, the Murwillumbah Services Club and a range of public open space reserves and playing fields.

- Public Transport Services

There are public bus stops located along Kyogle Road at both Thomas and O'Connor Streets approximately 850m from the site. However, it is noted that the local bus route travels along O'Connor Drive within 50m of the site with a hail and ride service for pick up and drop off. The bus service drops off and picks up along O'Connor Drive six (6) times Monday to Friday and two (2) times on Saturdays.

This loop service travels between the Sunnyside Shopping Centre and Murwillumbah Golf Course. This bus service also provides public transport access to the wider regional centres of Tweed Heads, Byron and the Gold Coast. A copy of this bus service timetable and map is attached (**Appendix H**).

A private bus service will also be operated from the site to promote access and mobility. This bus service would transfer residents to and from the Murwillumbah commercial centre twice daily. A bus with a minimum 10 passenger capacity would be utilised.

The Coolangatta airport is located approximately 35km (30 minutes) of the site.

- Infrastructure Provision

A preliminary capacity review of the existing infrastructure services in the area has been undertaken by Planit Consulting as part of this request (**Appendix E**). This review has determined that the site can be appropriately serviced by all essential infrastructure, likely via an extension to existing services and augmentation works (including pump out sewer system at cost to the developer). It is considered that further detail regarding provision of services can be investigated at detailed design/DA stage.

Figure 23 below identifies the site and its proximity to the various surrounding commercial centre and services which have been mentioned above.

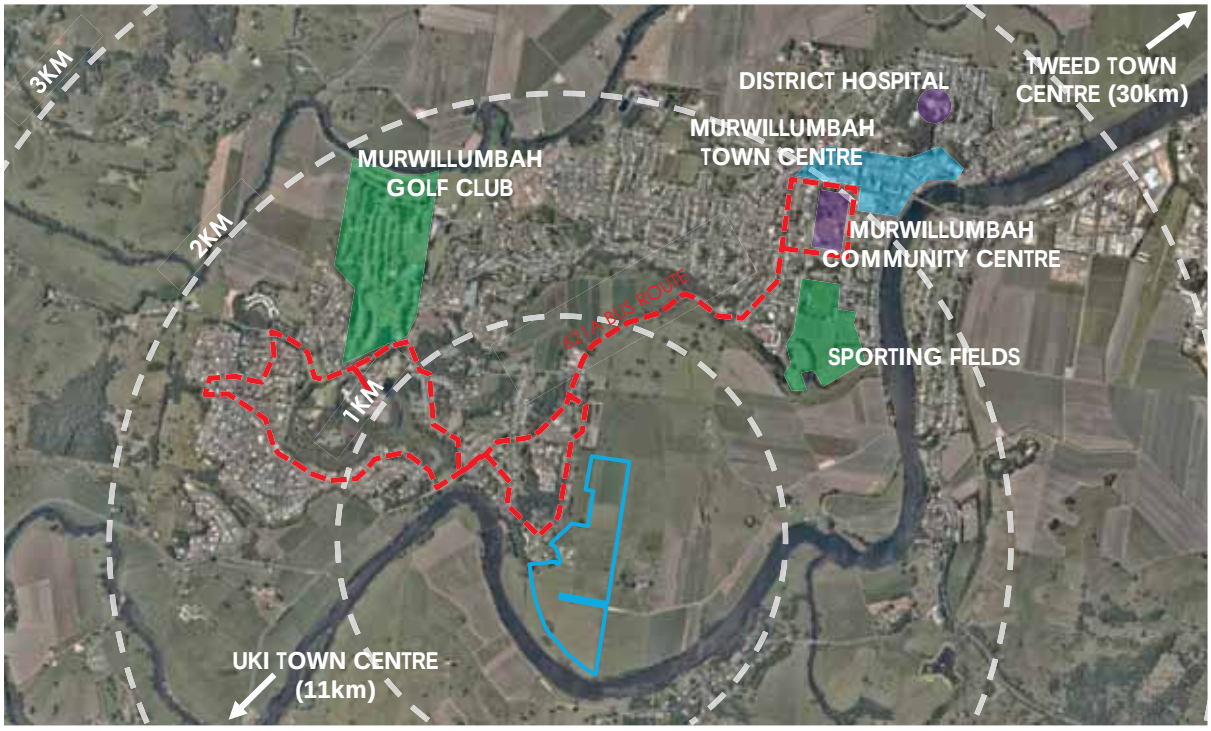


Figure 23 – Surrounding Services and Bus Route

Additional facilities will be provided on site and will include all manner of supporting, recreational and community services envisioned for the ongoing operation and demand of the community. The Oak Tree model provides for social events and organisations, retail, recreational and community facilities and has proven to meet the demand of their communities through established operations. The site sits to the extremity of the developable area of Bray Park which is encompassed by the wider Murwillumbah catchment area. This ensures the site does not result in isolation for the residents with on-site and off-site services readily available.

> *(iv) in the case of applications in relation to land that is zoned open space or special uses—the impact that the proposed development is likely to have on the provision of land for open space and special uses in the vicinity of the development,*

N/A – The site is not zoned open space or special uses.

> *(v) without limiting any other criteria, the impact that the bulk, scale, built form and character of the proposed development is likely to have on the existing uses, approved uses and future uses of land in the vicinity of the development,*

A concept design for the proposed seniors housing estate has been prepared to indicate the intended development yield, bulk and scale for the site (**Appendix A**). The proposal will potentially allow an increase in population of 230-280 persons which represents a 30%-35% increase to the localised area of Bray Park and 2.9%-3.4% to the wider Murwillumbah area. This increase has considered additional impacts such as traffic, infrastructure and amenity and is deemed unlikely to have a negative effect. The nature of the proposal and ability to provide facilities on site will not add additional stress to localised (Bray Park) infrastructure in the area. Rather the proposed increased population is expected to help drive the economic development of the wider Murwillumbah area.

The proposal will contribute to the existing and future built form and dwelling mix in the area, which comprises low density dwellings and dual occupancies. Standard residential setbacks are expected to be provided to adjoining residential lots due north and a public road separating the seniors housing and standard residential lots envisioned (within suitably zoned land and subject to relevant approval processes). The proposal provides ample opportunity for landscaping and separation/buffering from adjoining land uses.

Dwellings onsite will be limited to 2 storeys in height (less than 8m) and will be designed consistent to the coastal climate and character including orientation and layout which has considered solar access and outlooks. The proposal will not result in any detrimental overshadowing, loss of privacy or land use conflict with adjoining land uses and is consistent with the character of the area.

The Concept Layout confirms that seniors housing on the site can maintain consistency with the siting and design principles of the Seniors Housing SEPP and is compatible with the surrounding environment. Further detail will be required to be provided at development application stage to demonstrate consistency with the SEPP as well as Council's local planning provisions and development controls.

The preliminary design has considered the traffic capacity of Elouera Terrace and onto Kyogle Road including location of a public road which will form subsequent DA proposal for residential subdivision. The site includes detail on provision of stormwater services and will assist in defining the developable layout and yield for the site. The future uses in vicinity of the land are likely to continue as residential dwellings and rural farming with dwelling stock well established and the majority of rural land heavily flood constrained. The proposal will remain consistent in terms of built form with the residential development of the area and considers an appropriate buffer and interface with the rural lands ensuring protection of these uses into the future.

> *(vi) if the development may involve the clearing of native vegetation that is subject to the requirements of section 12 of the Native Vegetation Act 2003—the impact that the proposed development is likely to have on the conservation and management of native vegetation.*

The subject site is not identified under any ecological mapping and vegetation over the site is limited to dispersed shade trees within cleared grazing areas which will remain unchanged. The proposal will not involve the clearing of native vegetation that is subject to the requirements of section 12 of the Native Vegetation Act 2003. It should be noted that the concept layout is preliminary and would be

subject to further site testing and design review at development application stage. Any removal of native vegetation onsite would be subject to development approval and can consider relevant impacts.

> *(6) Without limiting subclause (4) (a), the relevant panel may refuse to issue a certificate if the relevant panel considers that the development is likely to have an adverse effect on the environment.*

As discussed throughout this report and detailed within the supporting site investigation studies, the site is suitable for seniors housing and will not result in any detrimental environmental impact.

> *(7) A certificate may certify that the development to which it relates is compatible with the surrounding land uses only if it satisfies certain requirements specified in the certificate.*

Noted.

> *(8) (Repealed)*

Noted.

> *(9) A certificate remains current for a period of 24 months after the date on which it is issued by the relevant panel.*

Noted.

> *(10) To avoid doubt, a site compatibility certificate:*
> *(a) cannot be varied during its currency to cover additional land, and*
> *(b) does not affect the zoning of the land to which it relates under another environmental planning instrument.*

Noted.

5.2.6 Coastal Management SEPP

The site contains coastal environment and coastal use mapped areas (**Figures 24** and **25** respectively). The SCC footprint includes land mapped as coastal environment only (**Figure 24**). In accordance with the *State Environmental Planning Policy (Coastal Management) 2018* this SCC request considers the following:

> *(1) Development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following:*
> *(a) the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment,*
> *(b) coastal environmental values and natural coastal processes,*
> *(c) the water quality of the marine estate (within the meaning of the Marine Estate Management Act 2014), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1,*
> *(d) marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms,*
> *(e) existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,*
> *(f) Aboriginal cultural heritage, practices and places,*

> *(g) the use of the surf zone.*

In response, the site is cleared grazing lands located along the Tweed River. This interface with the 'coastal environment area' remains unchanged and does not cause adverse impact on the matters identified above. There is minimal vegetation located within the SCC footprint limited to dispersed shade trees, the site is not public open space or identified as containing aboriginal cultural heritage practices and places, nor is the site identified as within a 'surf zone'. The proposal will not result in impact on the biophysical, hydrological or ecological environment of the area and includes detail on the retention and detention of stormwater providing suitable treatment. Overall, the SCC footprint considers this coastal area and does not result in any adverse impacts. These considerations will continue to be addressed through subsequent DA stages.

Figure 24 – Coastal Environment Area

Figure 25 – Coastal Use Area

It is noted that the site contains 'coastal use area' mapped land (**Figure 25**). However, the SCC footprint is positioned entirely outside this mapped area. No additional considerations are therefore required.

6 OTHER RELEVANT MATTERS - SENIORS HOUSING SEPP

The following comments are provided considering the other relevant provisions of the Seniors Housing SEPP to further demonstrate the permissibility of the proposal and its suitability.

Further detail will be required to be prepared following the issuing of a Site Compatibility Certificate to demonstrate compliance with the relevant provisions. This additional detail will be submitted at development application stage.

6.1 Clause 26 – Location and access to facilities

> *(1) A consent authority must not consent to a development application made pursuant to this Chapter unless the consent authority is satisfied, by written evidence, that residents of the proposed development will have access that complies with sub clause (2) to:*
>
> *(a) shops, bank service providers and other retail and commercial services that residents may reasonably require, and*
>
> *(b) community services and recreation facilities, and*
>
> *(c) the practice of a general medical practitioner.*

A review of the existing and future services surrounding the site has been undertaken above. This review has confirmed that all necessary services listed under Clause 26(1) are located within the Murwillumbah commercial centre.

> *(2) Access complies with this clause if:*
>
> *(a) the facilities and services referred to in sub clause (1) are located at a distance of not more than 400 metres from the site of the proposed development that is a distance accessible by means of a suitable access pathway and the overall average gradient for the pathway is no more than 1:14, although the following gradients along the pathway are also acceptable:*
>
> *(i) a gradient of no more than 1:12 for slopes for a maximum of 15 metres at a time,*
>
> *(ii) a gradient of no more than 1:10 for a maximum length of 5 metres at a time,*
>
> *(iii) a gradient of no more than 1:8 for distances of no more than 1.5 metres at a time, or*

N/A – The site is located greater than 400m from the required services.

> *(b) in the case of a proposed development on land in a local government area within the Sydney Statistical Division—there is a public transport service available to the residents who will occupy the proposed development:*
>
> *(i) that is located at a distance of not more than 400 metres from the site of the proposed development and the distance is accessible by means of a suitable access pathway, and*
>
> *(ii) that will take those residents to a place that is located at a distance of not more than 400 metres from the facilities and services referred to in sub clause (1), and*
>
> *(iii) that is available both to and from the proposed development at least once between 8am and 12pm per day and at least once between 12pm and 6pm each day from Monday to Friday (both days inclusive), and the gradient along the pathway from the site to the public transport services (and from the public transport services to the facilities and services referred to in subclause (1)) complies with subclause (3), or*

N/A – The site is not in the Sydney Statistical District.

(c) in the case of a proposed development on land in a local government area that is not within the Sydney Statistical Division—there is a transport service available to the residents who will occupy the proposed development:

(i) that is located at a distance of not more than 400 metres from the site of the proposed development and the distance is accessible by means of a suitable access pathway, and

(ii) that will take those residents to a place that is located at a distance of not more than 400 metres from the facilities and services referred to in subclause (1), and

(iii) that is available both to and from the proposed development during daylight hours at least once each day from Monday to Friday (both days inclusive), and the gradient along the pathway from the site to the public transport services (and from the transport services to the facilities and services referred to in subclause (1)) complies with subclause (3).

Note. Part 5 contains special provisions concerning the granting of consent to development applications made pursuant to this Chapter to carry out development for the purpose of certain seniors housing on land adjoining land zoned primarily for urban purposes. These provisions include provisions relating to transport services.

A private bus service will operate from the proposed seniors housing village, providing residents with a convenient mode of transport to and from the Murwillumbah commercial centre (indicative pick up locations in **Figure 26** below). It is proposed this service can operate in accordance with the general requirements of Clause 43, being:

- Bus capacity of minimum 10 passengers;
- Drop off and pick up passengers at a local centre (within 400m of Sunnyside Mall (Murwillumbah) which provides:
- Shops, bank, retail and commercial;
- Community services and recreational facilities; and
- General medical practitioner.
- Service available both to and from the proposed development to the local centre between 8am and 12pm and once between 12pm and 6pm per day Monday to Friday (opportunity for more frequent service to be determined);

Figure 26 – Potential Pick up/Drop off points

It is also noted that a local public bus route travels within 50m of the site and 220m walking distance from the SCC boundary. Although the topography of the residential subdivision area may slightly exceed the gradients as detailed in Subclause 3, this additional bus service runs 6 times per day Monday to Friday and twice on Saturday. This service offers a 'hail and ride' to allow pick up and drop off along the route (**Figure 27**). This provides an alternative transport option over and above the requirements of Clause 26.

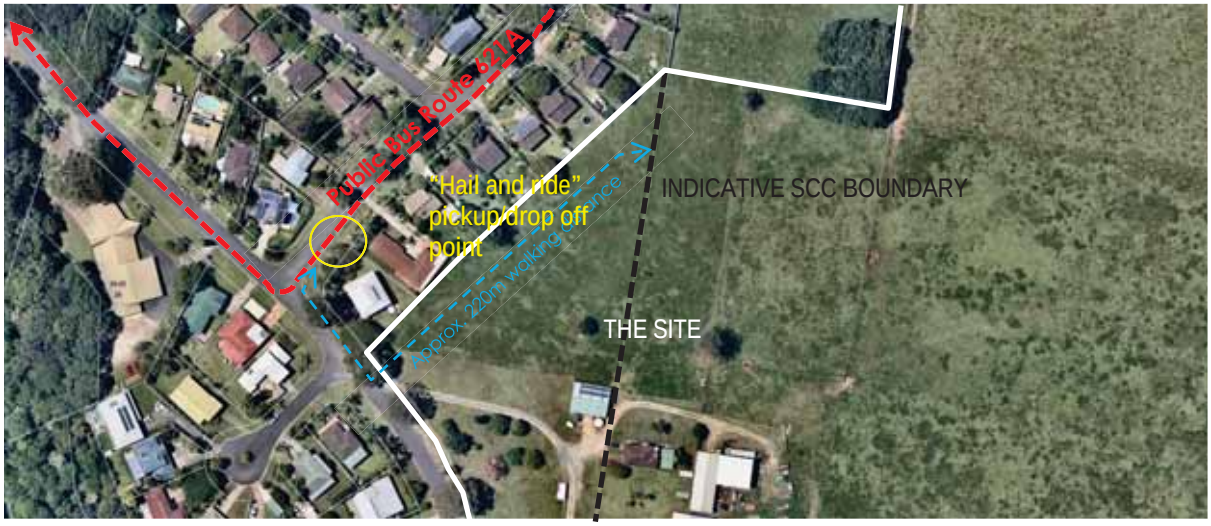


Figure 27 – Adjoining bus services

> *(3) For the purposes of subclause (2) (b) and (c), the overall average gradient along a pathway from the site of the proposed development to the public transport services (and from the transport services to the facilities and services referred to in subclause (1)) is to be no more than 1:14, although the following gradients along the pathway are also acceptable:*
>
> *(i) a gradient of no more than 1:12 for slopes for a maximum of 15 metres at a time,*
> *(ii) a gradient of no more than 1:10 for a maximum length of 5 metres at a time,*
> *(iii) a gradient of no more than 1:8 for distances of no more than 1.5 metres at a time.*

The private bus service will be provided onsite and pedestrian pathways and access provided in accordance with Clause 43. Indicative pickup and drop off points have been indicated on the concept development plan adjoining the proposed onsite community facility centres. There is opportunity for additional pick up and drop off areas to be provided throughout the site to minimise walking distances and grades (as required).

The average gradients between the collection points and dwellings are generally less than 1:20 (being less than the prescribed 1:14). Internal roadways and pedestrian pathways generally cut across the site slope to facilitate pedestrian movement throughout the site. The final layout and design (at DA stage) are expected to confirm compliance with the requirements of Subclause 3.

> *(4) For the purposes of subclause (2):*
>
> *(a) a suitable access pathway is a path of travel by means of a sealed footpath or other similar and safe means that is suitable for access by means of an electric wheelchair, motorised cart or the like, and*
> *(b) Distances that are specified for the purposes of that subclause are to be measured by reference to the length of any such pathway.*

All internal pathways will comply with this clause.

> *(5) In this clause:*
> *bank service provider means any bank, credit union or building society or any post office that provides banking services.*

A branch of all major banks is located within proximity of the Murwillumbah commercial centre including a St George Branch within the Sunnyside Shopping Centre itself. The private bus services provided onsite will increase accessibility to these banking facilities from the site.

6.2 Clause 28 – Water and sewer

> *(1) A consent authority must not consent to a development application made pursuant to this Chapter unless the consent authority is satisfied, by written evidence, that the housing will be connected to a reticulated water system and have adequate facilities for the removal or disposal of sewage.*
> *(2) If the water and sewerage services referred to in subclause (1) will be provided by a person other than the consent authority, the consent authority must consider the suitability of the site with regard to the availability of reticulated water and sewerage infrastructure. In locations where reticulated services cannot be made available, the consent authority must satisfy all relevant regulators that the provision of water and sewerage infrastructure, including environmental and operational considerations, are satisfactory for the proposed development.*

A review of existing infrastructure and services has been undertaken which confirms that the site has access to reticulated water and sewer services. The Applicant and Council are continuing to consult on capacity options. An engineering review has been prepared in consultation with Council's engineering services team. Augmentation works may be required to the existing sewer network to cater for increased sewer flow, as is the existing requirement for development of the zoned residential area. Augmentation works will be confirmed and investigated at detailed DA stage at the developers cost. Refer to the Engineering Assessment in **Appendix E** for further information.

6.3 Clause 40 – Development Standards – Minimum Sizes and Building Height

> *General*
> *A consent authority must not consent to a development application made pursuant to this Chapter unless the proposed development complies with the standards specified in this clause.*

The proposal complies with the standards specified under this clause.

> *Site size*
> *The size of the site must be at least 1,000 square metres.*

The site is greater than 1,000m^2 in area.

> *Site frontage*
> *The site frontage must be at least 20 metres wide measured at the building line.*

The site currently has a frontage of approximately 150m when measured along Elouera Terrace. Continuation of Council's transport network with a public road over the site will result in approximately 300m of available frontage for the site.

> *Height in zones where residential flat buildings are not permitted*
> *If the development is proposed in a residential zone where residential flat buildings are not permitted:*
> *(a) the height of all buildings in the proposed development must be 8 metres or less, and*
> *(b) a building that is adjacent to a boundary of the site (being the site, not only of that particular development, but also of any other associated development to which this Policy applies) must be not more than 2 storeys in height, and*
> *(c) a building located in the rear 25% area of the site must not exceed 1 storey in height.*

N/A – The site is not located within a 'residential zone'. Dwellings onsite will not exceed 2 storeys (8m or less)

> *Development applications to which clause does not apply*
> *Subclauses (2), (3) and (4) (c) do not apply to a development application made by any of the following:*
> *(a) the Department of Housing,*
> *(b) any other social housing provider.*

N/A – The proposal is not made by the Department of Housing or a social housing provider.

6.4 Clause 42 - Serviced self-care housing

Clause 42 is applicable to the proposal, the following comments are provided:

> *A consent authority must not consent to a development application made pursuant to this Chapter to carry out development for the purpose of serviced self-care housing on land that adjoins land zoned primarily for urban purposes unless the consent authority is satisfied, by written evidence, that residents of the proposed development will have reasonable access to:*
> *(a) home delivered meals, and*
> *(b) personal care and home nursing, and*
> *(c) assistance with housework.*

The proposed development will incorporate onsite facilities to meet the requirements of this provision. As detailed under Section 3 of this request, the provision and availability of the required services will be detailed at development application stage. All required services can be provided onsite.

> *For the purposes of subclause (1), residents of a proposed development do not have reasonable access to the services referred to in subclause (1) if those services will be limited to services provided to residents under Government provided or funded community based care programs (such as the Home and Community Care Program administered by the Commonwealth and the State and the Community Aged Care and Extended Aged Care at Home programs administered by the Commonwealth).*

The onsite services will be provided by the operator of the seniors housing facility. These will not be funded government community based care programs.

6.5 Clause 43 - Transport services to local centres

> *A consent authority must not consent to a development application made pursuant to this Chapter to carry out development for the purpose of serviced self-care housing on land that adjoins land zoned primarily for urban purposes unless the consent authority is satisfied that a*

> *bus capable of carrying at least 10 passengers will be provided to the residents of the proposed development:*
>
> *(a) that will drop off and pick up passengers at a local centre that provides residents with access to the following:*
>
> *(i) shops, bank service providers and other retail and commercial services that residents may reasonably require,*
>
> *(ii) community services and recreation facilities,*
>
> *(iii) the practice of a general medical practitioner, and*
>
> *(b)that is available both to and from the proposed development to any such local centre at least once between 8am and 12pm each day and at least once between 12pm and 6pm each day.*
>
> *Subclause (1) does not apply to a development application to carry out development for the purposes of the accommodation of people with dementia.*
>
> *In this clause, bank service provider has the same meaning as in clause 26.*

An onsite bus service will be provided for transporting occupants to and from the Murwillumbah commercial centre. A private bus with a minimum capacity of 10 passengers will service the site at least once daily in the AM and once daily in the PM. Two (2) pickup and drop off points have been indicated on the Concept Plan (**Appendix A**). Additional pick up and drop off zones can be accommodated onsite to minimise travel / walking distances.

6.6 Clause 44 - Availability of facilities and services

> *A consent authority must be satisfied that any facility or service provided as a part of a proposed development to be carried out on land that adjoins land zoned primarily for urban purposes will be available to residents when the housing is ready for occupation. In the case of a staged development, the facilities or services may be provided proportionately according to the number of residents in each stage.*

The facilities referred to above will be made proportionately available at the time that the proposal is complete. Staging is not yet known, however should staging be proposed, all required services will be available at Stage 1.

7 CONCLUSION

This request demonstrates that the site meets the requirement to be considered 'land that adjoins land zoned primarily for urban purposes' and that seniors housing on the site can be developed with no significant environmental impact.

The locality and specifically the subject site are ideally suited as an extension to the development footprint of Bray Park to accommodate seniors housing. The development is located within generally unconstrained land, presenting a clear delineation and buffer between suitable development land and rural lands to remain undeveloped.

The subject site has significant opportunity to help meet the existing and future seniors housing demand by providing a facility that has a high degree of amenity, which can often be lacking in traditional 'seniors living' developments and more 'urbanised' environments. The site outlooks over the natural landscape and flowing Tweed River with a unique setting for seniors housing. The site will transition and connect to the adjoining rural lands, while value adding to this transition through buffer landscaping and an active interface.

We trust the above provides the Department with sufficient detail to determine this Site Compatibility Certificate request in accordance with the provisions of Clause 24 and 25 of the SEPP.

Should the Department require any additional information, or wish to clarify any matter raised by this proposal or submission made to same, please consult with **Planit Consulting**.

Appendix A

Elouera Terrace, Bray Park
Concept Layout Plan

Seniors Housing Type 1A
Seniors Housing Lots 18m depth average.
Average Lot Size 150m²
Single Storey Attached Dwellings in groups of 2-3
Typical template used: 2 bedroom, single carpark per dwelling (one covered)
Yield: 82

Seniors Housing Type 1B
Seniors Housing Lots 18m depth average
Average Lot Size 200m² - 250m²
Single Storey Attached Dwellings in groups of 2-3
Typical template used: 2-3 bedroom, 2 x tandem carparks per dwelling (one covered)
Yield: 57

Primary Access Street (Indicative)
16.0m wide road reserve, 9.0m sealed. TSC 'Wider Access Street'. This street provides a loop road through the development, connecting the primary and secondary site entry points to Elouera Terrace.

Indicative Internal Street
10.0m wide road reserve, 6.0m sealed.

Indicative Internal Laneway
8.0m wide laneway reserve, 5.0m sealed.

Low Flow Flood Area
Area identified through topographic analysis as area of low flow flood area. Nil development proposed within this zone. Potential buffer planting located within this zone to transition to surrounding farmland. Development within this area would be subject to relevant flood considerations and design.

Indicative Community Facilities 01
Community facilities area. Primarily services the northern residential precinct (Residential Type C). Potential to include pool area, lawn bowls, landscaped gardens, areas of open turf. Community use building, footprint illustrated approximately 350-400m². Located to take advantage of views to the east and south across existing farmland. Located at the eastern end of the primary site entry to allow clear line of site through the development of the primary community facilities and to long views to the east.

Indicative Community Facilities 02
Community facilities area. Primarily services the southern residential precinct (Residential Type B). Potential to include pool area, lawn bowls, landscaped gardens, areas of open turf. Community use building, footprint illustrated approximately 350-400m² . Located on an elevated site to take advantage of views to the east and south across the residential precincts and over existing farmland. Located at the primary entry of the estate to serve as the 'entry statement' of the development and create a clear and legible arrival.

Indicative Site Entry
Site entry off Elouera Terrace. To be confirmed through residential subdivision layout. Subject to relevant approval.

Visitor Parking
Visitor carparking indicative locations illustrated. Requirement based on number of dwelling sites: 20
Car parking located primarily in close proximity to community facilities areas(qty 20) with balance of spaces located throughout the development where layout permits.
Total visitor carparks illustrated: 40.

Existing Agricultural Land
Working farm located to balance of lot. Potential to provide informal pedestrian access from the proposed development (from Community Facilities 01) to facilitate potential for community gardens and integration of these landuses.

Existing Residential Area

Indicative Bus Pick up point

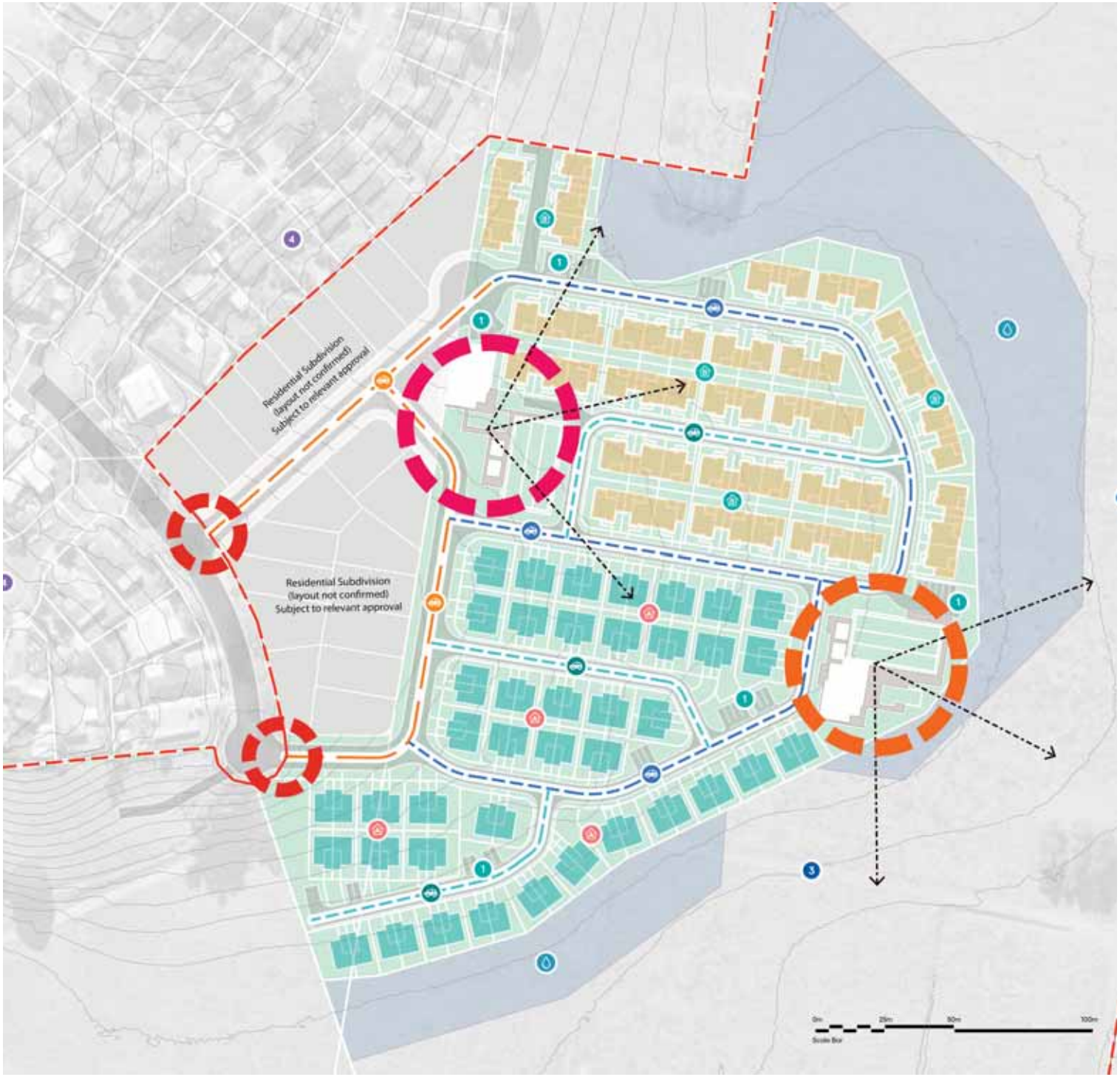
Area 1 Seniors: 45.272 m2

Area 2 Buffer: 20.039 m2

Area 3 Residential Subdivision: 12.728 m2

PLANIT

Elouera Terrace, Bray Park
Concept Layout Plan



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Indicative Internal Street
10.0m wide road reserve, 6.0m sealed.

Indicative Internal Laneway
8.0m wide laneway reserve, 5.0m sealed.

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PLANIT

Elouera Terrace, Bray Park

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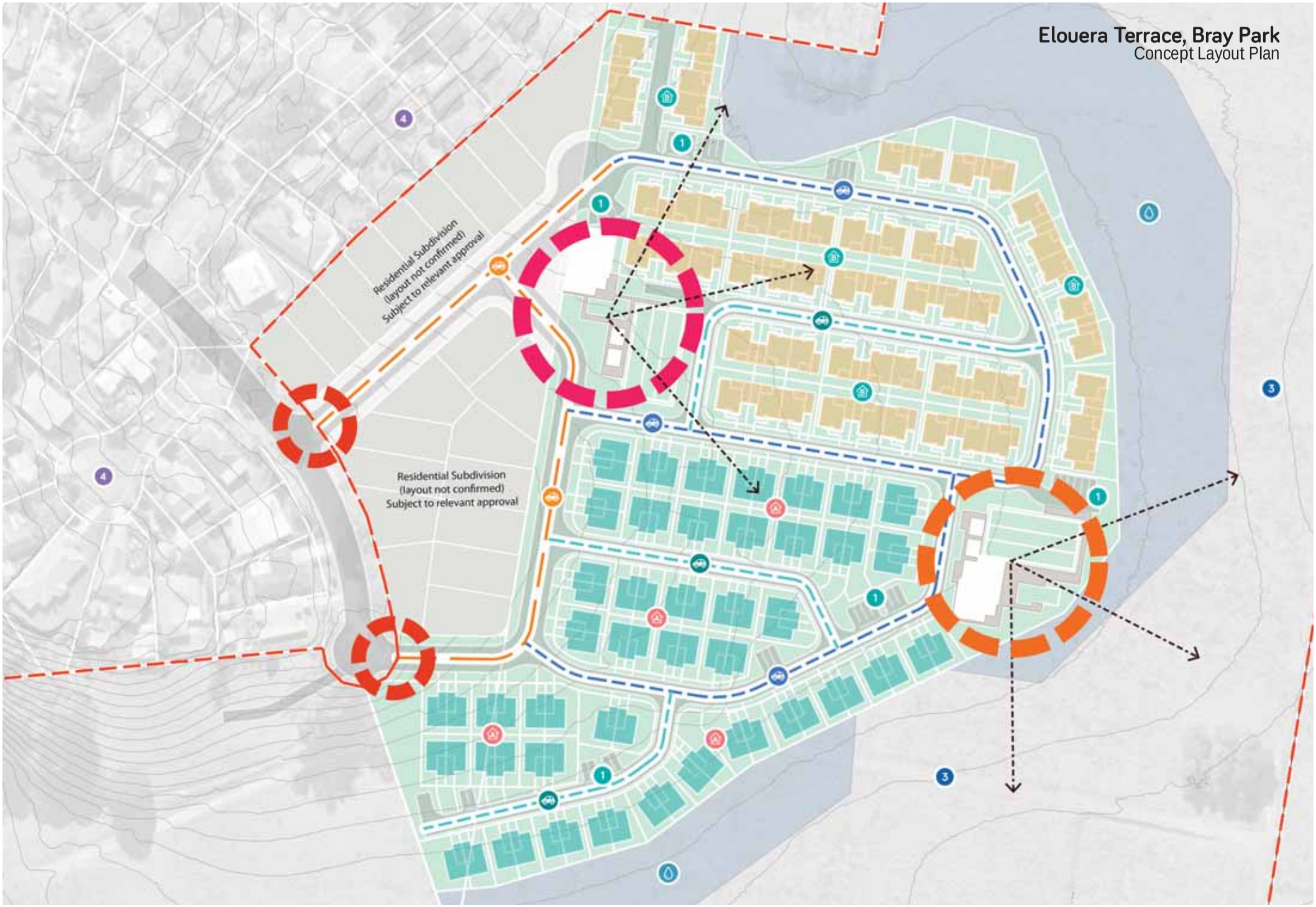
Elouera Terrace, Bray Park
Concept Layout Plan
Residential Subdivision
(layout not confirmed)
Subject to relevant approval
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(layout not confirmed)
Subject to relevant approval

Elouera Terrace, Bray Park
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Area 2 Buffer: 20.039 m2

Area 3 Residential Subdivision: 12.728 m2

PLANIT

Appendix B

NOTES

LOT AREAS AND BOUNDARY DIMENSIONS HAVE BEEN COMPILED FROM DEPOSITED PLANS AVAILABLE AT LAND & PROPERTY INFORMATION NSW. NO BOUNDARY SURVEY OR INVESTIGATION HAS BEEN MADE AND NO BOUNDARIES HAVE BEEN MARKED. BOUNDARIES SHOWN HEREON ARE PROVISIONAL AND SUBJECT TO FURTHER SURVEY. POSITION OF IMPROVEMENTS RELATIVE TO BOUNDARIES SHOWN HEREON IS DIAGRAMMATIC ONLY.

THE SUBJECT PARCEL IS SITUATED ON A RIVER AND AS SUCH SUBJECT TO AN AMBULATORY BOUNDARY. AREA AND DIMENSIONS USED FOR THE BOUNDARY HAVE BEEN DERIVED FROM THE ORIGINAL REGISTERED PLAN AND ANY CALCULATIONS USED FOR DEVELOPMENT PURPOSED COULD SIGNIFICANTLY CHANGE ON FINAL SURVEY. IT IS STRONGLY ADVISED THAT A SURVEY REDEFINING THE BOUNDARIES BE CARRIED OUT PRIOR TO LODGMENT OF DEVELOPMENT APPROVALS.

BEARINGS SHOWN ON THIS PLAN ARE ORIENTATED TO NORTH VIDE DP1170438. IF SHADOW DIAGRAMS ARE TO BE CALCULATED THEY MUST BE CALCULATED USING TRUE NORTH.

SERVICES & UTILITIES SHOWN ON THIS PLAN HAVE BEEN LOCATED BY COMBINATION OF FIELD SURVEY AND REFERENCE TO SERVICE PLANS FROM STATUTORY AUTHORITIES. ONLY VISIBLE AND APPARENT SERVICE COVERS AND POLES HAVE BEEN LOCATED BY FIELD SURVEY. SERVICE DETAILS AND LOCATIONS SHOULD BE CONFIRMED WITH THE RELEVANT SERVICE AUTHORITY DURING DESIGN & PRIOR TO ANY CONSTRUCTION. THE LOCATION OF UNDERGROUND SERVICES HAS NOT BEEN INVESTIGATED BY USHER & COMPANY PTY LTD.

WHERE THE EXACT LOCATION OF UNDERGROUND SERVICES IS CRITICAL TO THE DESIGN OR CONSTRUCTION THE RELEVANT PARTY SHOULD ARRANGE TO HAVE AN UNDERGROUND SERVICES TRACE CARRIED OUT TO CONFIRM THE SERVICES EXACT LOCATION. IN THIS REGARD ALL PARTIES SHOULD CONTACT THE 'DIAL BEFORE YOU DIG' SERVICE.

CONTOUR INTERVAL 1.0m MAJOR 0.25m MINOR

MGA CO-ORDINATES WAS ADOPTED FOR HORIZONTAL DATUM
ORIGIN OF COORDINATES:
SSM 64713
EASTING 537024.293
NORTHING 6864513.878

PLAN COORDINATES HAVE BEEN DETERMINED FROM GROUND (REAL) DISTANCES AND ARE RELATED TO A MGA (GRID) POINT OF ORIGIN. TO CONVERT PLAN COORDINATES TO TRUE MGA GRID COORDINATES A SCALE FACTOR OF 0.999607 ABOUT SSM 64713 MUST BE APPLIED.

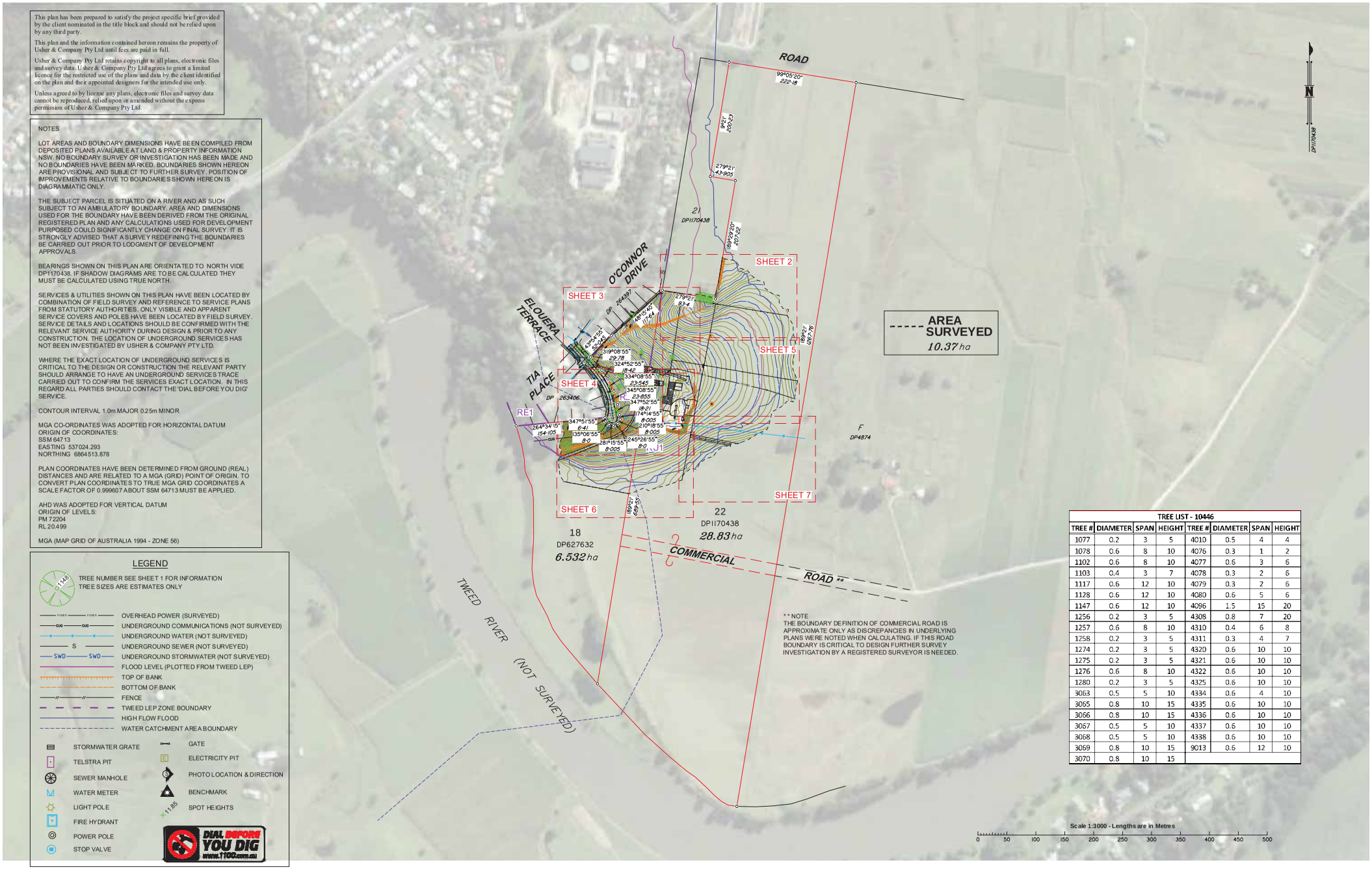
AHD WAS ADOPTED FOR VERTICAL DATUM
ORIGIN OF LEVELS:
PM 72204
RL 20.499

MGA (MAP GRID OF AUSTRALIA 1994 - ZONE 56)

LEGEND

- TREE NUMBER SEE SHEET 1 FOR INFORMATION; TREE SIZES ARE ESTIMATES ONLY
- OVERHEAD POWER (SURVEYED)
- UNDERGROUND COMMUNICATIONS (NOT SURVEYED)
- UNDERGROUND WATER (NOT SURVEYED)
- UNDERGROUND SEWER (NOT SURVEYED)
- UNDERGROUND STORMWATER (NOT SURVEYED)
- FLOOD LEVEL (PLOTTED FROM TWEED LEP)
- TOP OF BANK
- BOTTOM OF BANK
- FENCE
- TWEED LEP ZONE BOUNDARY
- HIGH FLOW FLOOD
- WATER CATCHMENT AREA BOUNDARY
- STORMWATER GRATE
- TELSTRA PIT
- SEWER MANHOLE
- WATER METER
- LIGHT POLE
- FIRE HYDRANT
- POWER POLE
- STOP VALVE
- GATE
- ELECTRICITY PIT
- PHOTO LOCATION & DIRECTION
- BENCHMARK
- SPOT HEIGHTS

DIAL BEFORE YOU DIG www.1100.com.au



** NOTE
THE BOUNDARY DEFINITION OF COMMERCIAL ROAD IS APPROXIMATE ONLY AS DISCREPANCIES IN UNDERLYING PLANS WERE NOTED WHEN CALCULATING. IF THIS ROAD BOUNDARY IS CRITICAL TO DESIGN FURTHER SURVEY INVESTIGATION BY A REGISTERED SURVEYOR IS NEEDED.

Scale 1:3000 - Lengths are in Metres
0 50 100 150 200 250 300 350 400 450 500

TREE LIST - 10446

TREE #	DIAMETER	SPAN	HEIGHT	TREE #	DIAMETER	SPAN	HEIGHT
1077	0.2	3	5	4010	0.5	4	4
1078	0.6	8	10	4076	0.3	1	2
1102	0.6	8	10	4077	0.6	3	6
1103	0.4	3	7	4078	0.3	2	6
1117	0.6	12	10	4079	0.3	2	6
1128	0.6	12	10	4080	0.6	5	6
1147	0.6	12	10	4096	1.5	15	20
1256	0.2	3	5	4308	0.8	7	20
1257	0.6	8	10	4310	0.4	6	8
1258	0.2	3	5	4311	0.3	4	7
1274	0.2	3	5	4320	0.6	10	10
1275	0.2	3	5	4321	0.6	10	10
1276	0.6	8	10	4322	0.6	10	10
1280	0.2	3	5	4325	0.6	10	10
3063	0.5	5	10	4334	0.6	4	10
3065	0.8	10	15	4335	0.6	10	10
3066	0.8	10	15	4336	0.6	10	10
3067	0.5	5	10	4337	0.6	10	10
3068	0.5	5	10	4338	0.6	10	10
3069	0.8	10	15	9013	0.6	12	10
3070	0.8	10	15				

USHER & COMPANY
Surveying & Land Development Consultants
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PO Box 756 Burleigh Heads QLD 4220
Phone: (07) 5535 8346
Fax: (07) 5535 8155
Email: admin@usherandcompany.com.au

APPROVED

Amendments

ISSUE	DATE	DETAILS
A	21-11-2018	Original Issue
B	23-11-2018	Add flood level and additional services information
C	14-02-2019	Tweed LEP Zone Boundary added
D	19-02-2019	Background Images Updated
E	08-03-2019	Extra Survey Added
F	11-03-2019	High Flow Flood lines, Water Catchments lines and Roads added

PLAN:
SITE PLAN
SHOWING DETAIL AND LEVELS
AT 49 ELOUERA TERRACE, BRAY PARK
BEING LOT 18 IN DP627632 & LOT 22 IN DP1170438

SHEET 1 OF 7

LGA:	TWEED
SUBURB:	BRAY PARK
ORIGIN:	PM 72204 RL 20.499 AHD CLASS LB, ORDER L2

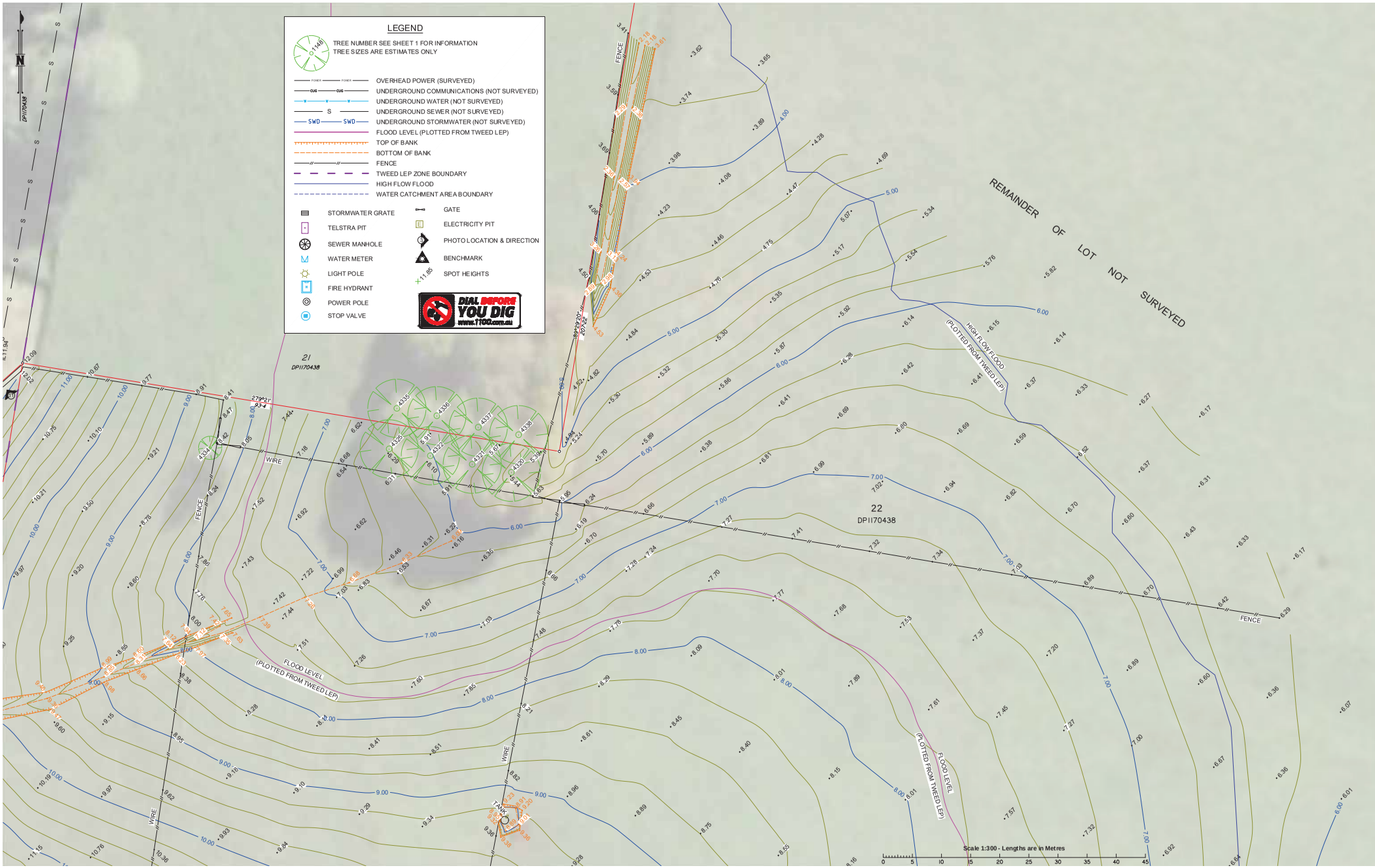
REDUCTION RATIO:	1:3000 (A1)
DATUM:	AHD
DATE OF SURVEY:	15-11-2018
SURVEYED BY:	LN & MB
DRAWN BY:	TM

THIS PLAN IS FOR THE EXCLUSIVE USE OF
MARJAN MANAGEMENT PTY LTD ATF

PLAN REFERENCE: 10446

ISSUE: F

A1



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PLAN:

SHOWING DETAIL AND LEVELS
AT 49 ELOUERA TERRACE, BRAY PARK
BEING LOT 18 IN DP627632 & LOT 22 IN DP1170438

SHEET 2 OF 7

LGA:	TWEED
SUBURB:	BRAY PARK
ORIGIN:	PM 72204 RL 20.499 AHD CLASS LB, ORDER L2

REDUCTION RATIO:	1:300 (A1)
DATUM:	AHD
DATE OF SURVEY:	15-11-2018
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A1

ISSUE: F

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SHOWING DETAIL AND LEVELS
AT 49 ELOUERA TERRACE, BRAY PARK
BEING LOT 18 IN DP627632 & LOT 22 IN DP1170438

SHEET 3 OF 7

LGA:	TWEED
SUBURB:	BRAY PARK
ORIGIN:	PM 72204 RL 20.499 AHD CLASS LB, ORDER L2

REDUCTION RATIO:	1:300 (A1)
DATUM:	AHD
DATE OF SURVEY:	15-11-2018
SURVEYED BY:	LN & MB
DRAWN BY:	TM

THIS PLAN IS FOR THE EXCLUSIVE USE OF
MARJAN MANAGEMENT PTY LTD ATF

A1

PLAN REFERENCE: 10446

ISSUE: F

(SEE SHEET 3)

(SEE SHEET 6)

(SEE SHEET 5)

(SEE SHEET 7)

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Amendments

ISSUE	DATE	DETAILS
A	21-11-2018	Original Issue
B	23-11-2018	Add flood level and additional services information
C	14-02-2019	Tweed LEP Zone Boundary added
D	19-02-2019	Background Images Updated
E	08-03-2019	Extra Survey Added
F	11-03-2019	High Flow Flood lines, Water Catchments lines and Roads added

PLAN:

SHOWING DETAIL AND LEVELS
AT 49 ELOUERA TERRACE, BRAY PARK
BEING LOT 18 IN DP627632 & LOT 22 IN DP1170438

SHEET 4 OF 7

LGA:	TWEED
SUBURB:	BRAY PARK
ORIGIN:	PM 72204 RL 20.499 AHD CLASS LB, ORDER L2

REDUCTION RATIO:	1:300 (A1)
DATUM:	AHD
DATE OF SURVEY:	15-11-2018
SURVEYED BY:	LN & MB
DRAWN BY:	TM

THIS PLAN IS FOR THE EXCLUSIVE USE OF
MARJAN MANAGEMENT PTY LTD ATF

A1

PLAN REFERENCE: 10446

ISSUE: F

(SEE SHEET 2)

(SEE SHEET 3)

(SEE SHEET 4)

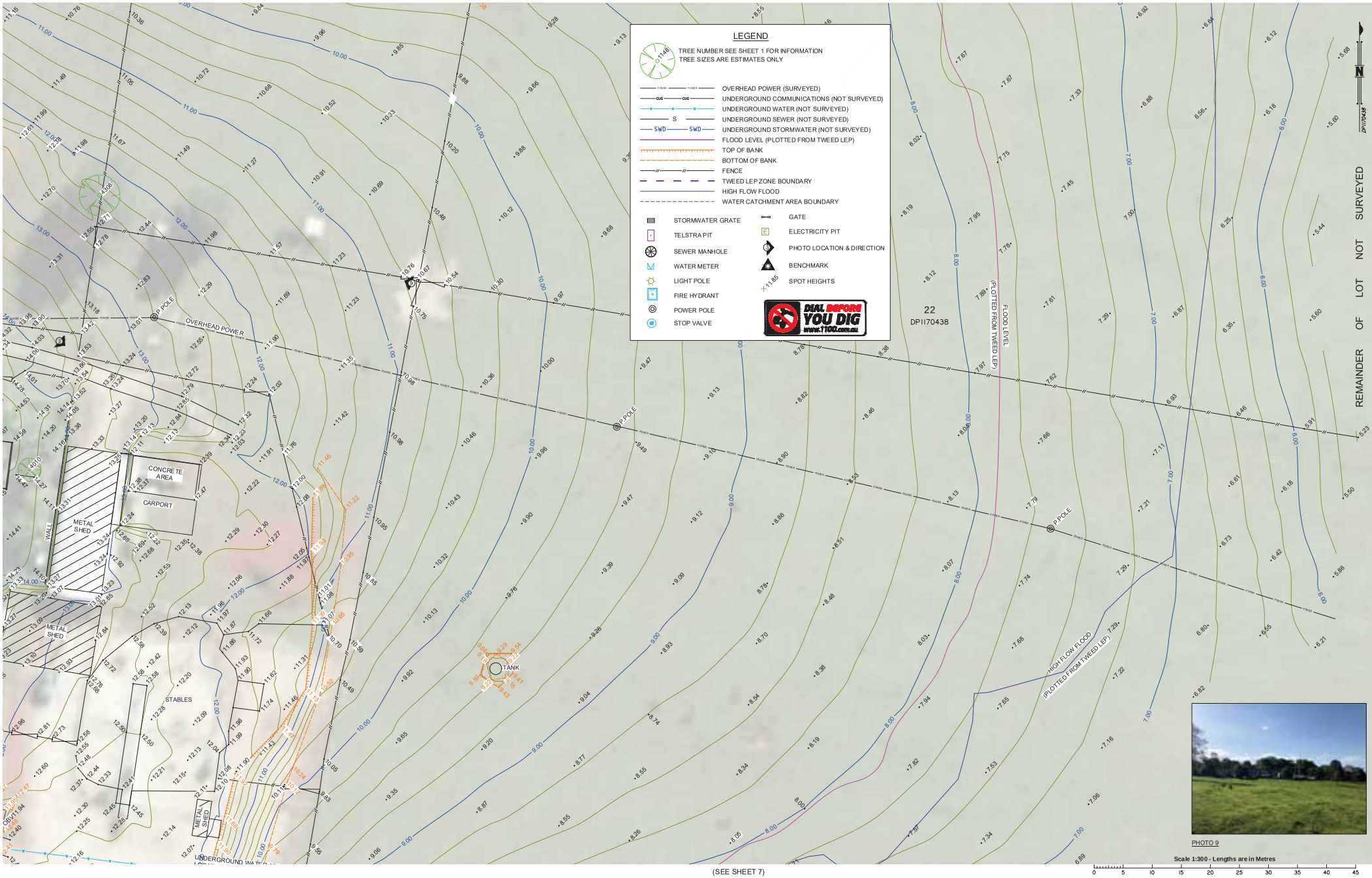

PHOTO 9

Scale 1:300 - Lengths are in Metres

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(SEE SHEET 7)

USHER & COMPANY
Surveying & Land Development Consultants
A.B.N. 70 128 414 602
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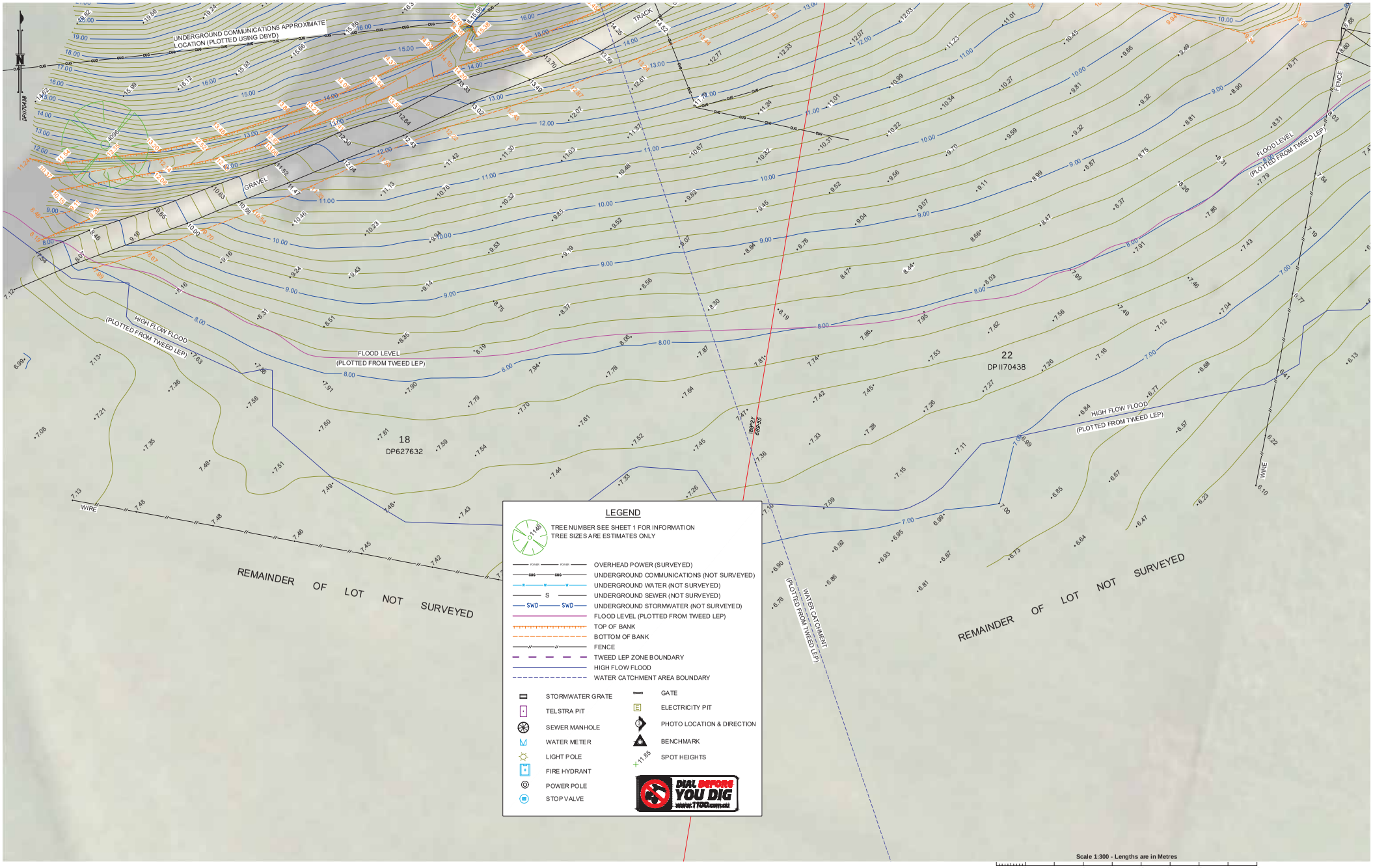

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(SEE SHEET 5)

(SEE SHEET 4)

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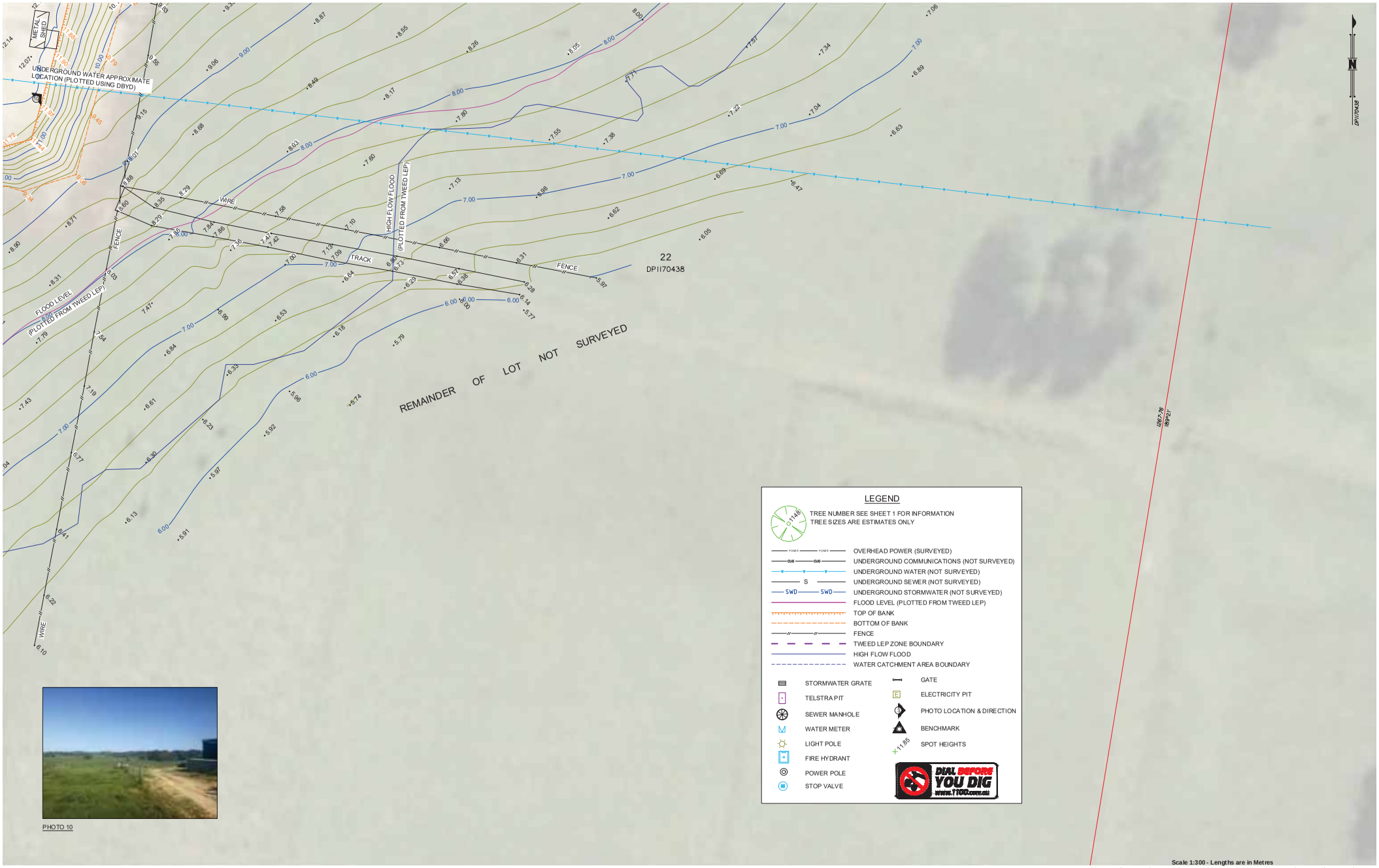

PHOTO 10

LEGEND

TREE NUMBER SEE SHEET 1 FOR INFORMATION
TREE SIZES ARE ESTIMATES ONLY

- OVERHEAD POWER (SURVEYED)
- UNDERGROUND COMMUNICATIONS (NOT SURVEYED)
- UNDERGROUND WATER (NOT SURVEYED)
- UNDERGROUND SEWER (NOT SURVEYED)
- UNDERGROUND STORMWATER (NOT SURVEYED)
- FLOOD LEVEL (PLOTTED FROM TWEED LEP)
- TOP OF BANK
- BOTTOM OF BANK
- FENCE
- TWEED LEP ZONE BOUNDARY
- HIGH FLOW FLOOD
- WATER CATCHMENT AREA BOUNDARY

- STORMWATER GRATE
- TELSTRA PIT
- SEWER MANHOLE
- WATER METER
- LIGHT POLE
- FIRE HYDRANT
- POWER POLE
- STOP VALVE
- GATE
- ELECTRICITY PIT
- PHOTO LOCATION & DIRECTION
- BENCHMARK
- SPOT HEIGHTS

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Scale 1:300 - Lengths are in Metres

0 5 10 15 20 25 30 35 40 45

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ISSUE: F

PLANIT
CONSULTING

Appendix C

Agricultural Report
For Proposed Residential Subdivision
and Seniors Living
Lot18 DP 627632 and Lot 22 DP1170438
49 Elouera Terrace, Bray Park NSW 2484

Melaleuca Group Pty Ltd

Date: 24th June 2019

Prepared for:
Marjan Management Pty Ltd

Further Information:
Melaleuca Group Pty Ltd

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.....
Dr. Melissa Van Zwieten
Senior Environmental and Agricultural Scientist

Table of Contents

1. Introduction

Melaleuca Group has been engaged by Marjan Management Pty Ltd to undertake an Agricultural Assessment for 49 Elouera Terrace, Bray Park NSW 2484 (the site) to allow a proposed Residential Subdivision and Seniors housing development on part of the Site. The proposal will subsequently include standard residential allotments from 450m^2 and seniors housing dwellings on 150-250m^2 parcels with community facilities. It is understood the proposal covers an area of approximately 7.7ha, which comprises:

- 1.2ha of zoned residential land earmarked for standard residential subdivision; and
- 6.5ha Site Compatibility Certificate (SCC) footprint to facilitate seniors housing (approx. 4.5ha) and associated services, buffering and development area (approx. 2ha).

Please refer to Figures 1 and 2 for the site locality plan and a plan showing the proposal.

The objective of this assessment is to assess the agricultural impact of the proposed development.

2. The Study Area

2.1 Site Identification

The Study Area (or development proposal) is located approximately 2.7km south-west of the Murwillumbah CBD. The Study Area is located across two parcels namely (note areas approximate only):

- Lot 18 DP 627632 - 6.5 ha; and
- Lot 22 DP 1170438 - 28.8 ha.

The Subject Site is Area is bound by the Tweed River in the south and south-west, residential lands to the west and agricultural/rural-residential lands to the north and east. The proposal adjoins residential lands with entry to the proposal from Elouera Terrace.

2.2 Zoning and Proposal

The Study Area is zoned RU1 – Primary Production and R2 – Low Density Residential (Tweed Shire Council's Local Environmental Plan (LEP), 2014). Surrounding lands are similarly zoned.

Approximately one third of the proposal would be contained within the current R2 Zone with the remaining portion within RU1 Zoned lands. Thereby, the RU1 area seeks approval through a Site Compatibility Certificate (SCC) process as part of the proposal to allow land use permissibility.

2.3 Site Usages

Information pertaining to the historical landuses are limited to information the following information:

- Historical aerial from 1980;
- Recent aerials from 2000 onwards;

- Cadastral Map from 1983;
- Information from 4th generation owner (Mr Paul O'Connor);
- Available mapping from Tweed Council's website; and
- Site investigations.

As advised by Mr O'Connor, the family has held the land for approximately 120 years. The original property covered a substantially larger area including current Lots 20 and 21, the residential area to the west and lands to the east. Several activities have occurred during this period including subsistence farming, dairy, piggery and small crops (e.g. vegetables such as zucchini). Sugar Cane commenced in 1971 and ceased in 2007. Beef cattle grazing has occurred since this time.

Mr O'Connor advised large portions of the residential lands to the west were compulsory acquired by Council (for the water treatment plan), Commission Homes and Education Department with few allotments privately subdivided. These lands being on the upper areas of the original holding resulted in the loss of lands utilised mainly for small crops. It is noted, some Sugar Cane was grown on the elevated areas in the 1970s.

Mr O'Connor advised the area under Sugar Cane became financially unviable with the level of inputs required. Diversifying into higher valued crops such as Macadamias were investigated, however, the risk of flooding proved these enterprises would also be unviable. For example, the recent flood (2017) resulted in some of the lower levels of the property being underwater by several metres. Tree crops such as Macadamias would not be able to withstand the depth or velocity of these flood waters. Mr O'Connor advised the flooding in 2017 was the worst he had experienced with flood waters extending across the majority of the site with the exception of the elevated areas where the existing dwelling and buildings are located (i.e. where proposal is located). Mr O'Connor advised the cattle grazing is viable with other options being high intensive enterprises such as hydroponics or mushrooms may be options. These enterprises require a small footprint and such buildings could be located on flood-prone land.

This information is supported by available historical information and site investigations. Available historical imagery (1980; Figure 3) indicate much of the property was producing Sugar Cane. Whereas recent imagery (Figure 4) indicate much of the site is used for cattle grazing. This was confirmed during site investigations. The dwelling and associated buildings can been seen in all imagery. The 1980 image depicts the expansion of the residential area from the north-west with dwellings along O'Connor Drive visible. The 1983 Cadastral Map (Figure 5) indicate the approval of residential subdivision to the current end of Elouera Terrace with dwellings in the allotments visible in the 2017 imagery.

The information pertaining to the flooding of the site is supported by available information on Council's website that indicate the majority of the Site would be inundated with major floods (Figure 6).

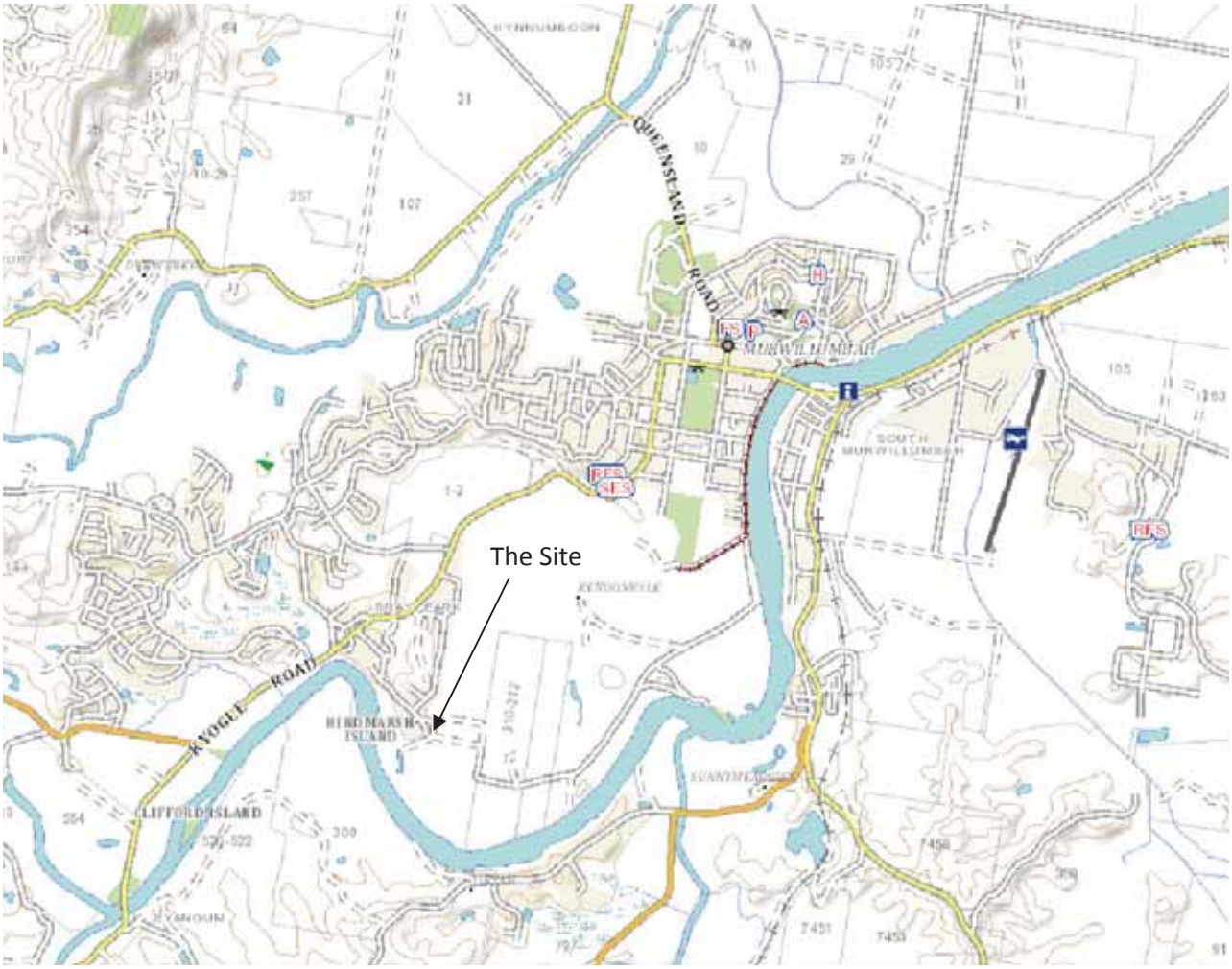


Figure 1. Location Plan

Elouera Terrace, Bray Park
Concept Layout Plan

Seniors Housing Type 1A
Seniors Housing Lots 18m depth average
Average Lot Size 150m²
Single Storey Attached Dwellings in groups of 2-3
Typical template used: 2 bedroom, single carpark per dwelling (one covered)
Yield: 82

Seniors Housing Type 1B
Seniors Housing Lots 18m depth average
Average Lot Size 200m² - 250m²
Single Storey Attached Dwellings in groups of 2-3
Typical template used: 2-3 bedroom, 2 x tandem carparks per dwelling (one covered)
Yield: 57

Primary Access Street (Indicative)
16.0m wide road reserve, 9.0m sealed. TSC 'Wider Access Street'. This street provides a loop road through the development, connecting the primary and secondary site entry points to Elouera Terrace.

Indicative Internal Street
10.0m wide road reserve, 6.0m sealed.

Indicative Internal Laneway
8.0m wide laneway reserve, 5.0m sealed.

Low Flow Flood Area
Area identified through topographic analysis as area of low flow flood area. Nil development proposed within this zone. Potential buffer planting located within this zone to transition to surrounding farmland. Development within this area would be subject to relevant flood considerations and design.

Indicative Community Facilities 01
Community facilities area. Primarily services the northern residential precinct (Residential Type C). Potential to include pool area, lawn bowls, landscaped gardens, areas of open turf. Community use building, footprint illustrated approximately 350-400m². Located to take advantage of views to the east and south across existing farmland. Located at the eastern end of the primary site entry to allow clear line of site through the development of the primary community facilities and to long views to the east.

Indicative Community Facilities 02
Community facilities area. Primarily services the southern residential precinct (Residential Type B). Potential to include pool area, lawn bowls, landscaped gardens, areas of open turf. Community use building, footprint illustrated approximately 350-400m². Located on an elevated site to take advantage of views to the east and south across the residential precincts and over existing farmland. Located at the primary entry of the estate to serve as the 'entry statement' of the development and create a clear and legible arrival.

Indicative Site Entry
Site entry off Elouera Terrace. To be confirmed through residential subdivision layout. Subject to relevant approval.

Visitor Parking
Visitor carparking indicative locations illustrated. Requirement based on number of dwelling sites: 20.
Car parking located primarily in close proximity to community facilities areas(qty. 20) with balance of spaces located throughout the development where layout permits.
Total visitor carparks illustrated: 40

Existing Agricultural Land
Working farm located to balance of lot. Potential to provide informal pedestrian access from the proposed development (from Community Facilities 01) to facilitate potential for community gardens and integration of these landuses.

Existing Residential Area

Indicative Bus Pick up point

Area 1 Seniors: 45,272 m2

Area 2 Buffer: 20,039 m2

Area 3 Residential Subdivision: 12,728 m2

Figure 2

PLANIT

Figure 3. Historical Aerial - 1980

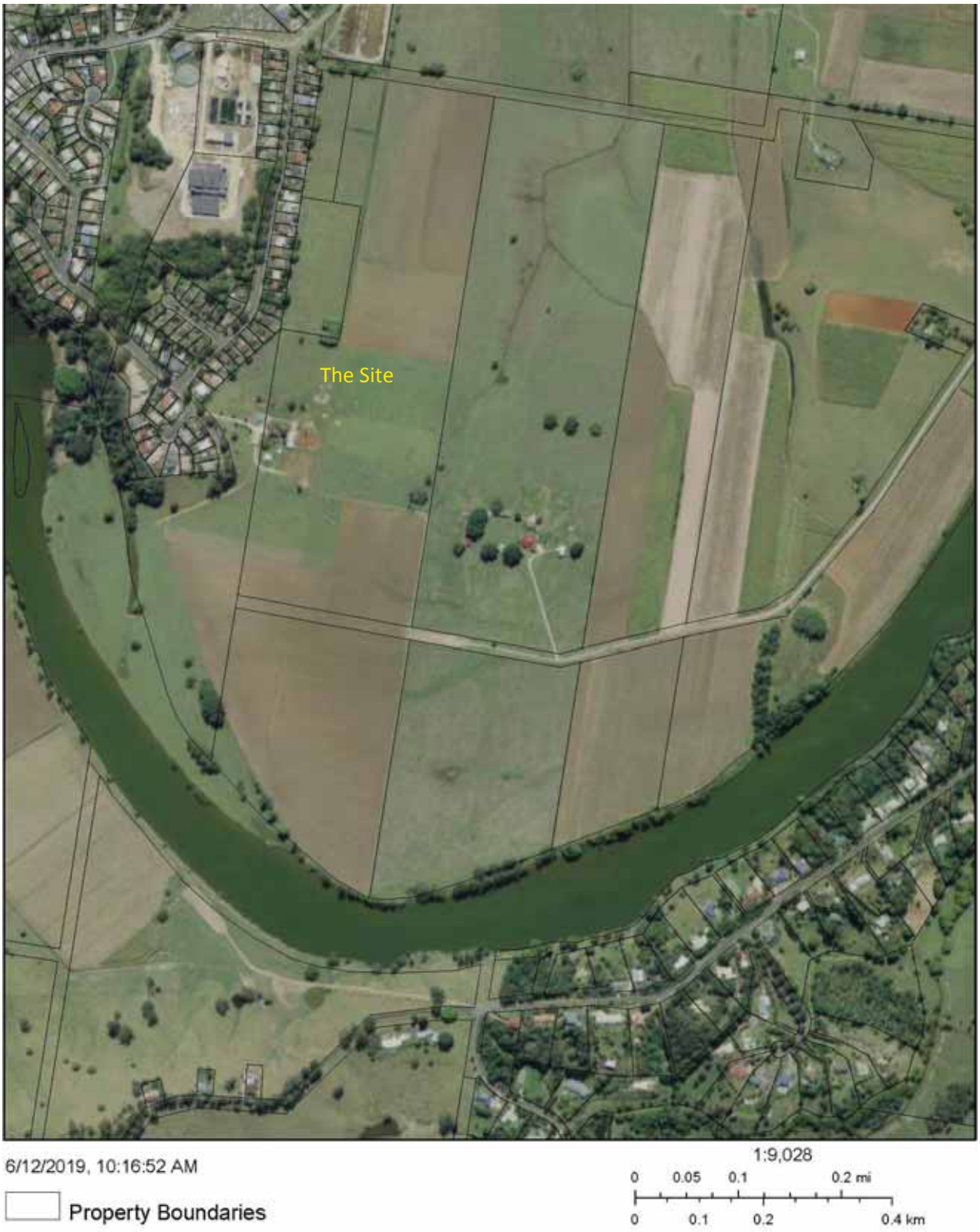


Figure 4. Recent Aerial - 2017

Figure 5. Historical Cadastral Map - 1983

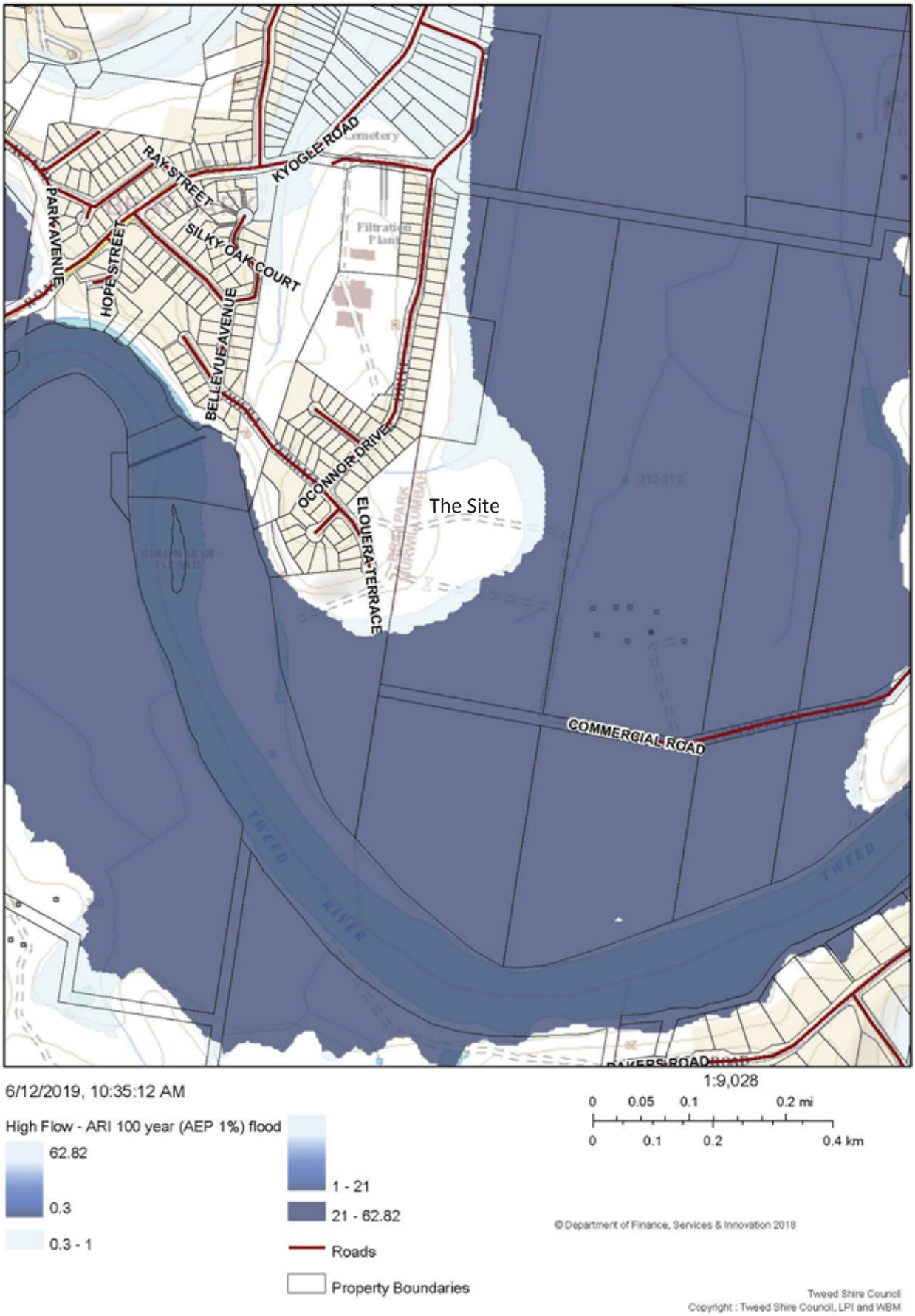


Figure 6. Flood Mapping.

Given the generic history of the locality and available information, it is likely the Subject Site (and Study Area) was settled and cleared around 150 - 180 years ago with the establishment of large pastoral properties in the area. Initially, principal uses were likely to be grazing animals and subsistence farming. Establishment into dairy and a subsistence piggery would have soon followed and is likely to have ceased around 1950/60s. Establishment into broad acre cropping (e.g. predominantly Sugar Cane such as that on the site from 1971) would have followed and is the typical agricultural pursuits of the area of today. However, with the reduction in farm size and increases in inputs, financial viability of such enterprises is difficult. Based on information available, the property to the east (Lot F DP4874) cattle grazing appears to have been maintained for a long period (1980 and 2017 images). Further east (Lot E DP4874) appears to have been regularly under cultivation (surmised Sugar Cane) during this same period. Within the locality, enterprises appear to be Cattle grazing or Sugar Cane during this time period. Diversification into other crops such as Macadamia has not occurred in the locality in comparison to areas further south (e.g. Ballina/Chatsworth/Harwood). It is surmised the flood characteristics of the Tweed River do not favour this diversification.

Plates 1 to 3 show general views some of the site in June 2019.

Plate 1: General view of dwelling and farm infrastructure

Plate 2: General view of southern section of Subject Site

Plate 3: General view of northern section of Subject Site

2.4 Topography

The Subject Site slopes from the western boundary to the north, south and east. At its highest point (near Elouera Terrace), elevation is approximately 25m AHD. The flat area of the site (which represents the majority of the site) are approximately 8m AHD.

The proposal is located on the elevated sections of the site from approximately 10m AHD upwards.

2.5 Local Geology and Soil Description

NSW DPI (2004) describes the geology of the Study (development) Area as Neranleigh-Fernvale beds. Morand (1996) also describe the geology of the Study Area as being the Palaeozoic Neranleigh-Fernvale Group.

The geology of the lower sections of the site are described as Quaternary Alluvial Plain or Quaternary alluvium or estuarine sediments.

The soils of the upper areas (i.e. within the proposal area) are identified as *Billinudgel* Variant a (**bia**) by Morand 1996. These represent very low hills forming footslopes to greater relief of the more common morphology of the **bi** soils. The **bia** soils are described by Morand (1994) as:

> **Landscape** – very low hills forming footslopes. Relief 10-30m, slopes less than 10%. Partly cleared open eucalypt forest.
>
> **Soils** – deep (>100cm), moderately well-drained Yellow Podzolics Soils (Dy 5.21, Dy4.11) and Red Podzolic Soil/Red Earths (Dr 5.21) on siltstone.
>
> **Limitations** – hardsetting, shallow, stony and erodible soils of low fertility.

Soils of the lower areas of the site are identified as *Tweed* (tw) or *Oxley* (ox) by Morand 1996. These are described as:

Tweed (**tw**):

> **Landscape** – extensive marine plain of lower Tweed catchment consisting of deep Quaternary alluvium and estuarine sediments. Local relief <1m; elevation 0-3m; slopes >3%. Totally cleared closed-forest (rainforest) now predominantly sugar cane.
>
> **Soils** – deep (>200cm), poorly drained Brown Alluvial Clays (Gn3.21, Uf6.22) on levees; deep (>200cm), poorly drained Humic Gleys (Uf6.61, Hn2.81, Dy5.11) on backplain.
>
> **Limitations** – flood hazard, high watertables, waterlogging and stream bank erosion hazard. Entensive occurrence of potential acid sulfate soils; highly acid, erodible, impermeable and plastic soils which have high aluminium toxicity potential, low wet bearing strength and which are hardsetting.

Oxley (**ox**): (Morand 1996)

> **Landscape** – level to gently undulating alluvial plains of the mid Oxley and Tweed catchments. Slopes <2%, local relief <9m, plain width 250-1000m. Inset terraces are common. Extensively cleared closed-forest (rainforest).

Soils – shallow to moderately deep (up to 100cm), imperfectly drained Alluvial Soils and/or minimal Prairie Soils (Um5.51) on floodplain/bar plain. Deep (>200cm), moderately well-drained minimal Prairie Soils and dark Alluvial Clays (Uf6.32, Uf6.31, Um6.41) on alluvial plain.

Limitations – flood hazard, stream bank erosion hazard, highly erodible soils, localised waterlogging, localised permanently high watertables, stoniness.

Observations recorded during site investigations indicate the above soil landscape descriptions are correct. Some slight variations between boundaries may occur and detailed soil investigations to determine this are not required for this assessment.

2.6 Surface Water

The Study Area is bounded in the south by the Tweed River.

2.7 Agricultural Land Classification

Five (5) available mapping data sets were available for review, namely:

- Land Capability Mapping (Emery 1985 Soil Conservation Service of NSW);
- Land and Soil Capability Mapping (NSW OEH 2012, based on 1986 mapping);
- Biophysical Strategic Agricultural Land (BSAL) Mapping (Department of Planning and Environment 2013);
- North Coast Agricultural Land Classification (or Agricultural Land Suitability on Council's online mapping); and
- Farmland of State and Regional Significance.

Land Capability Mapping (1985) shows the majority of the Study Area and Subject Site as:

- Class 2 - Suitable for Regular Cultivation: Soil conservation practices such as strip cropping, conservation tillage and adequate crop rotation; and
- Urban Area - located in north-west section of proposal area.

Land and Soil Capability Mapping (NSW OEH 2012 based on 1986 mapping) shows the Study Area within:

- Class 3 - Moderate limitations. Land capable of sustaining high impact land uses using more intensive, readily available and accepted management practices;

That is, this mapping takes into a number of attributes including:

- Soil acidity;
- Water;
- Soil structure;
- Wind erosion;
- Shallow rock;
- Salinity;
- Mass Movement; and
- Water logging/flooding.

This mapping is considered relatively old and while subsequent mapping has utilised these maps, these are considered superceded. However, they do provide historical information for revision purposes.

The BSAL (2013) mapping is considered contemporary. This mapping does not indicate any of the Study Area or the Subject Site being within the bounds of strategic agricultural land.

North Coast Agricultural Land Classification (or Agricultural Land Suitability on Council's online mapping; Figure 7) shows the majority of the Study Area and Subject Site as:

- Class 3 - Suited to grazing, including the use of improved pastures. Cultivation is limited to cash or forage crops in rotation with pastures.

The remaining Study Area is mapped as:

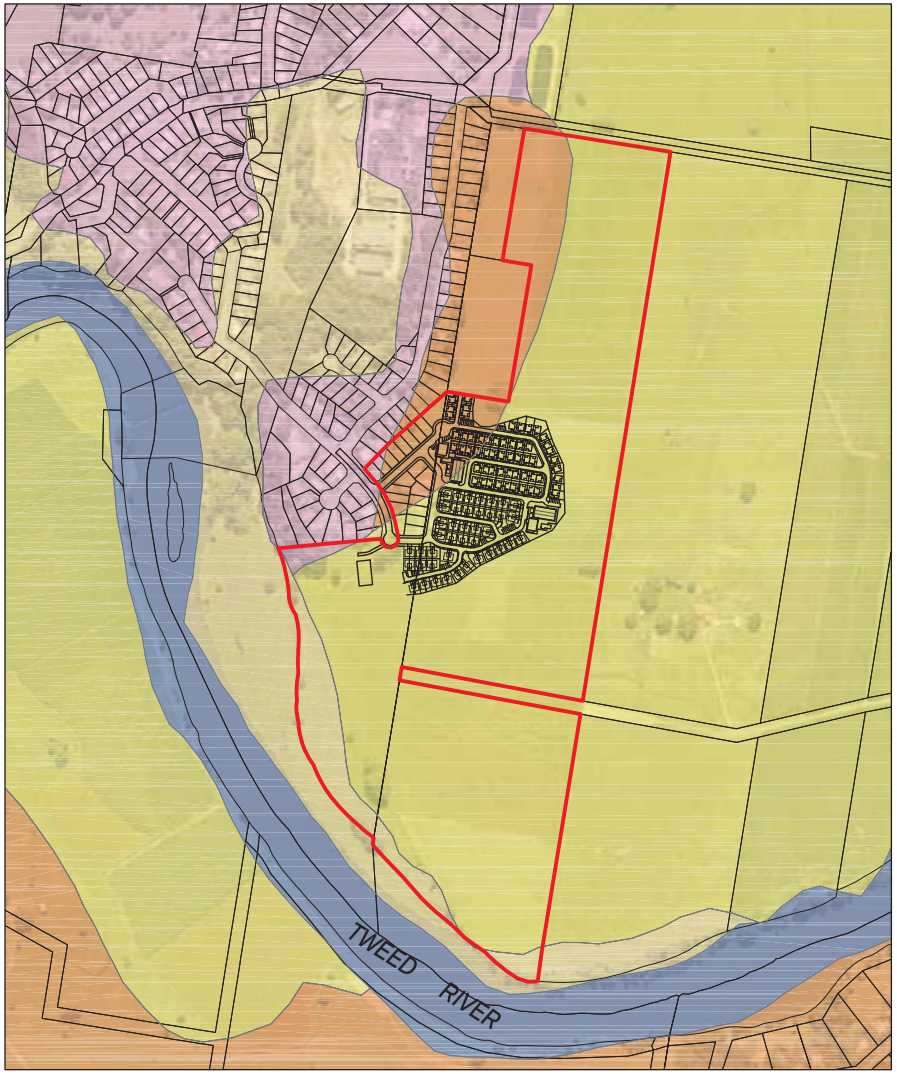
- Class 4 - Suitable for grazing, but not for cultivation. Pasture improvement relies on minimum tillage techniques. Productivity may be seasonally high but overall is low as a result of major environmental constraints; and
- Class 9 or Urban Area.

Farmland of State and Regional Significance; Figure 8) shows the majority of the Study Area and Subject Site as:

- Regionally Significant Farmland.

The remaining Study Area is mapped as:

- Other Rural Land; and
- Committed Urban Use or Rural-Residential Zone.

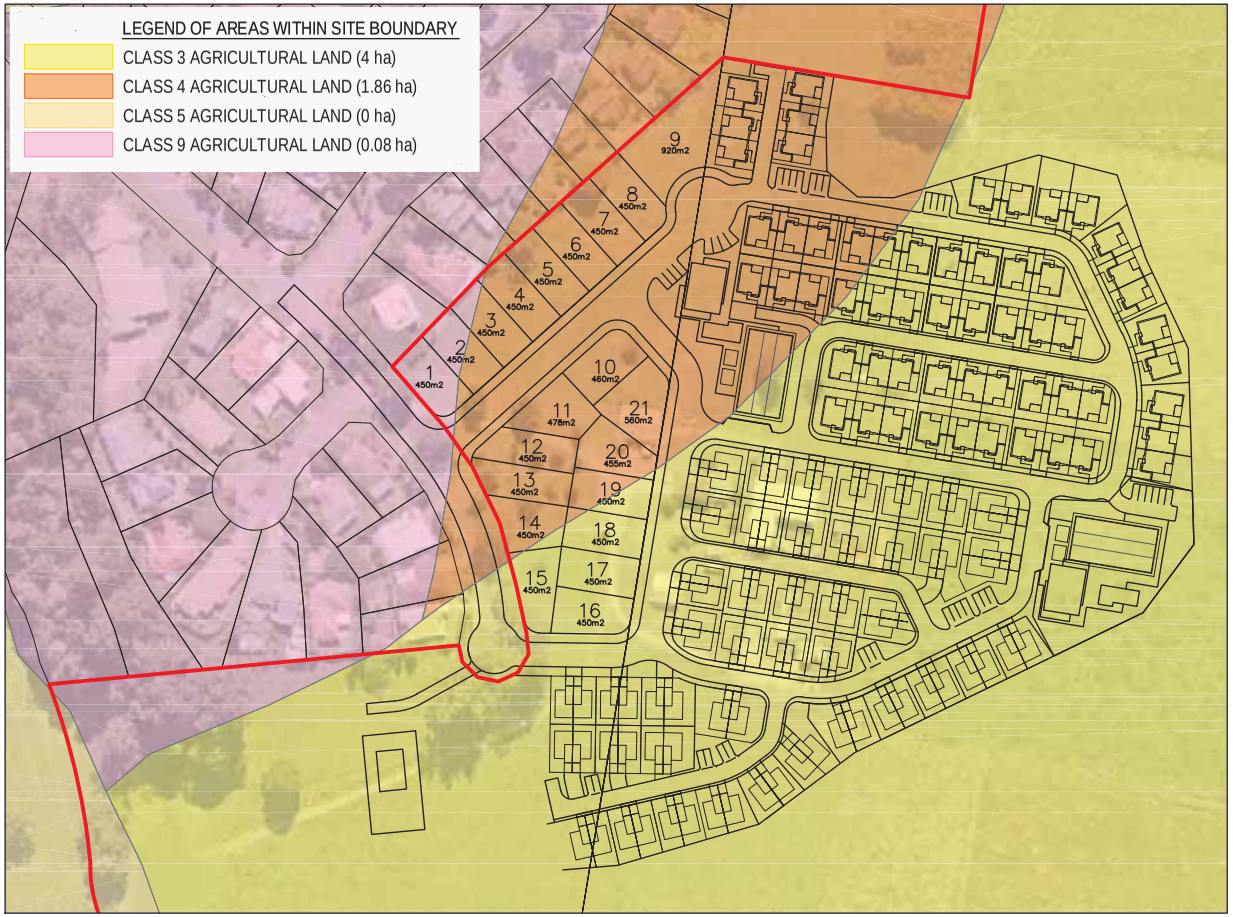


PLAN OF SITE BOUNDARY WITH
NORTH COAST AGRICULTURAL LAND CLASSIFICATION

SCALE: 1:8000

LEGEND OF AREAS WITHIN SITE BOUNDARY

- CLASS 3 AGRICULTURAL LAND (29.95 ha)
- CLASS 4 AGRICULTURAL LAND (3.9 ha)
- CLASS 5 AGRICULTURAL LAND (2.4 ha)
- CLASS 9 AGRICULTURAL LAND (0.3 ha)
- SITE BOUNDARY, 36.55 ha Approx.



PLAN OF DEVELOPEMENT WITH
NORTH COAST AGRICULTURAL LAND CLASSIFICATION

SCALE: 1:2000

MGA

Figure 7

SOURCE:
AERIAL: https://maps.six.nsw.gov.au

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SCALE 1:8000 AT A3

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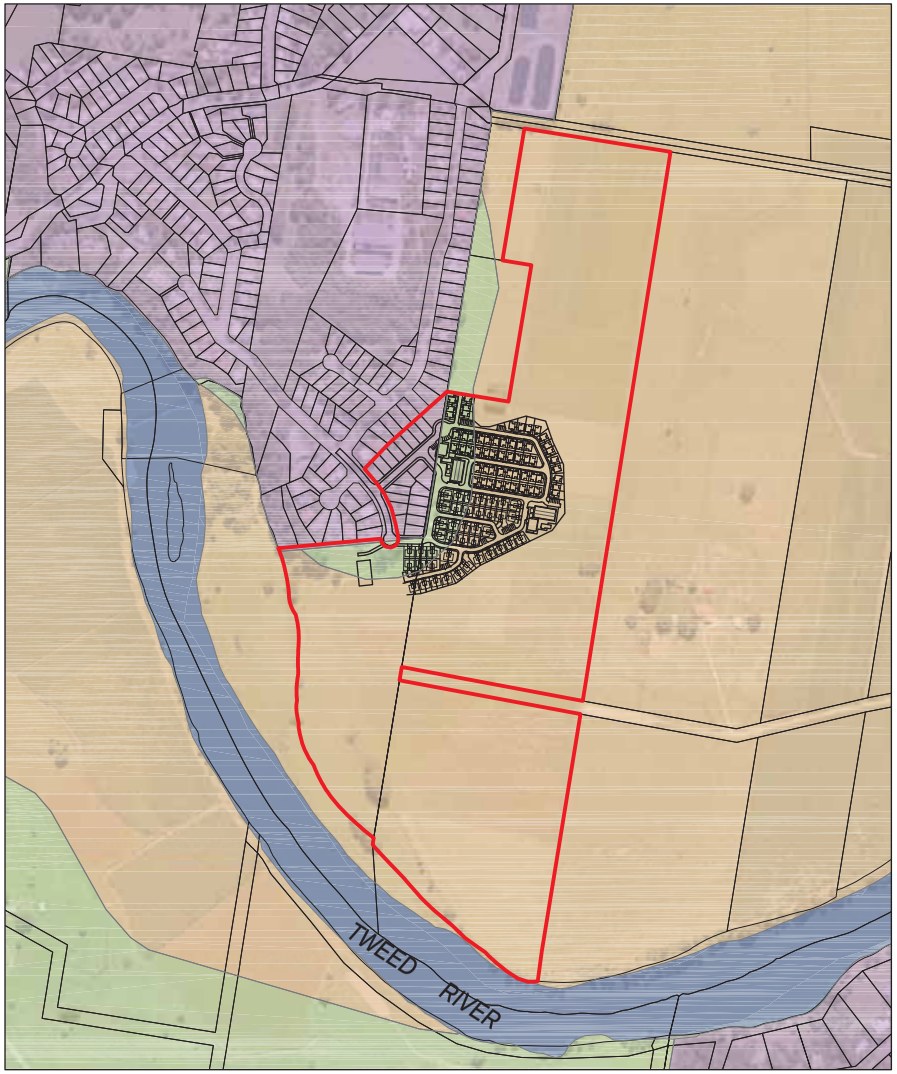
SCALE 1:2000 AT A3

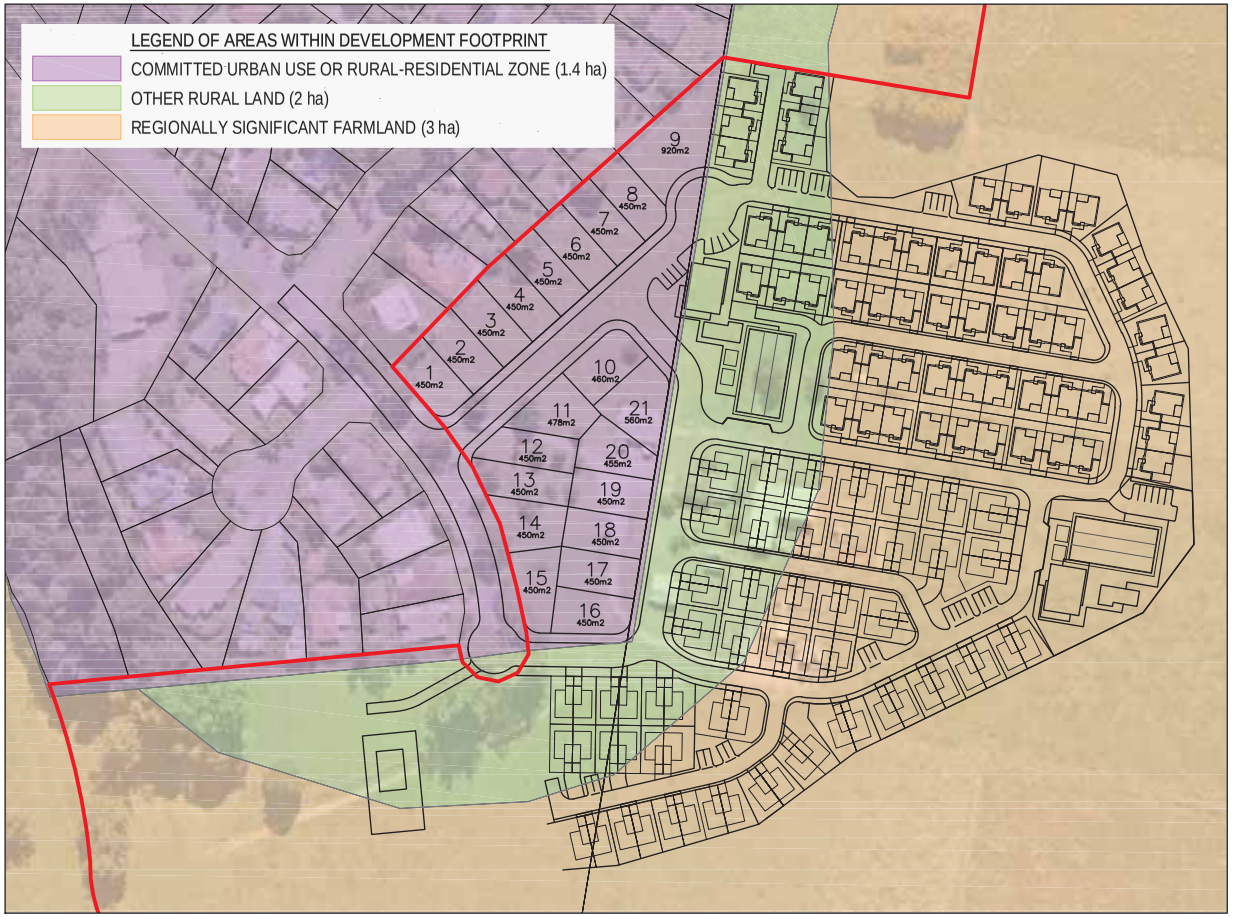
Project: LOT 18 IN DP627632 &
LOT 22 IN DP1170438
49 ELOUERA TERRACE
BRAY PARK

Title: PLAN OF NORTH COAST AGRICULTURAL LAND CLASSIFICATION



PLAN OF SITE BOUNDARY WITH
FARMLAND OF STATE & REGIONAL SIGNIFICANCE
SCALE: 1:8000

LEGEND OF AREAS WITHIN SITE BOUNDARY
COMMITTED URBAN USE OR RURAL-RESIDENTIAL ZONE (1.4 ha)
OTHER RURAL LAND (2 ha)
REGIONALLY SIGNIFICANT FARMLAND (33.15 ha)
SITE BOUNDARY, 36.55 ha Approx.



PLAN OF DEVELOPEMENT WITH
FARMLAND OF STATE & REGIONAL SIGNIFICANCE
SCALE: 1:2000

MGA

Figure 8

SOURCE:
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SCALE 1:2000 AT A3

Project: LOT 18 IN DP627632 & LOT 22 IN DP1170438 49 ELOUERA TERRACE BRAY PARK

Title: PLAN OF FARMLAND OF STATE & REGIONAL SIGNIFICANCE

3. Agricultural Impacts

3.1 Proposal

As described above, the proposal is to develop approximately 6ha for residential and seniors living. The proposal will subsequently include standard residential allotments from 450m^2 and seniors housing dwellings on 150-250m^2 parcels with community facilities. The proposal applies an SCC process to allow permissibility for seniors housing as an extension to the neighbouring R2 zone. This will be concentrated on the upper elevations of the site. The remainder of the Subject Site would remain as RU1 and due to site constraints is expected to remain undeveloped.

To assess this proposal an additional 40m buffer has been applied as this is considered a plausible buffer zone anticipated to minimise any Land Use Conflicts between the proposal and ongoing Agricultural activities on the remainder of the Subject Site. As such, including this buffer area, approximately an additional 2 ha is included as potentially being unavailable for Agricultural activities.

3.2 Agricultural Characteristics

The majority of the Subject Site is considered to have good agricultural characteristics. The soils of the site are, in general, considered deep and fertile. That is, within the areas of the site which are flat and of lower elevation.

However, this area is also located within a floodplain. Thereby, both historically and continuing, agricultural pursuits need to be adaptive to the ephemeral nature of flooding regimes. As such, agricultural pursuits are limited to such crops that can withstand inundation (e.g. Sugar Cane) or livestock pursuits whereby animals can be moved to higher ground in times of flood.

A further limitation is the potential presence of Acid Sulfate Soils. Mapping indicates much of the area as having a low probability. While the presence of these soils may be low, consideration on any extensive land reformation (e.g. for Macadamia plantation) potentially would provide a further limitation.

The elevated area of the site is considered of less agricultural quality (i.e. the location of the proposed development). The soils of this area are shallower, stony and of poorer fertility. In addition, this area is also located in close proximity to urban landuses. Thereby, any attempt to undertake intensive agricultural pursuits are likely to cause land use conflicts. The area does represent an elevated area for the location of farm infrastructure. The existing infrastructure is a result of the range of historical agricultural pursuits. The majority of this infrastructure is now superfluous to the current pursuit (cattle grazing). In essence, only a cattle loading ramp and yards are required. Such facilities can be provided as temporary facilities allowing for its positioning to be varied or removed during periods of floods.

The Study Area (proposal area plus 2ha for buffering) represents the following agricultural land within the Subject Site:

North Coast Agricultural Land Classification:

- Class 3 - Suited to grazing, including the use of improved pastures: 20%.

The remaining Study Area is mapped as:

- Class 4 - Suitable for grazing, but not for cultivation: 48%.
- Class 9 or Urban Area: 27%.

Farmland of State and Regional Significance;

- Regionally Significant Farmland: 15%.

The remaining Study Area is mapped as:

- Other Rural Land: 100%.
- Committed Urban Use or Rural-Residential Zone: 1.4%.

As previously mentioned, part of the proposal area is already zoned R2 Low Density Residential and this accounts for approximately 3.3% of the Subject Site.

The Tweed Shire LGA covers an area of approximately 130,000 ha. The proposal (including buffer) covers approximately 8ha or 0.006% of the LGA. Data for the individual Agricultural Class for the entire LGA was not readily available. Some extensive works would be required to obtain such data. As the entire site only represents 0.006% of the LGA, an example of the loss of one Agricultural Class (e.g. Class 3) could be estimated to be 0.096% (i.e. 16% x 0.006%) from with the LGA.

To further demonstrate the small area of agricultural lands lost by the proposal, calculation for such lands within the immediate locality (approximately 2km surrounding the site) has been completed and the following is provided:

North Coast Agricultural Land Classification:

- Class 3 - The proposal represents approximately 1.4% of similar lands within 2km of the site.
- Class 4 - The proposal represents approximately 6.5% of similar lands within 2km of the site.

Farmland of State and Regional Significance:

- Regionally Significant Farmland: The proposal represents approximately 1.3% of similar lands within 2km of the site.

Thereby it is surmised within the LGA, these areas would represent significantly lower areas and well under 1%.

3.3 Agricultural Impacts by the proposal

The Subject Site is considered to consist of relatively good Agricultural lands. However, the Proposal Area consists of Agricultural Lands of lower value.

Based on soil and climate consideration only, it is considered a range of agricultural activities could be pursued. However, a major natural characteristic precludes the Study Area being utilised for a range of high intensity, high value agricultural pursuits (e.g. orchards, plant nursery, intensive animal production). Flooding is considered restrictive for these pursuits as flooding would cripple any infrastructure installed (e.g. machinery, internal roads, buildings and the like). Historically the site has most likely been used for grazing purposes through the majority of its history and this would remain the most viable option for ephemeral use of the land (i.e. ease of moving stock during times

of flood). While Sugar Cane was grown on the site (for 30-35 yrs), the size of the property and required inputs have resulted in this being unviable.

The conflicts between Agriculture and urbanisation is likely to possibly be occurring at the site and may also have influenced the continuation of Sugar Cane production. Any intensive agricultural pursuits would similarly create conflicts.

Conflicts often occur due to either direct or perceived impacts by both parties and include:

- air quality due to agricultural and rural industry (odour, pesticides, dust, smoke and particulates);
- use and enjoyment of neighbouring land e.g. noise from machinery;
- visual amenity associated with rural industry e.g. the use of netting, planting of monocultures and impacts on views;
- soil erosion leading to land and water pollution;
- clearing of native vegetation;
- stock access to waterways;
- harassment of livestock from straying domestic animals;
- trespass;
- changes to storm water flows or water availability; and
- poor management of pest animals and weeds.

While the proposal removes a small area of medium quality Agricultural land from the Tweed LGA, the majority of the Subject Site would be retained for agricultural purposes. Sufficient buffers can be included to reduce any land use conflicts.

4. Discussion and Conclusion

Melaleuca Group Pty Ltd has been commissioned by Marjan Management Pty Ltd to undertake an Agricultural Assessment for 49 Elouera Terrace, Bray Park NSW 2484 (the site) to allow for a proposed Residential Subdivision and Seniors housing development on part of the Site.

The investigation was completed using desktop resources, interview with long-term landowner along with a site inspection. The physical characteristics of the Subject Site, obtained from desktop resources, indicate the Site does representative good Agricultural land for the Tweed area. However, the Study (or proposal) Area is considered to be located on lands of lesser Agricultural land value within the Site.

The Site is predominantly flood prone. As such, limitations on intensifying agricultural pursuits are limited due to the inherent risk on infrastructure for such activities. Historical and future agricultural pursuits need to be adaptive to the ephemeral nature of flooding regimes. As such, it is considered likely that low intensity grazing and cropping such as Sugar Cane are the most likely pursuits suitable for the Site. The proposal area represents a limited space for any such activities as the soils and topography are not suited to cropping. In addition, the existence of the properties' dwelling and farm infrastructure along with its proximity to existing residential properties precludes this area for such activities.

The proposal will result in the extension of an existing urban area. Part of the proposal is within an area zoned for such (i.e. R2 Low Density Residential). As such, the proposal will not result in the isolation of the better agricultural lands of site.

The Subject Site and to a lesser amount, the proposal represents very small areas of medium to good agricultural lands within the LGA. Within 2km of the site an estimated area of <2% of regionally significant farmland would be lost. Within the LGA, this area would be well below 1% (estimated < 0.01%).

In conclusion, this Agricultural Assessment has identified that while the Site as a whole demonstrates medium to good agricultural characteristics, flooding, proximity to urbanisation and the small scale of the proposal does not represent a significant impact on agricultural lands in the LGA.

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PLANIT
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Appendix D

STAGE 1 PRELIMINARY CONTAMINATION ASSESSMENT

Proposed Residential Subdivision and Seniors Housing

49 Elouera Terrace, Bray Park NSW 2484
(Lot 22, DP1170438 and Lot 18, DP627632)

May 2019

Environmental Engineering Solutions
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Executive Summary

ENV Solutions (ENV) has undertaken a Stage 1 Preliminary Contamination Assessment for a proposed residential subdivision and site compatibility certificate for seniors housing at 49 Elouera Terrace, Bray Park, NSW.

The assessment included the following components:

- A review of the site conditions and surrounding environment;
- Preparation of a summary of the site history;
- Identification of past and present potentially contaminating activities and potential contaminant types;
- A preliminary assessment of potential site contamination based on the desktop studies;
- Collection of soil samples from across the subject site;
- Assessment of the soil analytical results against relevant screening and investigation levels; and
- Assessment of the environmental (chemical) suitability of the site for the proposed use (residential land use).

A desk-top site history assessment and a site inspection have been conducted as part of the assessment. The desk-top site history assessment encompassed the site and adjacent areas. Information used to assist in the site history was collated from the following sources:

- Anecdotal information provided by Mr. Paul John O'Connor;
- NSW LPI – available Town and Parish Maps for the Caniaba area;
- NSW OEH's *Protection of Environment Operations Act 1997* (POEO Act) Public Register;
- OEH's Contaminated Land – Record of Notices; and,
- NSW DPI: cattle dip site locator.

Based on the desk-top site history assessment, it appears as though the majority of the subject site has potentially been cleared of vegetation since at least 1916. Anecdotal information provided by Mr. Paul John O'Connor indicates that the site has historically been used for cattle grazing and sugar cane production.

On this basis, the primary Areas or Activities of Environmental Concern (AEC) have been subsequently identified as:

- Site areas where possible previous broad-scale agricultural activities may have occurred. The associated chemicals of potential concern (COPC) were considered to

be organo-chlorine pesticides (OCPs) and heavy metals associated with potential insecticide, pesticide and/or fertiliser use.

- Areas surrounding structures where the use of lead-based paints may have occurred.

The NSW EPA *Sampling Design Guidelines* (1995) recommend a minimum of 72 sampling points for a site (proposed development) area of up to 5.7 ha. However, it is reasonable to expect that any contamination would be widespread on agricultural land such as this; therefore, a reasonable reduced sampling density was adopted. On this basis, 42 individual samples (40 grid based; 2 targeted) were collected from within the proposed subdivision and development envelope as part of the sampling program. Sampling was conducted on 9 April 2019.

A sampling grid was set up across the envelope area such that the samples were spaced evenly apart. Samples were collected directly by hand from shallow soils within the top 100 mm of the soil profile. Where organic matter such as leaves and twigs were present, these were removed and the underlying soils sampled. The sampling locations are presented on Figure 2, **Attachment 1**).

Each of the samples were placed immediately into an esky with ice and transported to the laboratory for analysis with accompanying chain of custody (COC) documentation. The samples were sent to Environmental Analysis Laboratories (EAL) in Lismore, which is accredited by the National Association of Testing Authorities (NATA) for the required analysis (refer to Section 6.4). Here, forty (40) individual samples were composited into ten samples for analysis of OCPs and a metals suite. Two (2) targeted soils samples were collected from visibly stained soils and analysed for hydrocarbons and heavy metals.

The analytical results for the individual and composited soil samples were compared with relevant human health-based and ecological investigation levels from the National Environment Protection (Assessment of Site Contamination) Measure 1999 (the 'NEPM') (as amended 2013). The human-health based screening and assessment levels used were those for a low density residential land use (HIL-A, HSL-residential, Management Limits), reflecting the proposed residential development.

A review of the results indicates that the concentrations of all analytes tested met the adopted human health-based investigation levels with the exception of chromium, lead and Total Recoverable Hydrocarbons (TRH); C16-C34 and C34-C40.

It is noted that chromium concentrations in several of the composite samples were greater than the NEPM HIL-A (allowing for compositing, by dividing the criterion by four). However, the site's location amongst volcanic rocks of basaltic origin is considered to be the cause of the elevated concentrations of these metals, as they are known constituent metals of basalt. The reported concentrations of each of these metals are also within or close to the published background ranges (where available), as provided in Schedule B(1) of the NEPM.

Following review of the initial composite results, it was evident that lead exceeded the adopted assessment criteria in composite samples 'C1' and 'C4'. Each of the sub-samples

comprising these composite samples were then individually analysed for lead. The results indicated that concentrations of lead in sample 'BH8' marginally exceeded the adopted assessment criterion. A 95% upper confidence limit (UCL) of the arithmetic average of lead concentrations was calculated using the statistical software ProUCL 5.1.002. The results from the 95% Student's-t UCL test indicate the mean lead concentration at 95% confidence is less than the adopted assessment criterion (**Attachment 4**).

With respect to the reported TRH exceedances, if the areas represented by 'BH7A' and 'BH16A' (i.e. visibly stained soils) are developed as a garden area or other unsealed area where human contact may occur, surface soil at these locations should be scraped and the material transported off-site to a suitably licensed landfill facility. Given the composition of the hydrocarbons reported in the samples ('heavier' chain fractions), it is considered likely that the soil impacts associated with the staining are limited to relatively shallow soils. From an aesthetic perspective (staining and odour), these soils may be unsuitable for the proposed development even if they are not within such areas. If the soils are removed, a remediation action plan (RAP) which details the methodology for the works and provides a description of validation sampling of the remaining soils in this area would be required, prior to the excavation works occurring.

Additionally, following the removal of existing structures at the property, further sampling should be undertaken to ensure soils beneath each structure are suitable for the proposed development.

On the basis of the results, and noting the exceptions described above, the subject land is considered suitable from an environmental perspective for the proposed residential and seniors housing development.

1. Introduction and Scope of Works

ENV Solutions Pty Ltd (ENV) was engaged by Marjan Management Pty Ltd to undertake a Stage 1 Preliminary Contamination Assessment of a portion of property located at 49 Elouera Terrace, Bray Park, NSW. The site is described as Lot 22 DP1170438 and Lot 18 DP627632. The relative location of the site is shown on Figures 1 and 2, **Attachment 1.**

ENV understands that the property as a whole has an area of approximately 36.5 ha and has been used historically for sugar cane production and cattle grazing. A residential subdivision is proposed for the property, including a senior's housing development. For the purposes of this assessment, the envelope of land associated with the proposed development has been assumed to be 5.7 ha.

Clause 7(1) of State Environment Planning Policy No 55 – Remediation of Land (SEPP 55) states that:

"(1) A consent authority must not consent to the carrying out of any development on land unless:

(a) it has considered whether the land is contaminated, and

(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and

(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

(2) Before determining an application for consent to carry out development that would involve a change of use on any of the land specified in subclause (4), the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines.

(3) The applicant for development consent must carry out the investigation required by subclause (2) and must provide a report on it to the consent authority…"

This assessment has been prepared to address these SEPP 55 requirements and has been prepared in accordance with the *Managing Land Contamination Planning Guidelines* (Department of Urban Affairs [DUAP] and Environment Protection Authority [EPA] 1998) and the *Guidelines for Consultants Reporting on Contaminated Sites* (EPA, 2011).

The assessment included the following components:

- A review of the site conditions and surrounding environment;
- Preparation of a summary of the site history;
- Identification of past and present potentially contaminating activities and potential

contaminant types;

- A preliminary assessment of potential site contamination, based on the desktop studies;
- A site inspection;
- Collection of soil samples from across the property;
- Assessment of the soil analytical results against relevant screening and investigation levels; and
- Assessment of the environmental suitability of the site for the proposed use (low density residential land use).

2. Site Identification Details

The site is identified as Lot 22 DP1170438 and Lot 18 DP627632, and is located approximately 2 kilometres (km) to the south-west of the Murwillumbah Central Business District (CBD).

Table 1 provides identification details for the site, relevant to the assessment.

Table 1: Site Identification Details

Site Address	49 Elouera Terrace, Bray Park, NSW.
Site Area	Overall property – approximately 36.5 ha. Development envelope considered for contamination assessment – approximately 5.7 ha.
Real Property Description	Lot 22 DP1170438 and Lot 18 DP627632
Local Government Area	Tweed Shire Council.
Zoning	RU1 – Primary Production and R2 – Low Density Residential (Tweed Shire Council's Local Environmental Plan (LEP), 2014).
Site Features	The property can be generally characterised as sloping in parts, with a flat, elevated portion in the site's western and central areas in which the existing dwelling and several farm/mechanical sheds are positioned. A small stormwater drain is positioned on the north-western border, which initially flows west and then north across the site. The majority of the site is grassed, with several stands of trees spread out across the property.
Elevation	The subject property slopes from its western portion to the north, south and east, with the highest point being approximately 23.64 m Australian Height Datum (AHD) (Usher & Company, 2018).
Existing Land Use	Agricultural use (sugar cane production and cattle grazing).
Surrounding Environment	Large rural agricultural blocks of land, with exception to the residential lots to the west and north-west. Tweed River borders the southern side of the property.

3. Site Condition and Surrounding Environment

A desk-top study was undertaken to establish the physical characteristics of the site and surrounding environment. The desk-top based information was supplemented by observations from the site inspection and sampling undertaken on 9 April 2019.

3.1. Site Features

At the time of the investigation, the area proposed for development was predominantly cleared of vegetation and covered with grass. Isolated medium to large stands of trees were located across the property area. There were several farm and mechanical shed surrounding the main dwelling and farm house located off the property driveway. Oil drums and chemical (herbicide) containers were observed in areas adjacent to the shed. A small stormwater drain is positioned on the north-western border, which initially flows west and then north across the site. The site slopes from the west in all directions. Cattle were observed to be grazing across the site.

Selected site inspection photos are provided in **Attachment 2.**

3.2. Surrounding Environment

The site is bordered immediately to the west and north-west by neighbouring residential properties. The southern boundary is bordered by the Tweed River, and then rural land likely used for broad-scale agricultural activities and/or cattle grazing surround the site in all other directions. The Murwillumbah CBD is approximately 2 km to the north-east.

3.3. Topography

The elevation of the area on which the development is proposed ranges from approximately 23.64 m AHD (west) to 5.23 m AHD (north, east and south) (Usher & Company, 2018).

3.4. Soils

Information regarding regional soils was collected using the NSW eSPADE mapping (https://www.environment.nsw.gov.au/eSpade2Webapp). The closest soil sample information was obtained from a location approximately 2.4 km to the west of the site, at the location named "Tyalgum Road – 1.1 km from Kyogle Rd Int.". The available soil information from this location is summarised as follows:

- Dark brown, light-medium clay with a pH of 6.0, moderately moist, moderately plastic, moderately sticky, disruptive test result was moderately weak force, shearing test result was plastic, to a depth of 1.5 m.

Observations of the on-site soils within the proposed development area, made during the site inspection and sampling on 9 April 2019, indicated soils comprising of dark brown to grey clay with abundant vegetative matter (leaves and roots) and some gravels, which is relatively consistent with the eSPADE notes.

3.5. Flooding

There is a potential flooding risk associated with the maximum probable flood level in the areas of the proposed development. However, the proposed development area is not situated within Tweed Shire Council's flood planning area. The extent of the Tweed Shire Council LEP (2014) flood planning area, associated with Tweed River to the south, is shown on Figure 3, **Attachment 1**.

3.6. Acid Sulfate Soils

The area of the proposed development is mapped as 'Class 5' acid sulfate soil (ASS) risk, with reference to the Tweed Shire Council LEP (2014). The ASS risk of soils in the vicinity of the site is illustrated on Figure 4, **Attachment 1**.

3.7. Groundwater Resources

A search of existing licensed groundwater bores was undertaken on 29 April 2019 using the WaterNSW Groundwater Explorer database (updated in the previous 12 months). The search indicated that there was one licensed groundwater bore situated within 500 m of the subject property. The bore is installed to a depth of 3.4 m, for irrigation water supply purposes. The bore is located on adjacent property to the west. A plan illustrating the relative location of the bore is presented as Figure 5, **Attachment 1**.

4. Site History

4.1. Overview

A desk-top site history assessment was undertaken to evaluate the chronological history of site occupation and possible sources and locations of contamination. Information used to assist in the desk-top site history assessment was collected and collated from the following sources:

- Anecdotal information provided by Paul John O'Connor (3rd generation property owner);
- NSW Land and Property Information (LPI) – available Town and Parish Maps for the Murwillumbah area;
- NSW Office of Environment and Heritage's (OEH) *Protection of Environment Operations Act 1997* (POEO Act) Public Register;
- OEH's Contaminated Land – Record of Notices; and,

- NSW Department of Primary Industries (DPI): cattle dip site locator.

The findings of the desk-top site history assessment are summarised in the following sub-sections.

4.2. Anecdotal Information

Anecdotal information relating to past site uses was provided during the site investigation by Mr. Paul John O'Connor on 9 April 2019. This information suggests that the subject property has been owned by the O'Connor family since 1892 and has formerly been used for agricultural activities (cattle grazing and sugar cane production). During this time organochlorine pesticides, Dieldrin and a product identified as 'BHC dust' has been used in areas across the property on existing power poles and to manage cane grubs. In 1984, areas around the pre-existing dairy shed and the adjacent power pole were excavated, due to Dieldrin contamination, during the construction of the current farm shed (west of dwelling). It is understood that this material was transported off site during construction. Dieldrin contamination was also found along the north-western boundary, which was thought to be attributed to contaminated grass clippings being placed over the fence from neighbouring properties.

4.3. Town and Parish Maps

The available historical Parish Maps for the Murwillumbah area and surrounds were reviewed to evaluate past land uses and ownership relevant for the assessment. The maps were accessed using the Land and Property Information (LPI) Historical Land Records Viewer (HLRV).

Three Parish Maps dating from 1916, 1923 and 1938 were available on the HLRV. The maps show that the subject property was encompassed within a larger allotment, which included the two separate land parcels located east of the site. The property was owned by T. Buckland and J. Milson.

An excerpt of each of the 1916 and 1938 maps are presented as Figures 6, **Attachment 1.**

4.4. POEO Act Public Register Search

The NSW EPA POEO Act Public Register contains information about environment protection licences, licence applications, notices issued under the POEO Act and pollution studies and reduction programs.

The EPA's POEO Act Public Register was searched for the areas of Bray Park and Murwillumbah on 1 May 2019. Six licences were located, associated with Holcim's concrete plant (3.2 km north-east), Sunstate's concrete plant (3.5 km north-east), Tweed Shire Council's landfill (4.8 km east), Tweed Shire Council's wastewater treatment plant (2.3 km

north), Tweed Shire Council's Bray Park water treatment plant (4 km north-east) and Uki Quarry (4 km north-east). These facilities are all located a significant distance from the subject property, and are considered to present a negligible risk to soil and groundwater quality at the subject property.

4.5. Contaminated Land – Record of Notices Search

The OEH's Contaminated Land – Record of Notices was searched (accessed 1 May 2019) for the Bray Park and Murwillumbah region. One notice was found – for the Murwillumbah Puma Service Station (approximately 3.8 km north-east) – concerning groundwater contamination at the site and the migration of contaminated groundwater beyond the sites boundaries. Given the distance of this site from the subject property, any contaminants which may be the subject of these notices are expected to pose a negligible risk to the quality of the subject site soils and groundwater.

4.6. Cattle Dip Site Locator

The NSW DPI's cattle dip site locator was accessed on 1 May 2019. A search of the Murwillumbah area indicated that twenty-seven cattle dips were present – the closest dip site 'OCONNORS', is located approximately 800 metres east of the site. The status of the dip site is 'lapsed' meaning it is currently not in use, however when it was operating prior to 2000, the following chemicals were used; arsenic, DDT, dioxathion, ethion, ethion chlordimeform and amitraz. All other dip sites were located more than 2.7 km from the subject site. Given the distance of the dip sites from the subject property, they are considered to pose a negligible risk to soils and groundwater at the subject property.

4.7. Areas of Environmental Concern and Potential Contaminants

Based on the desk-top site history assessment, it appears as though the majority of the subject site has been cleared for agricultural and/or cattle grazing purposes since at least 1916. Anecdotal information provided by Mr. Paul John O'Connor indicates that the site has historically been used for cattle grazing and sugar cane production where pesticides (Dieldrin) have been applied to land.

On this basis, the primary Areas or Activities of Environmental Concern (AEC) have been subsequently identified as:

- Site areas where previous broad-scale agricultural activities have occurred. The chemicals of potential concern (COPC) associated with these activities may include organo-chlorine pesticides (OCPs) and heavy metals associated with potential insecticide, pesticide and/or fertiliser use.
- Areas surrounding structures where the use of lead-based paints may have occurred.

5. Site Inspection

An Environmental Engineer from ENV, Ollie Fick, undertook a site inspection with associated soil sampling on 9 April 2019. The inspection and sampling were limited to the proposed subdivision and seniors housing development envelope, with an area of approximately 5.7 ha. The relative location of the dwelling envelope is presented on Figure 2, **Attachment 1**.

The purpose of the inspection was to obtain further information about AECs identified during the desk-top site history assessment and to identify any additional AECs on the site. Photographs taken during the site inspection and sampling program are provided in **Attachment 2.**

During the inspection, one additional AEC was noted where two small areas appeared to have mechanical oil staining. Two additional targeted samples were subsequently collected for laboratory analyses from the surficial soils in these areas. The vegetation within the proposed subdivision and seniors housing development envelope appeared to be healthy and not distressed by potential contamination in the soils.

6. Sampling and Analysis Plan

Section 2.1 of the *Sampling Design Guidelines* (EPA, 1995) states that a preliminary sampling and analysis program may be required where investigations indicate possible sources of contamination. Given the results of the site history assessment, soil sampling and analysis were undertaken at the site.

6.1. Sampling Objective

In accordance with the NSW EPA *Sampling Design Guidelines* (EPA, 1995), the rationale behind sampling is to gather information concerning the location, nature, level and extent of contamination at the site. The objective of the field sampling program was therefore to collect this information in order to evaluate the current environmental quality of the site soils in the context of the proposed residential subdivision and seniors housing development.

6.2. Sampling Investigation

The NSW EPA *Sampling Design Guidelines* (1995) recommend a minimum of 72 sampling points for a site (proposed development envelope) area of up to 5.2 ha. However, it is reasonable to expect any contamination would be widespread on agricultural land such as this. A reduced sampling density was adopted on this basis.

Forty (40) individual samples and 2 targeted samples were collected from within the proposed development envelope as part of the sampling program. Sampling was conducted on 9 April 2019.

A sampling grid was set up across the development area such that the samples were spaced evenly apart. Samples were collected using a shovel and a gloved hand from shallow soils

within the top 150 mm of the soil profile. Where organic matter such as leaves and twigs were present, these were removed and the underlying soils sampled. The sampling locations are presented on Figure 2, **Attachment 1**).

Each of the samples were placed immediately into an esky with ice and transported to the laboratory for analysis with accompanying chain of custody (COC) documentation. The samples were sent to Environmental Analysis Laboratories (EAL) in Lismore, which is accredited by the National Association of Testing Authorities (NATA) for the required analysis (refer to Section 6.4). Here, the individual samples were composited into ten (10) samples – refer to Table 2, for analysis of OCPs and a metals suite and the two targeted samples were analysed for hydrocarbons and heavy metals.

Table 2: Sample Details

Individual Sample No.	Depth (mm)	Composite Sample No.
BH1, BH2, BH3, BH12	0 - 150	C1
BH4, BH5, BH6, BH36	0 - 150	C2
BH33, BH34, BH37, BH38	0 - 150	C3
BH7, BH8, BH9, BH11	0 - 150	C4
BH29, BH31, BH35, BH39	0 - 150	C5
BH26, BH27, BH27, BH32	0 - 150	C6
BH10, BH13, BH14, BH15	0 - 150	C7
BH16, BH17, BH18, BH40	0 - 150	C8
BH19, BH20, BH21, BH25	0 - 150	C9
BH22, BH23, BH24, BH30	0 - 150	C10

6.3. Field Quality Assurance/Quality Control (QA/QC)

The samples were collected using a fresh pair of disposable nitrile gloves for each discrete sample. The samples were collected using a shovel to loosen soil in the subsurface. Between locations, the shovel was washed with detergent and potable water to minimise the potential for cross-contamination between locations. Each sample was sealed in glass sample jars (supplied by the laboratory) with no headspace and chilled using ice in an esky prior to, and during dispatch to the laboratory.

6.4. Laboratory Analysis

Table 3 summarises the laboratory analysis conducted on the samples collected.

Table 3: Summary of Laboratory Analysis

Analytes Tested	Potential Contamination Source	Sample No.
Organo-chlorine pesticides (OCPs)	Agricultural insecticides and pesticides	C1 – C10
Metals	Agricultural chemicals, insecticides and pesticides, fertilisers	C1 – C10, BH7A, BH16A
Hydrocarbons	Machinery oils and fuels	BH7A, BH16A

Insecticides/Pesticides

Insecticides and pesticides are used during agricultural and horticultural activities to kill organisms that are potentially harmful to the crop being grown. Some pesticides are also applied beneath and adjacent to buildings to control termites.

Some insecticides and pesticides contain heavy metals and OCPs. They may cause both acute and chronic health effects in those who are exposed. Insecticide and pesticide exposure can cause a variety of adverse health effects, ranging from irritation of the skin and eyes to more severe effects such as those on the nervous system, mimicking hormones causing reproductive problems, or causing cancer.

Metals

Metals occur naturally in the environment with large variations in concentration. Anthropogenic sources of metals include fertilisers, pesticides/herbicides and combustion products of fossil fuels.

Hydrocarbons

Hydrocarbons deriving from the use of mechanical lubricants, oils and fuels which may have been historically dumped or spilled. They may cause both acute and chronic health effects in those who are exposed.

7. Laboratory Analysis Results and Discussion

A summary table showing the laboratory results is provided in **Attachment 3.**

The analytical results for the ten composite soil samples and two individual targeted soil samples analysed were compared with relevant investigation levels from the NEPM. The human-health based screening and assessment levels used were those for a low-density residential land use (HIL-A, HSL-residential, Management Limits), since these are the most conservative levels and meet the proposed residential land use of the subject site. Generic EILs were also referenced.

A review of the results indicates that the concentrations of all analytes tested met the adopted human health-based investigation levels with the exception of chromium, lead and Total Recoverable Hydrocarbons (TRH); C16-C34 and C34-C40.

It is noted that chromium concentrations in several of the composite samples were greater than the NEPM HIL-A (allowing for compositing, by dividing the criteria by four). However, the site's location amongst volcanic rocks of basaltic origin is considered to be the cause of the elevated concentrations of these metals, as they are known constituent metals of basalt. The reported concentrations of each of these metals are also within or close to the published background ranges (where available), as provided in Schedule B(1) of the NEPM.

Following review of the initial composite results, it was evident that lead exceeded the adopted assessment criterion in composite samples 'C1' and 'C4'. Each of the sub-samples that comprised the composite samples were then individually analysed for lead. The results indicated that concentrations of lead in sample 'BH8' marginally exceeded the adopted assessment criteria. A 95% upper confidence limit (UCL) of the arithmetic average of lead concentrations was calculated using the statistical software ProUCL 5.1.002. The results from the 95% Student's-t UCL test indicate the mean lead concentration at 95% confidence is less than the adopted assessment criterion (**Attachment 4**).

Concentrations of TRH were reported to be greater than the adopted assessment criteria in samples 'BH7A' and 'BH16A' for TRH C16-C34, and 'BH16A' for TRH 34-C40, collected from surficial soils within areas of inferred oil staining on the ground surface in two locations. The reported concentrations exceeded the NEPM Management Limits for residential land use. However, given the composition of the hydrocarbons reported in these samples ('heavier' chain fractions), it is considered likely that the soil impacts associated with the staining are limited to relatively shallow soils.

8. Conclusions and Recommendations

ENV Solutions has undertaken a Stage 1 Preliminary Contamination Assessment for a proposed residential subdivision and site compatibility certificate for seniors housing at 49 Elouera Terrace, Bray Park, NSW.

Based on a site inspection and sampling investigation undertaken at the site on 9 April 2019, together with a desk-top site history assessment, it appears as though the subject site has been predominantly cleared of vegetation since at least 1916. Anecdotal information provided by Mr. Paul John O'Connor suggests that the land has been used historically for cattle grazing and sugar cane production. Areas surrounding structures where the use of lead-based paints may have occurred were also noted.

From the above information, preliminary sampling and analysis was undertaken across the subject property, consistent with relevant NSW EPA Guidelines. A total of forty (40) individual grid-based samples and two (2) targeted samples were collected from within the proposed development envelope (area of up to 5.7 ha), which is a density reduced from the recommended sampling density provided in the NSW EPA *Sampling Design Guidelines* (1995). As it is reasonable to expect that any contamination would be widespread (diffuse) on agricultural land such as this, a reduced sampling density was adopted. The samples were stored on ice in an esky and transported to a NATA accredited laboratory for analysis.

The analytical results for the individual soil samples were compared with relevant human health and ecological investigation levels from the NEPM (as amended 2013). The criteria adopted were those for a low density residential land use (HIL-A, HSL-residential, Management Limits), reflecting the proposed residential development.

A review of the results indicates that the concentrations of all analytes tested met the adopted investigation levels with the exception of chromium, lead and TRH fractions C16-C34 and C34-C40.

The chromium exceedances are considered to be associated with volcanic rocks of basaltic origin known to exist in the area, and not with anthropogenic sources.

Lead exceedances in two of the composite samples (C1 and C4) were investigated further by analysing the individual sub-samples that comprised these composite samples. The calculated 95% UCLs of mean lead concentrations in the individual samples analysed were less than the adopted assessment criterion.

On the basis of the TRH results, if the areas represented by 'BH7A' and 'BH16A' (i.e. visibly stained soils) are developed as a garden area or other unsealed area where human contact may occur, surface soil at this location should be scraped and the material transported off-site to a suitably licensed landfill facility. From an aesthetic perspective (staining and odour), the soils may be unsuitable for the proposed development even if they are not within such areas. If the soils are removed, a remediation action plan (RAP) which details the

methodology for the works and provides a description of validation sampling of the remaining soils in this area would be required, prior to the excavation works occurring.

Additionally, following the removal of existing structures at the property, further sampling should be undertaken to ensure soils beneath each structure are suitable for the proposed development.

On the basis of the results, and noting the exceptions described above, the subject land is considered suitable from an environmental perspective for the proposed residential development.

9. General Notes

General

Geotechnical and environmental reports present the results of investigations carried out for a specific project and usually for a specific phase of the project (e.g. preliminary design). The report is based on specific criteria, such as the nature of the project, underground utilities or scope of service limitations imposed by the Client. The report may not be relevant for other phases of the project (e.g. construction), after some time or where project details and clients change.

Interpretation of Results

The discussion and recommendations in the accompanying report are based on extrapolation/interpolation from data obtained at discrete locations and other external sources and guidelines. The actual interface between the materials may be far more gradual or abrupt than indicated. Also, actual conditions in areas not sampled may differ from those predicted.

The report is based on significant background details that only the authors can be aware of, and therefore implementation of the recommendations by others may lead to misinterpretation and complications. Therefore, this company should be consulted to explain the reports implications to other involved parties.

Reporting relies on interpretation of often limited factual information based on judgment and opinion which has a level of uncertainty and ambiguity attached to it and is far less exact than other design disciplines. This should be considered by users of the report when assessing the implications of the recommendations.

Change in Conditions

Subsurface conditions can change with time and can vary between test locations. Construction operations at or adjacent to the site and natural events such as floods, earthquakes or groundwater fluctuations can also affect subsurface conditions.

10. References

1. *Bureau of Meteorology (2019) Australian Groundwater Explorer database.*
2. *Department of Urban Affairs and Planning and the Environment Protection Authority (1998). Managing Land Contamination, Planning Guidelines SEPP 55 – Remediation of Land.*
3. *DIPMAC (1995) Guidelines to Assist Local Government in Assessing Development within 200 metres of Cattle Tick Dip Sites.*
4. *Environment Protection Authority (1995) Sampling Design Guidelines.*
5. *Environment Protection Authority (2000) Guidelines for Consultants Reporting on Contaminated Sites.*
6. *Tweed Shire Council: Local Environmental Plan (LEP; 2014).*

11. Glossary

Below is a list of commonly used abbreviations in the report:

AEC – Areas of Environmental Concern

ENV – ENV Solutions Pty Ltd

COC – Chain of Custody

DPI – Department of Primary Industries

EILs – Ecological Investigation Levels (for soil)

EPA – NSW Environment Protection Authority (within the Office of Environment and Heritage (OEH))

HILs – Health Investigation Levels (for soil)

HSL – Health Screening Levels (for soil)

NEPM – National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)

mBGL – Metres Below Ground Level

OEH – Office of Environment & Heritage

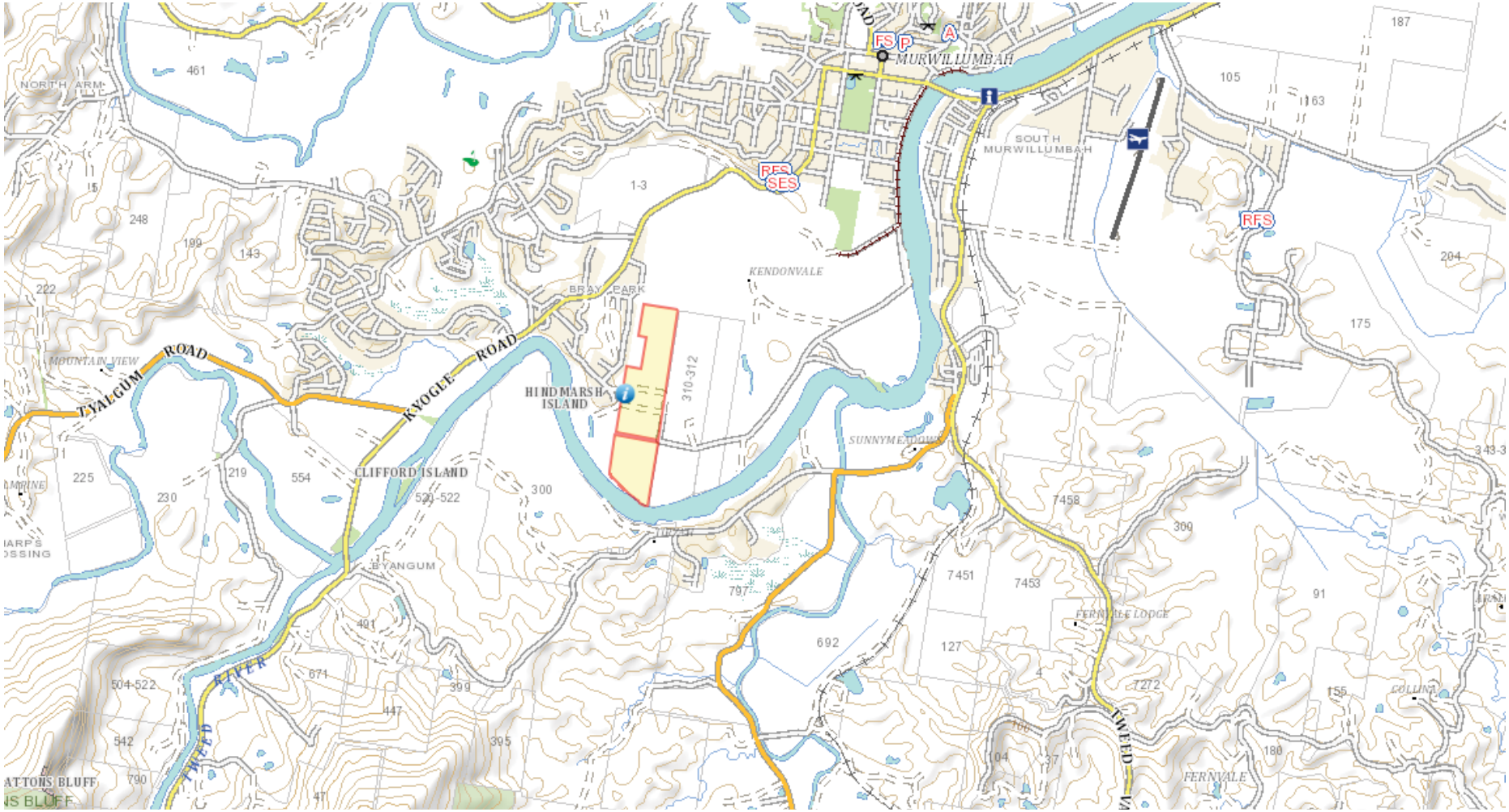
QA/QC – Quality Assurance and Quality Control

12. Attachments

Attachment 1	Figures
Attachment 2	Photographs
Attachment 3	Analytical Results Table
Attachment 4	ProUCL Statistical Analyses

ATTACHMENT 1

Figures 1, 2, 3, 4, 5, 6 and Client Drawings



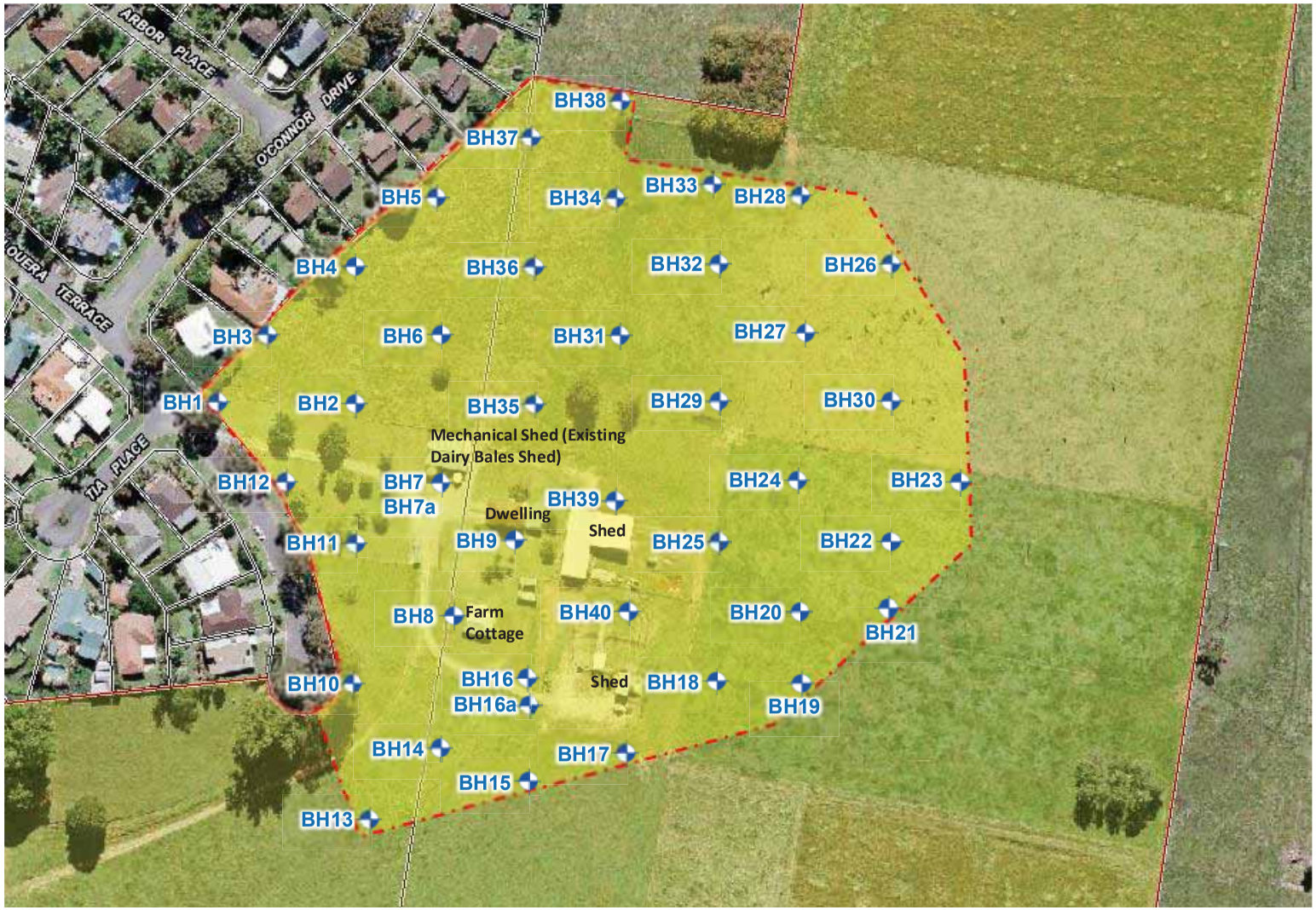
Site Location (Approximate)

0 200 400 m

Figure 1 - Site Location
49 Elouera Terrace, Bray Park NSW

Marjan Management Pty Ltd
Contamination Assessment
Job No: 19121

Image source: Six Maps (2018)



Investigation area (approximate)

Contamination Soil Sample Locations

0 30 60 m

Image source: Six Maps (2015)

Figure 2 – Sample Locations
49 Elouera Terrace, Bray Park NSW

Marjan Management Pty Ltd
Contamination Assessment
Job No: 19121

Site area (approximate)

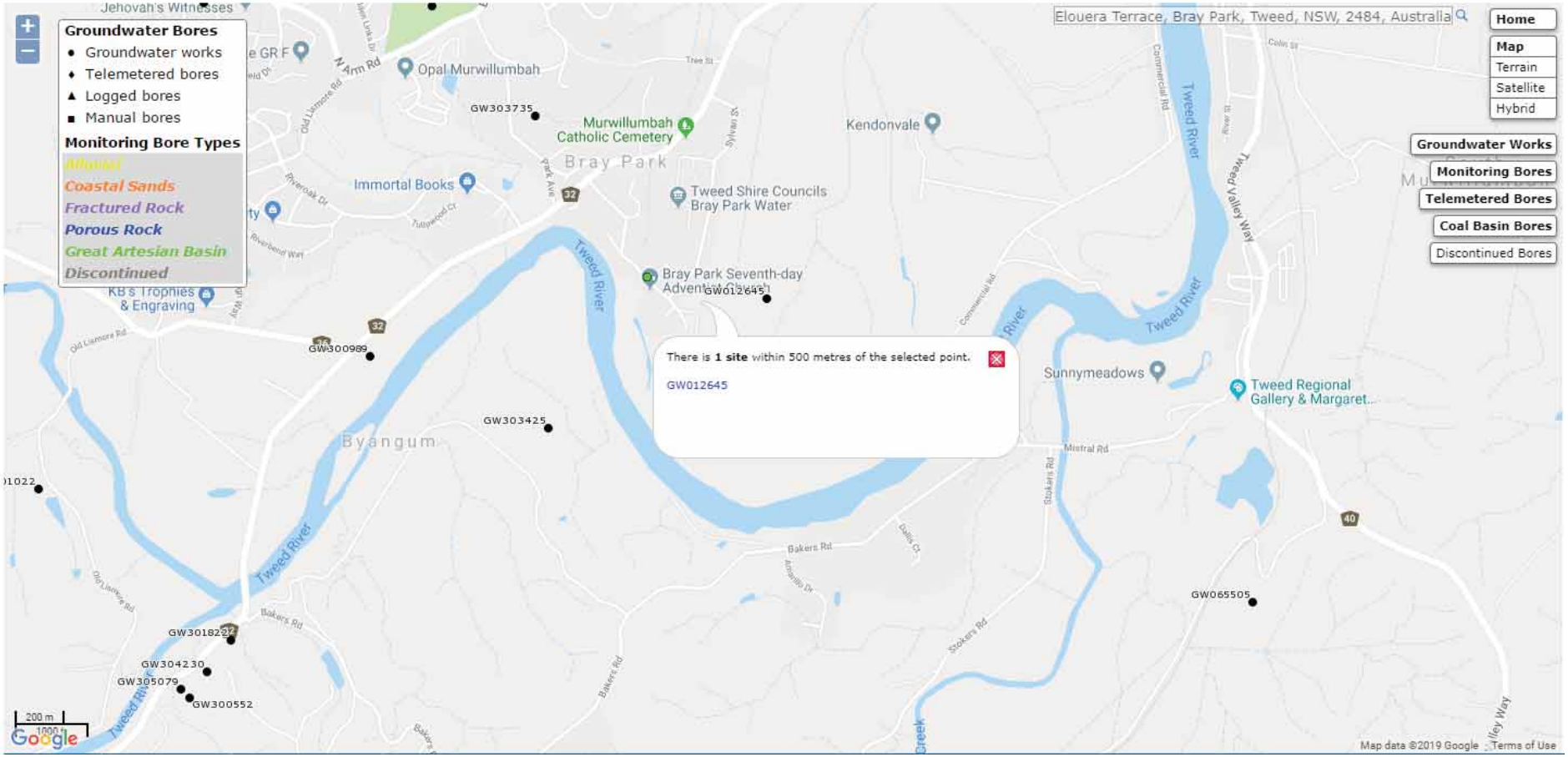
Image source: Tweed Shire Council LEP (2014)

Figure 3 – Flood Planning Area
49 Elouera Terrace, Bray Park NSW

Site area (approximate)

Figure 4 – Acid Sulfate Soils Map: Tweed Shire Council LEP (2014)
49 Elouera Terrace, Bray Park NSW

Image source: Tweed Shire Council LEP (2014)



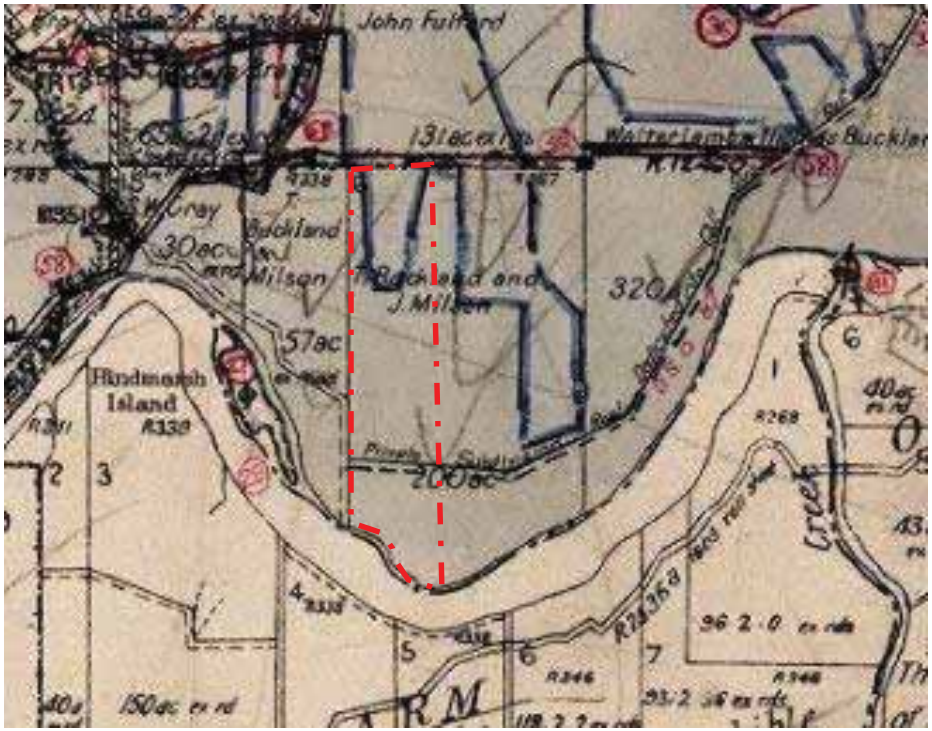
Site area (approximate)

Registered Groundwater Bore Location

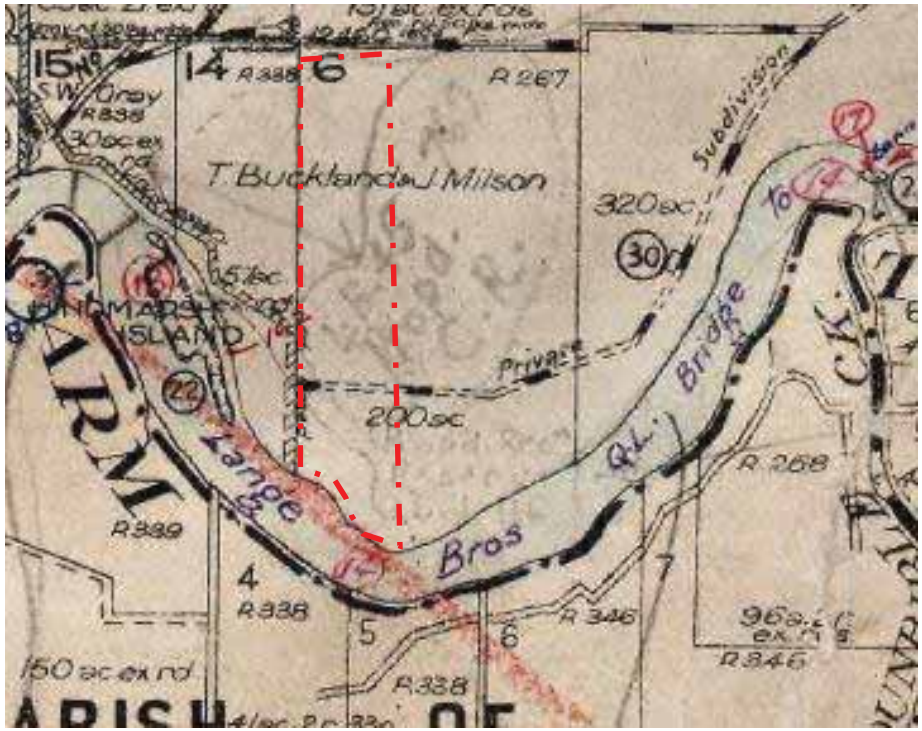
Image source: Real time data – Water NSW (2018)

Figure 5 – Registered Groundwater Bore Locations
49 Elouera Terrace, Bray Park NSW

Marjan Management Pty Ltd
Contamination Assessment
Job No: 19121



1916



1938

Site area (approximate)

Image source: NSW Land Registry Services (2018)

Figure 6 – Town and Parish Maps
49 Elouera Terrace, Bray Park NSW

Marjan Management Pty Ltd
Contamination Assessment
Job No: 19121

Elouera Terrace, Bray Park
Concept Layout Plan

ATTACHMENT 2

Photographs

Photograph 1: Looking south-east at the area of the dwelling, mechanical shed and farm cottage. The driveway, grass ground cover of the area and nearby stands of trees are visible.

Photograph 2: Looking east toward the adjacent land parcel where the northern portion of development will be situated. The drain that enters the site is visible in the foreground before it flows north.

Photograph 3: Typical surface sample, showing ‘BH8’ collected from the perimeter of the farm cottage.

Photograph 4: Looking north at the cattle yard, the mechanical oil staining and location of sample ‘BH16A’ visible in the foreground.

Photograph 5: Image of the chemical drums (herbicide) observed during the site inspection and location of sample ‘BH39’.

Photograph 6: Image of the mechanical oil staining next to the mechanical shed and the location of sample ‘BH7A’.

ATTACHMENT 3

Analytical Results Table

RESULTS OF SOIL ANALYSIS

42 soil samples supplied by Env Solutions Pty Ltd on 11th April, 2019 - Lab Job No. i0664
Soil samples supplied were composited by EAL into 10 composite samples for analysis
Analysis requested by Oli ie Fi dk. Your Job: 19121
PO Box 248 BALLINA NSW 2478

ANALYTE	METHOD REFERENCE	Composite Sample 1 C1 (BH1, BH2, BH3, BH12))	Composite Sample 2 C2 (BH4, BH5, BH6, BH36)	Composite Sample 3 C3 (BH33, BH34, BH37, BH38)	Composite Sample 4 C4 (BH7, BH8, BH9, BH11)	Composite Sample 5 C5 (BH29, BH31, BH35, BH39)	Composite Sample 6 C6 (BH26, BH27, BH28, BH32)	Composite Sample 7 C7 (BH10, BH13, BH14, BH15)	Composite Sample 8 C8 BH16, BH17, BH18, BH40)	Composite Sample 9 C9 (BH19, BH20, BH21, BH25)	Composite Sample 10 C10 (BH22, BH23, BH24, BH30)	Sample 41 BH7A	Sample 42 BH16A	RESIDENTIAL A Guideline Limit Composite -Column A	RESIDENTIAL A Guideline Limit Individual -Column A	COMMERCIAL / INDUSTRIAL D Guideline Limit Composite -Column D	COMMERCIAL / INDUSTRIAL D Guideline Limit Individual -Column D	Background Range
	Job No.	i0664/C1	i0664/C2	i0664/C3	i0664/C4	i0664/C5	i0664/C6	i0664/C7	i0664/C8	i0664/C9	i0664/C10	i0664/41	i0664/42	See note 1a	See note 1a	See note 1d	See note 1d	See note 2
TEXTURE (SAND, CLAY, SILT)	** inhouse	Silt	Silt	Silt	Silt	Silt	Silt	Silt	Silt	Silt	Silt	..	..	..	..	..	..	..
MOISTURE %	** c	19	26	27	20	22	26	23	23	29	30	13	6	..	..	..	..	..
SILVER (mg/kg DW)	a	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	na	na	na	na	na
ARSENIC (mg/kg DW)	a	13	17	9	15	9	5	9	10	4	4	14	9	25	100	750	3,000	0.2-30
LEAD (mg/kg DW)	a	103	14	11	97	13	10	12	20	11	10	15	14	75	300	375	1,500	<2-200
CADMIUM (mg/kg DW)	a	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5	20	225	900	0.04-2.0
CHROMIUM (mg/kg DW)	a	36	15	18	29	42	40	21	19	49	50	36	16	(<25)	(<100)	(<900)	(<3,600)	0.5-110
COPPER (mg/kg DW)	a	9	11	8	12	9	12	12	12	11	11	14	13	1,500	6,000	60,000	240,000	1-190
MANGANESE (mg/kg DW)	a	352	509	658	398	352	383	624	255	486	517	149	229	950	3,800	15,000	60,000	4 - 12,600
NICKEL (mg/kg DW)	a	4	3	4	7	8	10	8	5	10	10	8	4	100	400	1,500	6,000	2-400
SELENIUM (mg/kg DW)	a	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	50	200	2,500	10,000	na
ZINC (mg/kg DW)	a	61	59	37	108	50	45	43	41	43	43	132	170	1,850	7,400	100,000	400,000	2-180
MERCURY (mg/kg DW)	a	<0.05	0.09	0.26	0.15	0.09	0.14	0.10	<0.05	0.11	0.14	0.06	<0.05	10	40	183	730	0.001-0.1
IRON (% DW)	a	2.03	2.22	2.42	3.24	4.29	4.08	2.48	2.04	4.85	4.90	3.85	1.56	na	na	na	na	na
ALUMINIUM (% DW)	a	1.03	1.58	2.00	1.99	3.21	3.59	1.72	1.23	3.65	3.83	2.55	1.02	na	na	na	na	na
BERYLLIUM (mg/kg DW)	a	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	15	60	125	500	na
BORON (mg/kg DW)	a	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	1	2	1,125	4,500	75,000	300,000	na
COBALT (mg/kg DW)	a	3	2	3	4	4	4	7	3	5	5	2	3	25	100	1,000	4,000	na
PESTICIDE ANALYSIS SCREEN																		
DDT+DDE+DDD (mg/kg)	c	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	..	..	60	240	900	3,600	<0.1
Aldrin + Dieldrin (mg/kg)	c	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	..	..	2	6	11	45	<0.1
Chlordane (mg/kg)	c	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	..	..	13	50	133	530	<0.1
Endosulfan (mg/kg)	c	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	..	..	68	270	500	2,000	<0.1
Endrin (mg/kg)	c	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	..	..	3	10	25	100	<0.1
Heptachlor (mg/kg)	c	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	..	..	2	6	13	50	<0.1
HCB (mg/kg)	c	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	..	..	3	10	20	80	<0.1
Methoxychlor (mg/kg)	c	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	..	..	75	300	625	2,500	<0.1
Other Organochlorine Pesticides (mg/kg)	c	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	..	..	..	..	..	..	<0.1
HYDROCARBON ANALYSIS RESULTS																		
BTEX																		
Benzene (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	<0.1	<0.1	..	..	..	..	..
Toluene (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	<0.1	<0.1	..	..	..	..	..
Ethylbenzene (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	<0.1	<0.1	..	..	..	..	..
m+p- Xylene (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	<0.2	<0.2	..	..	..	..	..
o-Xylene (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	<0.1	0.4	..	..	..	..	..
Total Xylenes (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	<0.3	0.5	..	..	..	..	..
Total BTEX (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	<0.6	<0.6	..	..	..	..	..
Naphthalene (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	<0.1	0.2	..	..	..	..	..
Total Recoverable Hydrocarbons																		
TRH C10-C14 (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	<20	440	..	..	..	..	..
TRH C15-C28 (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	2,000	20,000	..	..	..	..	..
TRH C29-C36 (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	3,800	25,000	..	..	..	..	..
TRH C37-C40 (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	1,900	11,000	..	..	..	..	..
TRH >C10-C16 (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	<25	560	..	..	..	..	..
TRH >C10-C16 - Naphthalene (F2) (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	<25	560	..	..	..	..	..
TRH >C16-C34 (F3) (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	4,400	35,000	..	..	..	..	..
TRH >C34-C40 (F4) (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	3,400	21,000	..	..	..	..	..
TRH C10-C36 Total (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	5,800	45,000	..	..	..	..	..
TRH C10-C40 Total (F bands) (mg/kg)	c	..	..	..	..	..	..	..	..	..	..	7,700	56,000	..	..	..	..	..

METHODS REFERENCE

a [1,3]Nitric/HCl digest- APHA 3125 ICPMS

b. [1,3]Nitric/HCl digest- APHA 3120 ICPOES

c. Analysis sub-contracted - SGS report no. SE 191675

*** denotes these test procedure or calculation are as yet not NATA accredited but quality control data is available*

NOTES

1a. HIL A & Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry), also includes childcare centres, preschools and primary schools.
1b. HIL B & Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.
1c. HIL C & Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. This does not include undeveloped public open space.
1d. HIL D & Commercial/industrial, includes premises such as shops, offices, factories and industrial sites.
(REFERENCE: Health Investigation Guidelines from NEPM (National Environmental Protection, Assessment of Site Contamination, Measure), 2013; Schedule B1).
2. Environmental Soil Quality Guidelines, Page 40, ANZECC 1992.
3a. Table 1 Maximum values of specific contaminant concentrations for classification without TCLP (NSW EPA 2014, Waste Classification Guidelines Part 1: Classifying Waste)
3b. Table 2 Maximum values for leachable concentrations and specific contaminant concentrations when used together (NSW EPA 2014, Waste Classification Guidelines Part 1: Classifying Waste)
4. Analysis conducted between sample arrival date and reporting date.
5. ** NATA accreditation does not cover the performance of this service.
6. .. Denotes not requested.
7. This report is not to be reproduced except in full.
8. All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).

Additional NOTES

DW = Dry Weight. na = no guidelines available
Organochlorine pesticide (OC's) screen: (HCB, alpha-BHC, Heptachlor, delta-BHC, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, Lindane, trans-Nonachlor, Endrin Ketone, Isodrin, Mirex
Alpha Endosulfan, p,p'-DDE, Dieldrin, Endrin, p,p'-DDD, Beta Endosulfan, p,p'-DDT, Endrin Aldehyde, Endosulfan Sulphate, Methoxychlor)

checked:.....

RESULTS OF SOIL ANALYSIS

10 of 42 soil samples supplied by Env Solutions Pty Ltd on 11th April, 2019 - Lab Job No. i0664

Analysis requested by Ollie Fick. Your Job: 19121

PO Box 248 BALLINA NSW 2478

ANALYTE	METHOD REFERENCE	Sample 1 BH1	Sample 2 BH3	Sample 3 BH12	Sample 4 BH2	Sample 13 BH11	Sample 14 BH7	Sample 15 BH8	Sample 16 BH9	*RESIDENTIAL A Guideline Limit* Composite - Column A	*RESIDENTIAL A Guideline Limit* Individual - Column A	*COMMERCIAL/ INDUSTRIAL D Guideline Limit* Composite - Column D	*COMMERCIAL/ INDUSTRIAL D Guideline Limit* Individual - Column D	*Background* Range
	Job No.	*i0664/1*	*i0664/2*	*i0664/3*	*i0664/4*	*i0664/13*	*i0664/14*	*i0664/15*	*i0664/16*	*See note 1a*	*See note 1a*	*See note 1d*	*See note 1d*	*See note 2*
LEAD (mg/kg DW)	*a*	7	8	8	13	15	12	331	58	*75*	*300*	*375*	*1,500*	*<2-200*

METHODS REFERENCE

a. [13]Nitric/HCl digest - APHA 3125 ICPMS

b. [13]Nitric/HCl digest - APHA 3120 ICPOES

c. Analysis sub-contracted - SGS report no. SE 191675

*** denotes these test procedure or calculation are as yet not NATA accredited but quality control data is available*

NOTES

1a. HIL A ⁞ Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry), also includes childcare centres, preschools and primary schools

1b. HIL B ⁞ Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

1c. HIL C ⁞ Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. This does not include undeveloped public open space.

1d. HIL D ⁞ Commercial/industrial, includes premises such as shops, offices, factories and industrial sites.

(REFERENCE: Health Investigation Guidelines from NEPM (National Environmental Protection, Assessment of Site Contamination, Measure), 2013; Schedule B1).

2. Environmental Soil Quality Guidelines, Page 40, ANZECC, 1992.

3a.Table 1 Maximum values of specific contaminant concentrations for classification without TCLP (NSW EPA 2014, Waste Classification Guidelines Part 1: Classifying Waste)

3b.Table 2 Maximum values for leachable concentrations and specific contaminant concentrations when used together (NSW EPA 2014, Waste Classification Guidelines Part 1: Classifying Waste)

4. Analysis conducted between sample arrival date and reporting date.

5. ** NATA accreditation does not cover the performance of this service.

6. .. Denotes not requested.

7. This report is not to be reproduced except in full.

8. All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).

Additional NOTES

DW = Dry Weight. na = no guidelines available

checked:.....

TABULATED TRH RESULTS

			TRH						
			C6-C10	C6-C10 (F1 minus BTEX)	C10-C16	C10-C16 (F2 minus Naphthalene)	C16-C34	C34-C40	C10-C40 (Sum of total)
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			25	25	50	50	100	100	50
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil			800		1,000		3,500	10,000	
Field ID	**Date**	**Depth**							
BH7A	**09-04-19**	**0.15**	-	-	<25	<25	4400	3400	7700
BH16A	**09-04-19**	**0.15**	-	-	560	560	35000	21000	56000

Environmental Standards

NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil

(-) not reported

Environmental Analysis Laboratory

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Sample Receipt Notification (SRN)

Project: **EAL/I0664**
Customer: Env Solutions Pty Ltd
Contact: Ollie Fick
Client Job ID: 19121
No. of Samples 42 x Soil; 10 x Composites.
Date Received: 11 APR 2019
Comments: 1/5/19 added Pb to selected samples Urgent 3 day TAT due Monday 6th May
Biller: **Env Solutions Pty Ltd** - Accounts Payable

Test Request

Sample Text ID	Client Sample ID	Basic Metals Scan - Total Acid Extractable	Contaminated Site Assessment 3	Petroleum Compounds Assessment 1a	Sample Compositing	Lead - Total
		SS-PACK-004	SS-PACK-008	SS-PACK-017	SS-PREP-004	SS-SING-150
I0664/(C)001	Samples(1,2,3,4)	0	1	0	0	0
I0664/(C)002	Samples(5,6,7,8)	0	1	0	0	0
I0664/(C)003	Samples(9,10,11,12)	0	1	0	0	0

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Sample Receipt Notification (SRN) for EAL/I0664

		Basic Metals Scan - Total Acid Extractable	Contaminated Site Assessment 3	Petroleum Compounds Assessment 1a	Sample Compositing	Lead - Total
		SS-PACK-004	SS-PACK-008	SS-PACK-017	SS-PREP-004	SS-SING-150
I0664/(C)004	Samples(13,14,15,16)	0	1	0	0	0
I0664/(C)005	Samples(17,18,19,20)	0	1	0	0	0
I0664/(C)006	Samples(21,22,23,24)	0	1	0	0	0
I0664/(C)007	Samples(25,26,27,28)	0	1	0	0	0
I0664/(C)008	Samples(29,30,31,32)	0	1	0	0	0
I0664/(C)009	Samples(33,34,35,36)	0	1	0	0	0
I0664/(C)010	Samples(37,38,39,40)	0	1	0	0	0
I0664/001	BH1	0	0	0	1	1
I0664/002	BH3	0	0	0	1	1
I0664/003	BH12	0	0	0	1	1

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Sample Receipt Notification (SRN) for EAL/I0664

		SS-PACK-004	SS-PACK-008	SS-PACK-017	SS-PREP-004	SS-SING-150
		Basic Metals Scan - Total Acid Extractable	Contaminated Site Assessment 3	Petroleum Compounds Assessment 1a	Sample Compositing	Lead - Total
I0664/004	BH2	0	0	0	1	1
I0664/005	BH4	0	0	0	1	0
I0664/006	BH5	0	0	0	1	0
I0664/007	BH6	0	0	0	1	0
I0664/008	BH36	0	0	0	1	0
I0664/009	BH37	0	0	0	1	0
I0664/010	BH38	0	0	0	1	0
I0664/011	BH34	0	0	0	1	0
I0664/012	BH33	0	0	0	1	0
I0664/013	BH11	0	0	0	1	1

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Sample Receipt Notification (SRN) for EAL/I0664

		SS-PACK-004	SS-PACK-008	SS-PACK-017	SS-PREP-004	SS-SING-150
		Basic Metals Scan - Total Acid Extractable	Contaminated Site Assessment 3	Petroleum Compounds Assessment 1a	Sample Compositing	Lead - Total
I0664/014	BH7	0	0	0	1	1
I0664/015	BH8	0	0	0	1	1
I0664/016	BH9	0	0	0	1	1
I0664/017	BH35	0	0	0	1	0
I0664/018	BH31	0	0	0	1	0
I0664/019	BH39	0	0	0	1	0
I0664/020	BH29	0	0	0	1	0
I0664/021	BH32	0	0	0	1	0
I0664/022	BH28	0	0	0	1	0
I0664/023	BH27	0	0	0	1	0

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Sample Receipt Notification (SRN) for EAL/I0664

		SS-PACK-004	SS-PACK-008	SS-PACK-017	SS-PREP-004	SS-SING-150
		Basic Metals Scan - Total Acid Extractable	Contaminated Site Assessment 3	Petroleum Compounds Assessment 1a	Sample Compositing	Lead - Total
I0664/024	BH26	0	0	0	1	0
I0664/025	BH10	0	0	0	1	0
I0664/026	BH13	0	0	0	1	0
I0664/027	BH14	0	0	0	1	0
I0664/028	BH15	0	0	0	1	0
I0664/029	BH16	0	0	0	1	0
I0664/030	BH17	0	0	0	1	0
I0664/031	BH40	0	0	0	1	0
I0664/032	BH18	0	0	0	1	0
I0664/033	BH25	0	0	0	1	0

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ABN: 41 995 651 524

Sample Receipt Notification (SRN) for EAL/I0664

		SS-PACK-004	SS-PACK-008	SS-PACK-017	SS-PREP-004	SS-SING-150
		Basic Metals Scan - Total Acid Extractable	Contaminated Site Assessment 3	Petroleum Compounds Assessment 1a	Sample Compositing	Lead - Total
I0664/034	BH20	0	0	0	1	0
I0664/035	BH19	0	0	0	1	0
I0664/036	BH21	0	0	0	1	0
I0664/037	BH24	0	0	0	1	0
I0664/038	BH22	0	0	0	1	0
I0664/039	BH30	0	0	0	1	0
I0664/040	BH23	0	0	0	1	0
I0664/041	BH7A	1	0	1	0	0
I0664/042	BH16A	1	0	1	0	0
Total		2	10	2	40	8

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Sample Receipt Notification (SRN) for EAL/I0664

Test Descriptions

Test List Item	Item Description
SS-PREP-004	**Sample Compositing** EAL can composite samples and store the individual samples for at least 2 months to allow for individual testing if required. Charge per individual sample used in the composite.
SS-PACK-004	**Basic Metals Scan - Total Acid Extractable** Dry and Grind Metals (Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Ni, Se, Ag, Zn)
SS-PACK-008	**Contaminated Site Assessment 3** Dry and Grind Basic Texture Metals (Cu, Pb, Cd, Zn, As, Se, Fe, Mn, Ag, Cr, Ni, Al, Hg, B, Co, Be) Pesticides (OCs) SUBCONTRACTED
SS-PACK-017	**Petroleum Compounds Assessment 1a** TPH(C10-C36) and BTEX (equivalent to TPHC6- C9) SUBCONTRACTED
SS-SING-150	**Lead - Total** Includes sample preparation / acid digest and analysis by ICPMS.

EAL Environmental Analysis Laboratory

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Submitting Client Details

Quote Id:
Job Ref: 19121
Company: ENV Solutions Pty Ltd
Contact: ~~James Foster~~ OLLIE FICK
Phone:
Mobile: ~~0421519354~~ 0423124923
Email: ~~james~~ OLLIE@envsolutions.com.au
Postal address:

Billing Client Details

☐ Tick if same as submitting details
ABN: 58 600 788 814
Company: ENV Solutions Pty Ltd
Contact: James Foster
Phone:
Mobile: 0421519354
Email: james@envsolutions.com.au
Postal address:PO Box 248 Ballina NSW 2478

Payment Method:
☐ Purchase Order
☐ Cheque
☐ Credit/Debit Card (EAL staff will phone for details)
☐ Invoice (prior approval)

Relinquished: O. FICK Date: 9.4.19
Received: Date: 11.4.19

Preservation: none - freezer bricks - (ice) - acidified - filtered - other
Condition on receipt: ambient - cool - frozen - other

Comments:

Likelihood and nature of Hazardous material:

Lab ID	Sample ID	Sample Depth	Sampling Date	Sampler	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)	Total number of samples: Composite	Sample Analysis Request: Price list code (e.g. SW-PACK-06): SS-PACK-008				
1	BH 1		9.4.19				SOIL	✓					
2	BH 3		↑				↑	✓					
3	BH 12		↓				↓	✓					
4	BH 2		9.4.19				SOIL	✓					

EAL Chain of Custody
Issue: March 2018

EAL Project Reference: I0664 x 42 soils (10 composites)

CHAIN OF CUSTODY

Comments:

Marketing Survey – where did you find us?
☐ Word of mouth ☐ Magazine ☐ Google search ☐ Other

Lab Sample No.	Sample ID	Sample Depth	Sampling Date	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)	Sample Analysis Request — Price List Code (e.g. SW-PACK-06): COMPOSITE	SS - PACK - 008								
	C1		9.4.19			SOIL		✓								
5	BH 4		↑			↑	✓									
6	BH 5						✓									
7	BH 6						✓									
8	BH 36						✓									
	C2							✓								
9	BH 37						✓									
10	BH 38						✓									
11	BH 34						✓									
12	BH 33						✓									
	C3							✓								
13	BH 11						✓									
14	BH 7						✓									
15	BH 8						✓									
16	BH 9						✓									
	C4							✓								
17	BH 35						✓									
18	BH 31						✓									
19	BH 39		↓			↓	✓									
20	BH 29		9.4.19			SOIL	✓									

CHAIN OF CUSTODY

Comments:

Marketing Survey – where did you find us?
☐ Word of mouth ☐ Magazine ☐ Google search ☐ Other

Lab Sample No.	Sample ID	Sample Depth	Sampling Date	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)	Sample Analysis Request – Price List Code (e.g. SW-PACK-06): Composite	SS-PACK-008
	C5		9.4.19			SOIL		✓
21	BH 32		↑			↑	✓	
22	BH 28						✓	
23	BH 27						✓	
24	BH 26							✓
	C6						✓	
25	BH 10						✓	
26	BH 13						✓	
27	BH 14						✓	
28	BH 15							✓
	C7						✓	
29	BH 16						✓	
30	BH 17						✓	
31	BH 40						✓	
32	BH 18							✓
	C8						✓	
33	BH 25						✓	
34	BH 20						✓	
35	BH 19		↓			↓	✓	
36	BH 21		9.4.19			SOIL	✓	

CHAIN OF CUSTODY

Comments:

Marketing Survey – where did you find us?
☐ Word of mouth ☐ Magazine ☐ Google search ☐ Other

Lab Sample No.	Sample ID	Sample Depth	Sampling Date	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)	Sample Analysis Request Price List Code (e.g. SW-PACK-06) Composite	SS-PACK-008	SS-PACK-004	SS-PACK-017						
	C9							✓								
37	BH 24						✓									
38	BH 22						✓									
39	BH 30						✓									
40	BH 23							✓								
	C10								✓	✓						
41	BH 7A								✓	✓						
42	BH 16A															

ATTACHMENT 4

ProUCL Statistical Analyses

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.108-May-19 9:38:09 AM
From File	ENV022-SS-i0664-R01_b.xls
Full Precision	OFF
Confidence Coefficient	95%

C1

General Statistics

Total Number of Observations	8	Number of Distinct Observations	7
		Number of Missing Observations	1
Minimum	7	Mean	56.5
Maximum	331	Median	12.5
SD	112.2	SD of logged Data	1.326
Coefficient of Variation	1.986	Skewness	2.71

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.516	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.394	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	131.6	95% Adjusted-CLT UCL (Chen-1995)	162.4
		95% Modified-t UCL (Johnson-1978)	138

Suggested UCL to Use

Data do not follow a Discernible Distribution, May want to try Nonparametric UCLs

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

13.Document Control

Filename:	19121_Contam Assessment_20190521
Job No.:	19121
Author:	Ollie Fick
Client:	Marjan Management Pty Ltd
File/Pathname:	C:\Users\Dropbox (ENV Solutions)\ENV Solutions Team Folder\01 Jobs\19121 - Elouera Tce, Bray Park SEPP55

Revision No:	Date:	Name	Signed
0	09/05/2019	Ollie Fick	
1	21/05/2019	Ollie Fick	

PLANIT
CONSULTING

Appendix E







SITE COMPATIBILITY CERTIFICATE
ENGINEERING ASSESSMENT REPORT

49 Elourera Terrace BRAY PARK NSW 2484 | 18/-/DP627632 & 22/-/DP1170438

Prepared for Marjan Management Pty Ltd
By Planit Consulting Pty Ltd

June 2019



This report has been prepared by:

Planit Consulting Pty Ltd
ABN 20 099 261 711

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Document Control

Issue	Date	Description	Prepared By	Checked By
01	13/06/2019	SCC Approval	KB	**AW**

Disclaimer

Contents

Figures

1 Introduction

1.1 Background

Planit Consulting Pty Ltd has been engaged by Marjan Management Pty Ltd to prepare an Engineering Assessment Report (EAR) for a Site Compatibility Certificate investigating a proposed Seniors Housing development at 49 Elouera Terrace Bray Park.

The purpose of this EAR is to demonstrate the suitability of the Seniors Housing development at the subject site location in regards to civil works and servicing.

1.2 Scope

This report investigates and prepares the following in regard to engineering servicing aspects associated with the proposed development:

1. Review of the site and proposed development (refer Appendix B).
2. Review of existing relevant encumbrances burdening the site;
3. Review of existing services and potential servicing strategies;
4. Provision of a concept servicing plan (refer Appendix C);

1.3 Limitations

The limitations of the report include:

1. Services locations are based on historical records and survey;
2. No field sampling or testing has been undertaken;
3. No analysis or calculations as to the capacity of the existing services have been undertaken;
4. No geotechnical investigations have been undertaken;
5. ENV Solutions Pty Ltd have undertaken field sampling works (top 100mm of the soil profile only) as part of a Preliminary Contamination Assessment of the site and have identified no problems;
6. Existing services location and size have been derived from Council and Statutory Authorities' search records which have been made available;
7. Any concept plans provided are not for construction purpose.

This report has been prepared generally in accordance with Council guidelines and other reference documents.

2 Site and Proposal Overview

A Site Compatibility Certificate is sought to permit the development of Seniors Housing in the portion of land within both 18/-/DP627632 and 22/-/DP1170438 (zoned RU1 – Primary Production) located above the 100 year ARI flood event (refer Figure 2.1 for location).

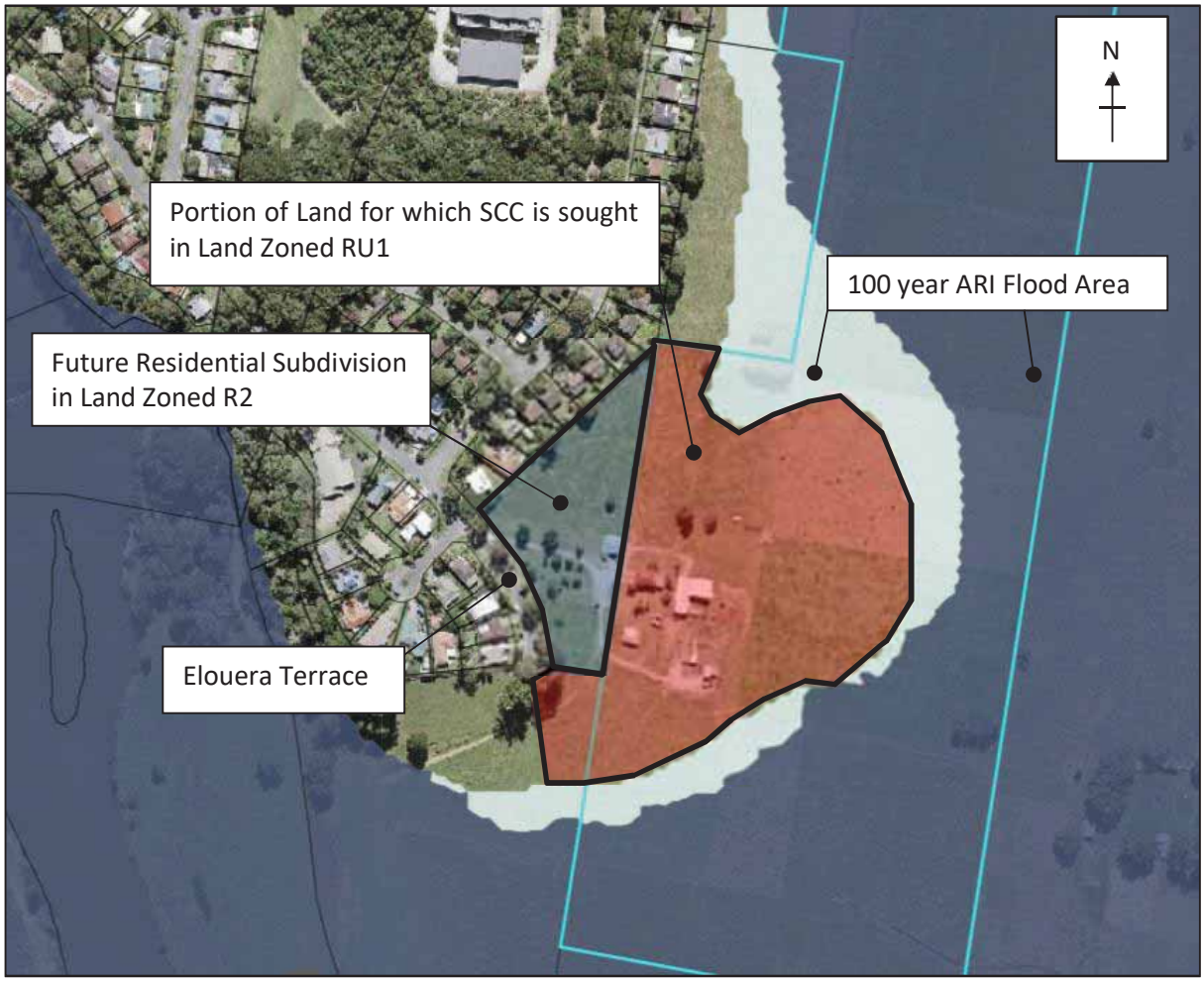

Figure 2.1 – Portion of Land for which SCC is sought (High Flow Flood Extent Shown)

A concept plan has been prepared for yield analysis and for the purposes of this request (refer (Appendix B). This plan demonstrates up to 139 serviced self-contained dwellings being accommodated onsite. The final dwelling yield and development layout would be determined as part of any development application assessment, subsequent to receiving a Site Compatibility Certificate.

It is noted that a DA application for a residential subdivision is currently being prepared for the area of land located between portion of land for which SCC is sought and Elouera Terrace (18/-/DP627632).

3 Civil Engineering and Services Assessment

3.1 Topography

The site falls from north-west to south-east at the approximate grades documented in Figure 3.1.

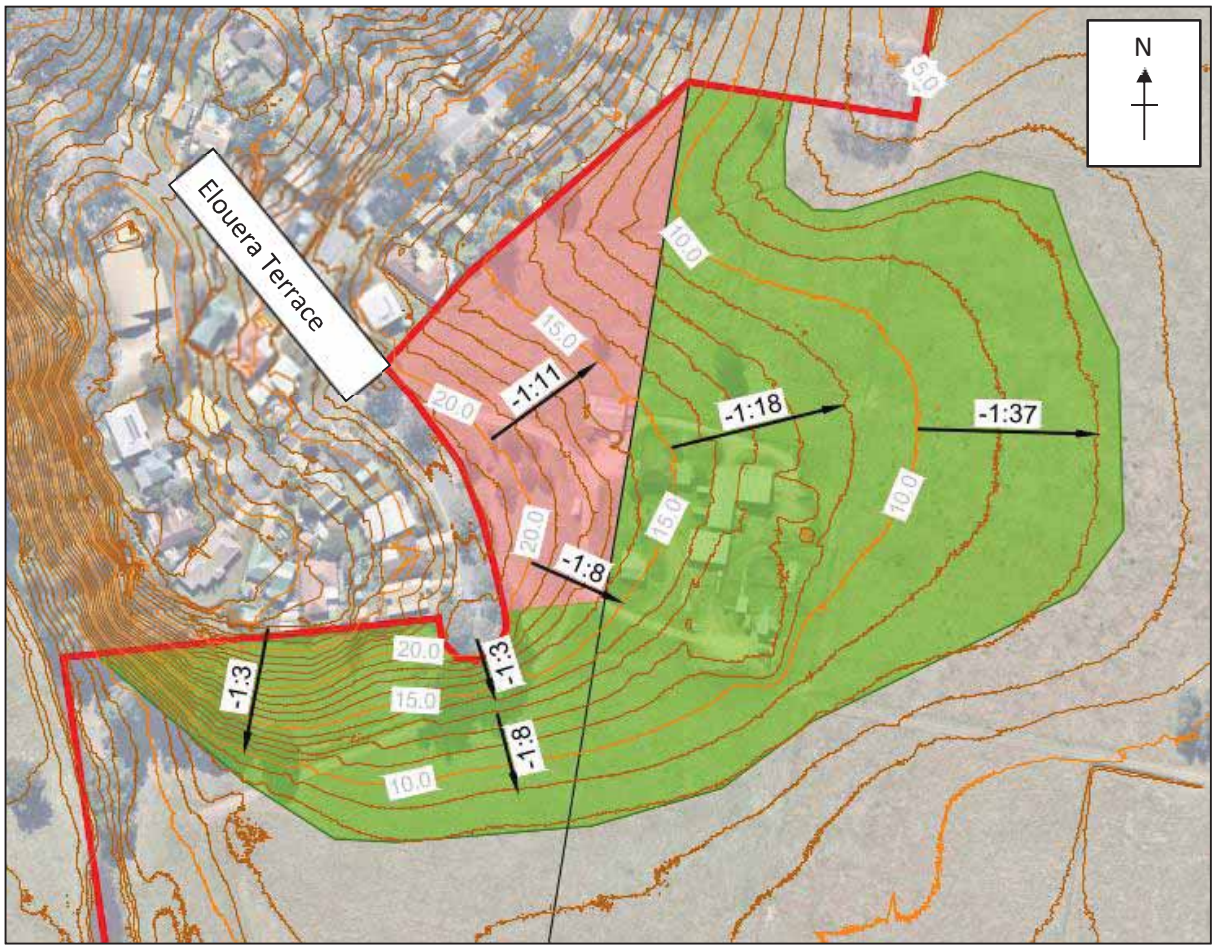

Figure 3.1 – Topography (Showing Only Land above the mapped flood planning level)

3.2 Flooding

3.2.1 Flooding Overlay

A significant amount of the site is mapped as flooded as shown in Figure 3.2 and Figure 3.3.

Flood Level Contours are generally as follows:

1. High Flow Flood Area (ARI 100 year, AEP 1%) = 7.7m – 8.2m AHD;
2. PMF Inundation Area = 13.1 – 13.6m AHD

Figure 3.2 – High Flow Flood Extent (AEP 1%)

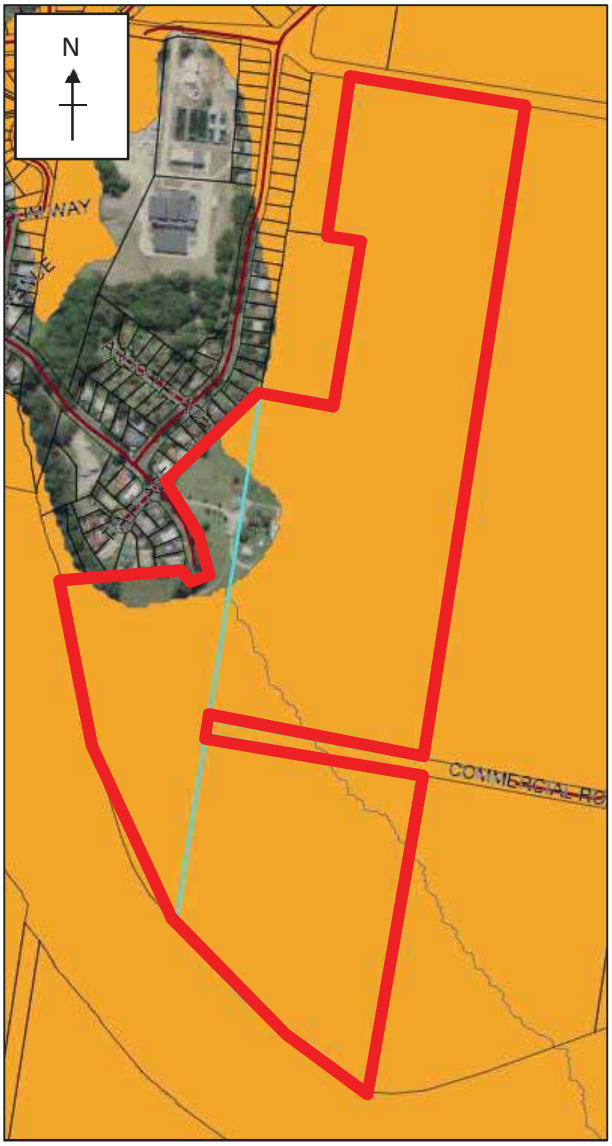

Figure 3.3 – PMF Inundation Areas

3.2.2 High Flow Flood Area (ARI 100 year, AEP 1%)

Seniors Housing development at the site is not permitted on land mapped as high flow flood area. This is regardless of whether land forming works have been undertaken to make this high flow flood area flood free.

No works are proposed below the high flow flood area, thus the above requirements are complied with.

3.2.3 PMF Inundation Area

A probable maximum flood (PMF) means the largest flood that could conceivably occur at a particular location. The PMF level/flood extent provided informs Council's Emergency Response Provisions.

For the Seniors Housing development a permanent high level road evacuation route to land above PMF (Elouera Terrace) is provided via the proposed residential subdivision which complies with Council requirements.

Dwellings will be designed to achieve compliance with the minimum habitable floor level requirements (DFL + freeboard). As such development can occur within the PMF area subject to suitable design at the DA stage.

3.3 Earthworks

Considering the topography described in Section 3.1:

1. Earthworks will be required to facilitate development and will generally involve filling works to level/flatten the site;
2. All earthworks shall be above the High Flow Flood Area (ARI 100 year, AEP 1%);
3. Pathway and accessibility requirements for aged care housing (generally flatter than 1:14 – 1:20) will need to be considered during the earthworks design to achieve compliant grades.

The above shall be further considered and incorporated into designs prepared during the DA phase of the proposal.

3.4 Access, Parking & Manoeuvrability

The proposed seniors housing development will be accessed from Elouera Terrace via a new roadway to be determined as part of the proposed residential subdivision.

3.5 Stormwater Management

3.5.1 Upstream Catchment

The proposed footprint of the Seniors Housing development appears to lie over an existing overland flow path draining the catchment north of O'Connor Drive. Appropriate swales / overland flow paths will need to be constructed around the footprint of the proposed development to ensure the upstream catchment can continue to drain without causing hazard to the new development.

3.5.2 Stormwater Quantity/Quality

The site is currently undeveloped and the proposal will involve the increase of impervious areas. Hence stormwater quality and quantity (non-worsening) requirements will be addressed;

The likely treatment option for stormwater quality/quantity will be a bio-retention basin. The total footprint that should be allowed for the basin is typically 6-8% of the development catchment. This allowance includes treatment surface, batters, bunds, inlets and maintenance access.

It is likely that the any proposed bio-retention basin will service both the seniors' housing development (45,000m2 of developable area) and future residential subdivision (12,750m2 of developable area). Considering this, 3,600-4,800m2 should be allocated for bio-retention basin(s). Final sizing shall be confirmed during detailed design.

3.5.3 Lawful Point of Discharge

The lawful point of discharge of the proposed development is considered to be the existing drainage channels within the high flow area to the north and south of the proposed development.

3.6 Water and Sewerage Reticulation

Tweed Shire Council are the responsible authority for both sewerage and water reticulation for residential customers within their local government area. There are existing sewerage and water reticulation services to the immediate north-west of the site.

3.6.1 Proposed Connection Points

The following connection points have been identified. Refer Appendix C for details.

Sewerage

1. Existing sewerage manhole located within the neighbouring property 7DP264397
2. Sewerage pipe servicing manhole is 150 DIA AC;

Water

1. Existing 100 DIA AC watermain located within Elouera Terrace

3.6.2 Communications with Council

Planit have been liaising with Council regarding the provision of these services. It is noted that the site is currently located outside both the sewerage and water development servicing plan (DSP) area.

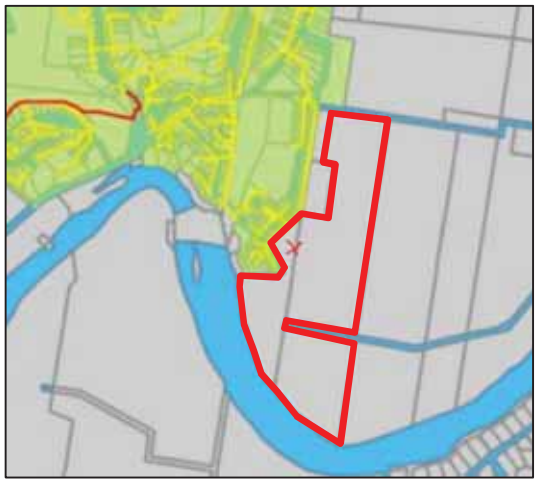

Figure 3.4 – Sewerage DSP Area

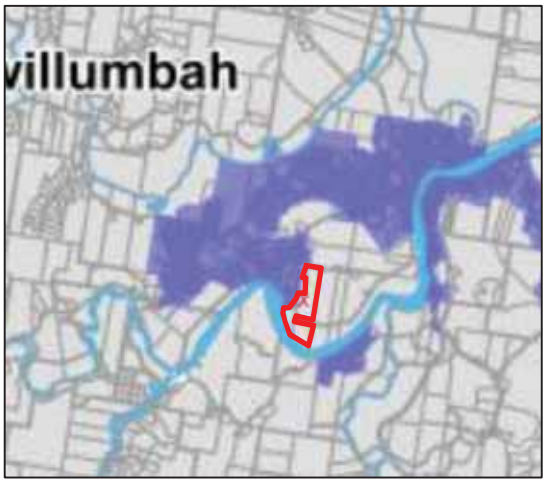

Figure 3.5 – Water Supply DSP Area

Refer below for key points from discussions to date with Council:

1. There is existing sewerage and water infrastructure in close proximity to the proposed development site (refer Appendix C for proposed connection points);
2. Existing Sewerage System Modelling:
    a. Council is currently undertaking modelling and development of a sewerage strategy for the locality. At this stage the estimate for completion is December 2019;
    b. Once completed, further modelling can be undertaken to understand if and what upgrades would be required to service the proposed development;
3. Unloading of Water from Water Treatment Plan Option:
    a. In addition to the above, Council are currently scoping a strategy brief to investigate options to “unload” water from the Water Treatment Plant that currently discharges into the sewerage system.
    b. The water treatment plant consumes a proportion of the sewerage capacity in the system and this option investigates an alternative disposal method;

   c. Council will undertake a preliminary assessment of the option of irrigating water from the Water Treatment Plant to the pastures on the subject site (22/-/DP1170438 and 18/-/DP627632);
   d. At this stage the estimate for completion for this assessment is December 2019;
4. Any sewerage augmentation works required are not expected to prevent the site from being serviced in a timely manner and can be further detailed during the DA phase;
5. There are no expected issues with the provision of a water reticulation connection.

Considering the above, it is considered likely that sewerage pump stations will be required for the subject site due to the topography. It is possible that network upgrades will be required within the existing Council sewerage network to service the development pending the outcomes of the above investigations. Augmentation works will be further investigated and addressed in detail during the DA phase.

3.7 Electrical

Essential Energy is the main service authority for power supply in the region. There is existing electrical infrastructure in the vicinity of the site.

Essential Energy have advised during preliminary discussions:

1. That the substation in the area is close to full capacity hence it is likely that a new pad mount substation and 11KV tie cable to the existing overhead power line east of the proposed development will be required.
2. The substation will require a 7m x 4.2m easement area so a suitable location would need to be confirmed.
3. The proposed electricity service is likely to loop through the site, via Elouera Terrace and the proposed residential subdivision, between the below points;
   a. Existing overhead power Line in O'Conner Drive;
   b. Existing overhead power line east of the proposed development;

Refer Appendix C for proposed connection locations.

In order to undertake a detailed assessment of the works required, Essential Energy will require an estimate of the total load of the proposed development. This information would then be provided in an application request to Essential Energy. This shall be confirmed during the DA phase.

3.8 Telecommunications

Telstra/NBN are the main telecommunications service providers in the regional. There is an existing copper Telstra/NBN service available within Elouera Terrace that the proposed development can connect into.

Details of the connection location within Elouera Terrace shall be addressed during that DA phase. Refer to Appendix C for schematic.

3.9 Gas

There are currently no existing gas mains in the vicinity of the proposed site, nor does there appear to be any plans to provide gas in the near future. Any requirements for gas to be provided will require the proposed dwellings to have a bottled gas supply that will be maintained and serviced by the landowner in accordance with relevant standards and requirements.

4 Conclusion

This engineering assessment has found that the proposed Seniors Housing development:

1. Will comply with Council's flooding requirements, emergency response provisions and stormwater management requirements;
2. Can likely be adequately serviced with water, sewerage, electricity and telecommunications services.

The above findings are subject to final development yields and load demands. It is likely that some minor augmentation works may be required to increase supply capacity or shift loads within the existing servicing infrastructure which have formed current and ongoing investigations to be confirmed through the DA stage(s).

Considering all of the above, based on this desktop assessment and preliminary advice received, there have been no major issues identified that would prevent the proposed development from being adequately serviced.

Yours faithfully
Planit Consulting

Kyle Buis
Senior Civil Engineer BE(Hons) MIEAust CPEng
NER 3334583
ph: 07 5526 1500 | e: kyleb@planitconsulting.com.au

Appendix A. Feature Survey

NOTES

LOT AREAS AND BOUNDARY DIMENSIONS HAVE BEEN COMPILED FROM DEPOSITED PLANS AVAILABLE AT LAND & PROPERTY INFORMATION NSW. NO BOUNDARY SURVEY OR INVESTIGATION HAS BEEN MADE AND NO BOUNDARIES HAVE BEEN MARKED. BOUNDARIES SHOWN HEREON ARE PROVISIONAL AND SUBJECT TO FURTHER SURVEY. POSITION OF IMPROVEMENTS RELATIVE TO BOUNDARIES SHOWN HEREON IS DIAGRAMMATIC ONLY.

THE SUBJECT PARCEL IS SITUATED ON A RIVER AND AS SUCH SUBJECT TO AN AMBULATORY BOUNDARY. AREA AND DIMENSIONS USED FOR THE BOUNDARY HAVE BEEN DERIVED FROM THE ORIGINAL REGISTERED PLAN AND ANY CALCULATIONS USED FOR DEVELOPMENT PURPOSED COULD SIGNIFICANTLY CHANGE ON FINAL SURVEY. IT IS STRONGLY ADVISED THAT A SURVEY REDEFINING THE BOUNDARIES BE CARRIED OUT PRIOR TO LODGMENT OF DEVELOPMENT APPROVALS.

BEARINGS SHOWN ON THIS PLAN ARE ORIENTATED TO NORTH VIDE DP1170438. IF SHADOW DIAGRAMS ARE TO BE CALCULATED THEY MUST BE CALCULATED USING TRUE NORTH.

SERVICES & UTILITIES SHOWN ON THIS PLAN HAVE BEEN LOCATED BY COMBINATION OF FIELD SURVEY AND REFERENCE TO SERVICE PLANS FROM STATUTORY AUTHORITIES. ONLY VISIBLE AND APPARENT SERVICE COVERS AND POLES HAVE BEEN LOCATED BY FIELD SURVEY. SERVICE DETAILS AND LOCATIONS SHOULD BE CONFIRMED WITH THE RELEVANT SERVICE AUTHORITY DURING DESIGN & PRIOR TO ANY CONSTRUCTION. THE LOCATION OF UNDERGROUND SERVICES HAS NOT BEEN INVESTIGATED BY USHER & COMPANY PTY LTD.

WHERE THE EXACT LOCATION OF UNDERGROUND SERVICES IS CRITICAL TO THE DESIGN OR CONSTRUCTION THE RELEVANT PARTY SHOULD ARRANGE TO HAVE AN UNDERGROUND SERVICES TRACE CARRIED OUT TO CONFIRM THE SERVICES EXACT LOCATION. IN THIS REGARD ALL PARTIES SHOULD CONTACT THE 'DIAL BEFORE YOU DIG' SERVICE.

CONTOUR INTERVAL 1.0m MAJOR 0.25m MINOR

MGA CO-ORDINATES WAS ADOPTED FOR HORIZONTAL DATUM
ORIGIN OF COORDINATES:
SSM 64713
EASTING 537024.293
NORTHING 6864513.878

PLAN COORDINATES HAVE BEEN DETERMINED FROM GROUND (REAL) DISTANCES AND ARE RELATED TO A MGA (GRID) POINT OF ORIGIN. TO CONVERT PLAN COORDINATES TO TRUE MGA GRID COORDINATES A SCALE FACTOR OF 0.999607 ABOUT SSM 64713 MUST BE APPLIED.

AHD WAS ADOPTED FOR VERTICAL DATUM
ORIGIN OF LEVELS:
PM 72204
RL 20.499

MGA (MAP GRID OF AUSTRALIA 1994 - ZONE 56)

LEGEND

- TREE NUMBER SEE SHEET 1 FOR INFORMATION
- TREE SIZES ARE ESTIMATES ONLY
- OVERHEAD POWER (SURVEYED)
- UNDERGROUND COMMUNICATIONS (NOT SURVEYED)
- UNDERGROUND WATER (NOT SURVEYED)
- UNDERGROUND SEWER (NOT SURVEYED)
- UNDERGROUND STORMWATER (NOT SURVEYED)
- FLOOD LEVEL (PLOTTED FROM TWEED LEP)
- TOP OF BANK
- BOTTOM OF BANK
- FENCE
- TWEED LEP ZONE BOUNDARY
- STORMWATER GRATE
- TELSTRA PIT
- SEWER MANHOLE
- WATER METER
- LIGHT POLE
- FIRE HYDRANT
- POWER POLE
- STOP VALVE
- GATE
- ELECTRICITY PIT
- PHOTO LOCATION & DIRECTION
- BENCHMARK
- SPOT HEIGHTS

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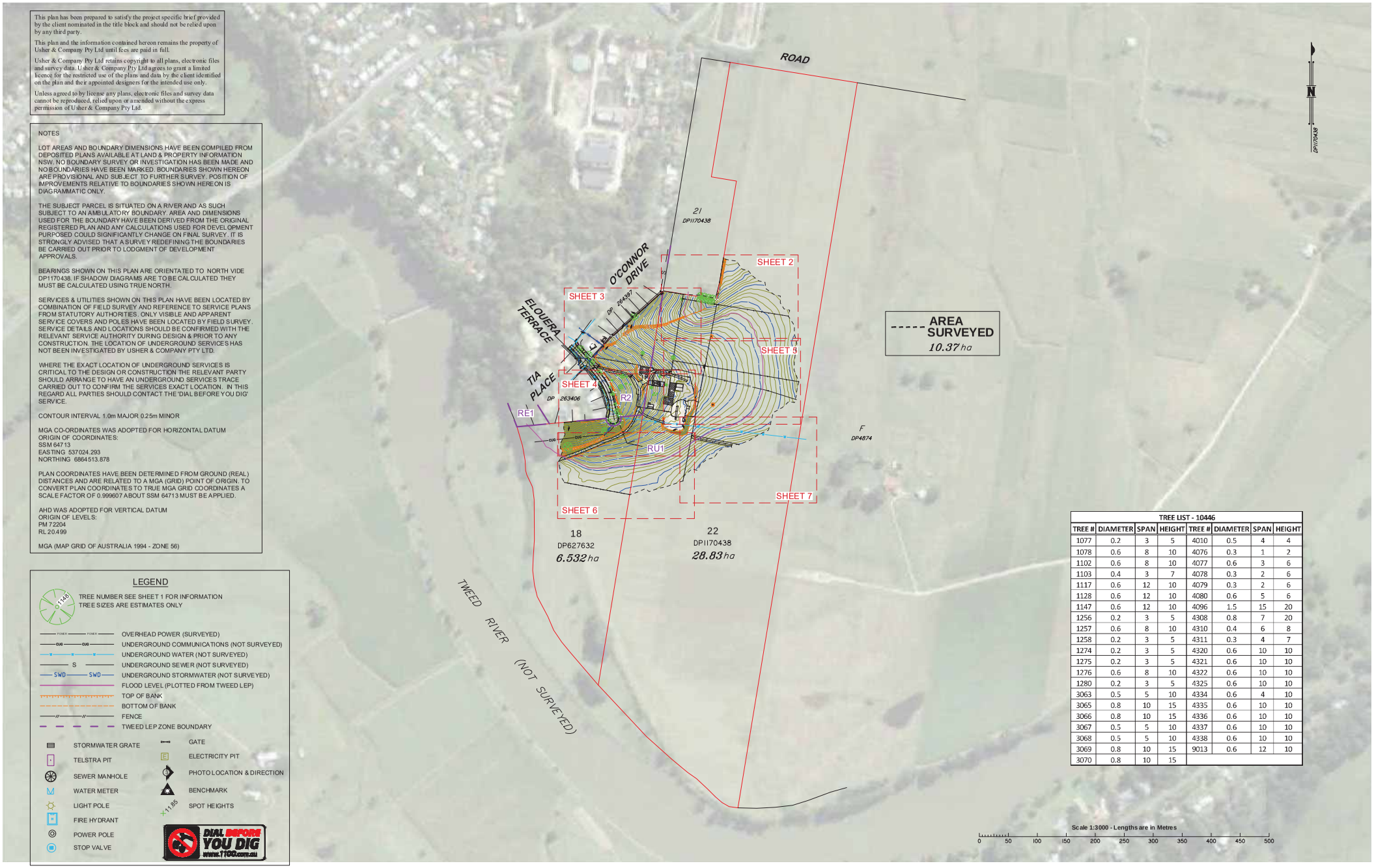

TREE LIST - 10446

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1078	0.6	8	10	4076	0.3	1	2
1102	0.6	8	10	4077	0.6	3	6
1103	0.4	3	7	4078	0.3	2	6
1117	0.6	12	10	4079	0.3	2	6
1128	0.6	12	10	4080	0.6	5	6
1147	0.6	12	10	4096	1.5	15	20
1256	0.2	3	5	4308	0.8	7	20
1257	0.6	8	10	4310	0.4	6	8
1258	0.2	3	5	4311	0.3	4	7
1274	0.2	3	5	4320	0.6	10	10
1275	0.2	3	5	4321	0.6	10	10
1276	0.6	8	10	4322	0.6	10	10
1280	0.2	3	5	4325	0.6	10	10
3063	0.5	5	10	4334	0.6	4	10
3065	0.8	10	15	4335	0.6	10	10
3066	0.8	10	15	4336	0.6	10	10
3067	0.5	5	10	4337	0.6	10	10
3068	0.5	5	10	4338	0.6	10	10
3069	0.8	10	15	9013	0.6	12	10
3070	0.8	10	15				

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Email: admin@usherandcompany.com.au

APPROVED

Amendments

ISSUE	DATE	DETAILS
A	21-11-2018	Original Issue
B	23-11-2018	Add flood level and additional services information
C	14-02-2019	Tweed LEP Zone Boundary added
D	19-02-2019	Background Images Updated
E	08-03-2019	Extra Survey Added

PLAN:
SITE PLAN
SHOWING DETAIL AND LEVELS
AT 49 ELOUERA TERRACE, BRAY PARK
BEING LOT 18 IN DP627632 & LOT 22 IN DP1170438

SHEET 1 OF 7

LGA: TWEED
SUBURB: BRAY PARK
ORIGIN: PM 72204 RL 20.499 AHD CLASS LB, ORDER L2

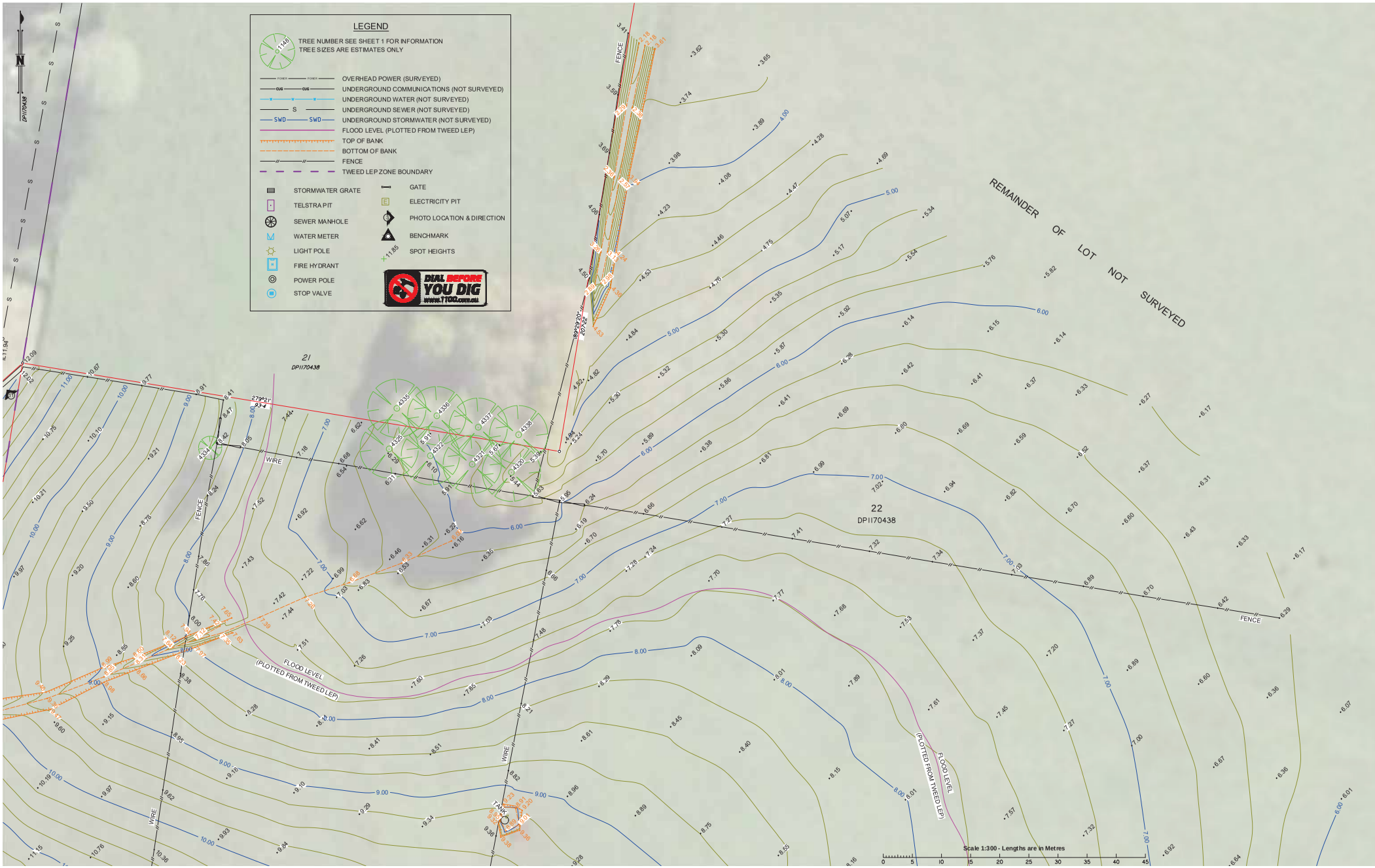
REDUCTION RATIO: 1:3000 (A1)
DATUM: AHD
DATE OF SURVEY: 15-11-2018
SURVEYED BY: LN & MB
DRAWN BY: TM

THIS PLAN IS FOR THE EXCLUSIVE USE OF
MARJAN MANAGEMENT PTY LTD ATF

PLAN REFERENCE: 10446

A1

ISSUE: E



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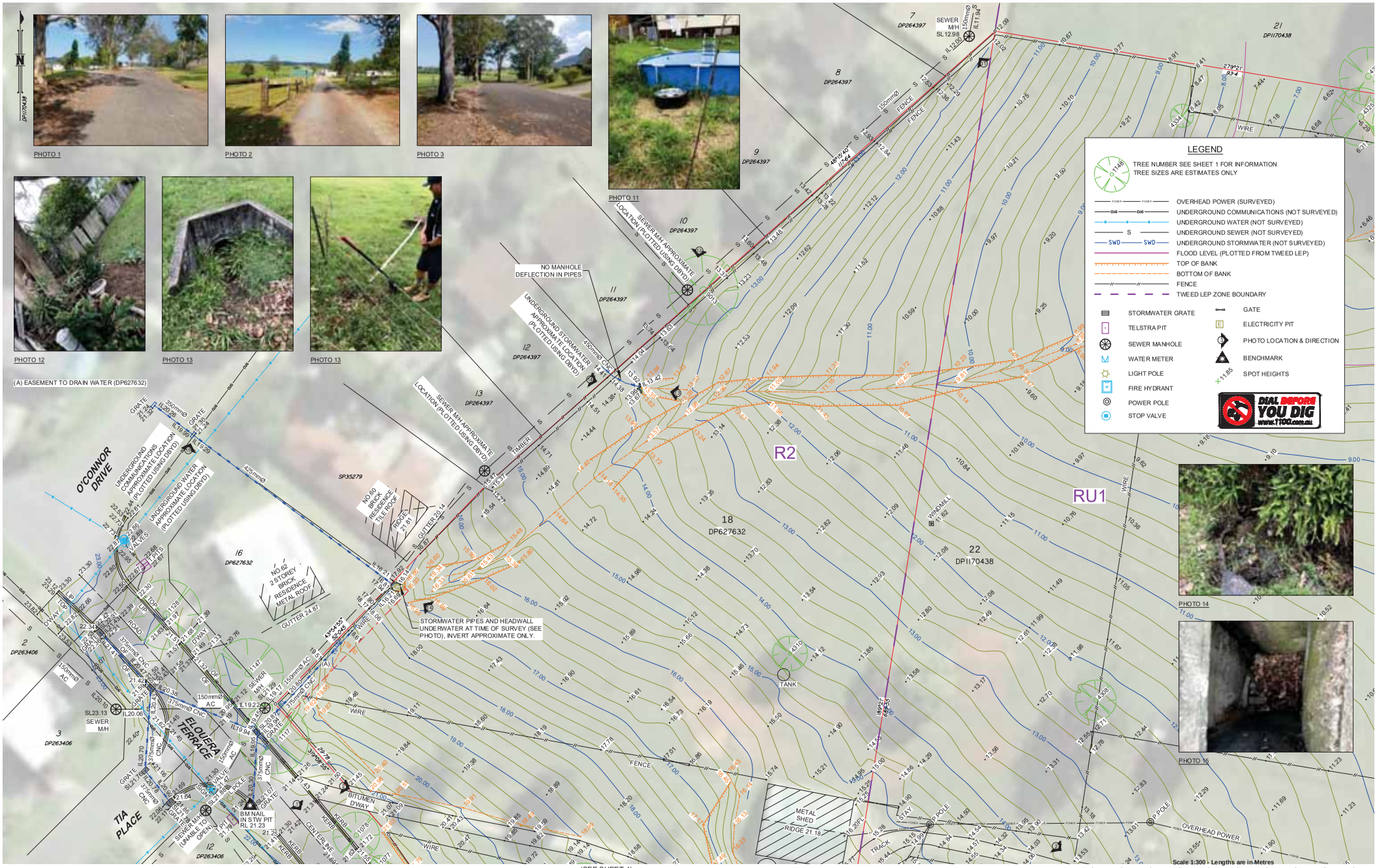

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(SEE SHEET 3)

(SEE SHEET 6)

(SEE SHEET 5)

(SEE SHEET 7)

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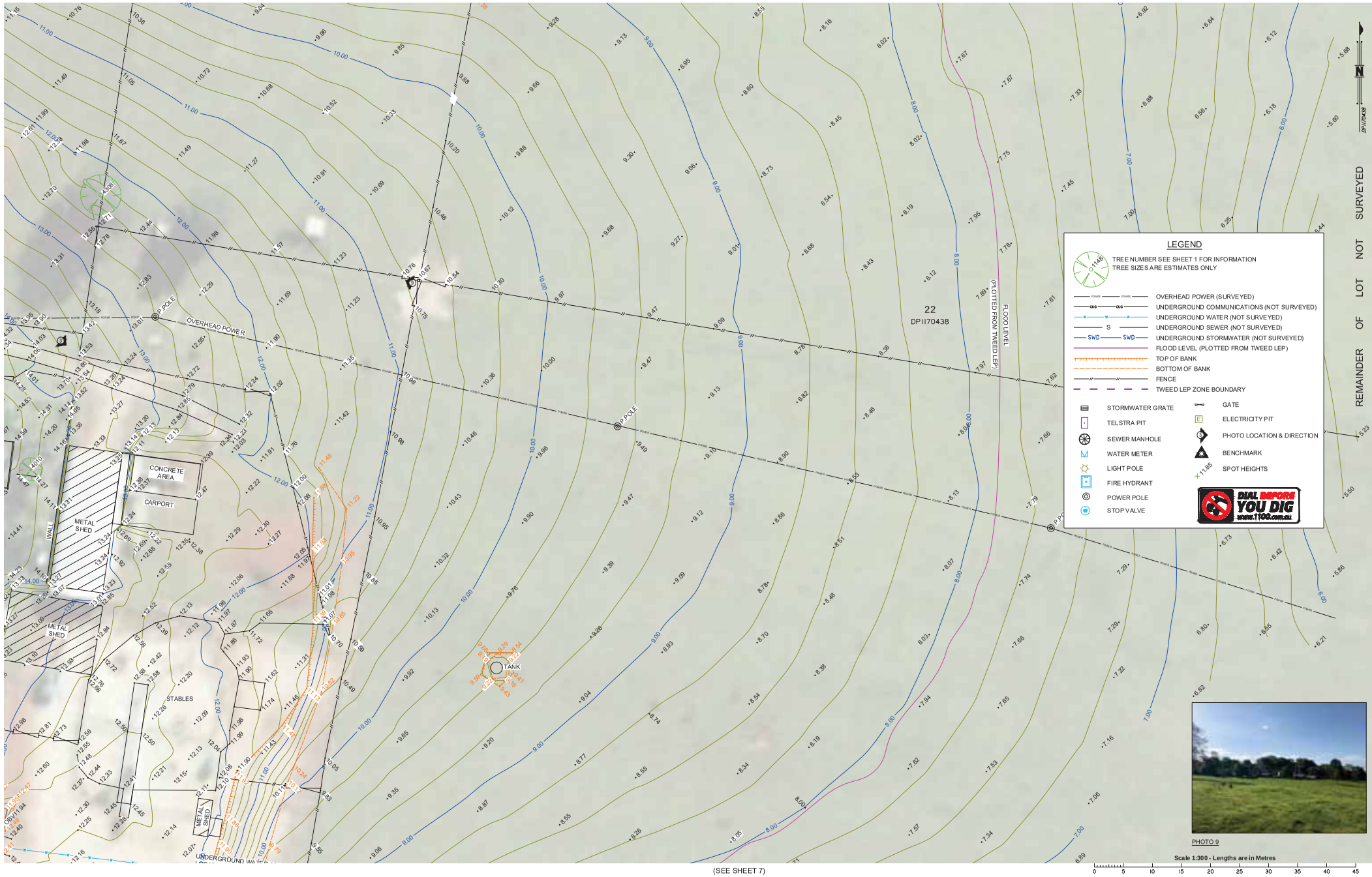

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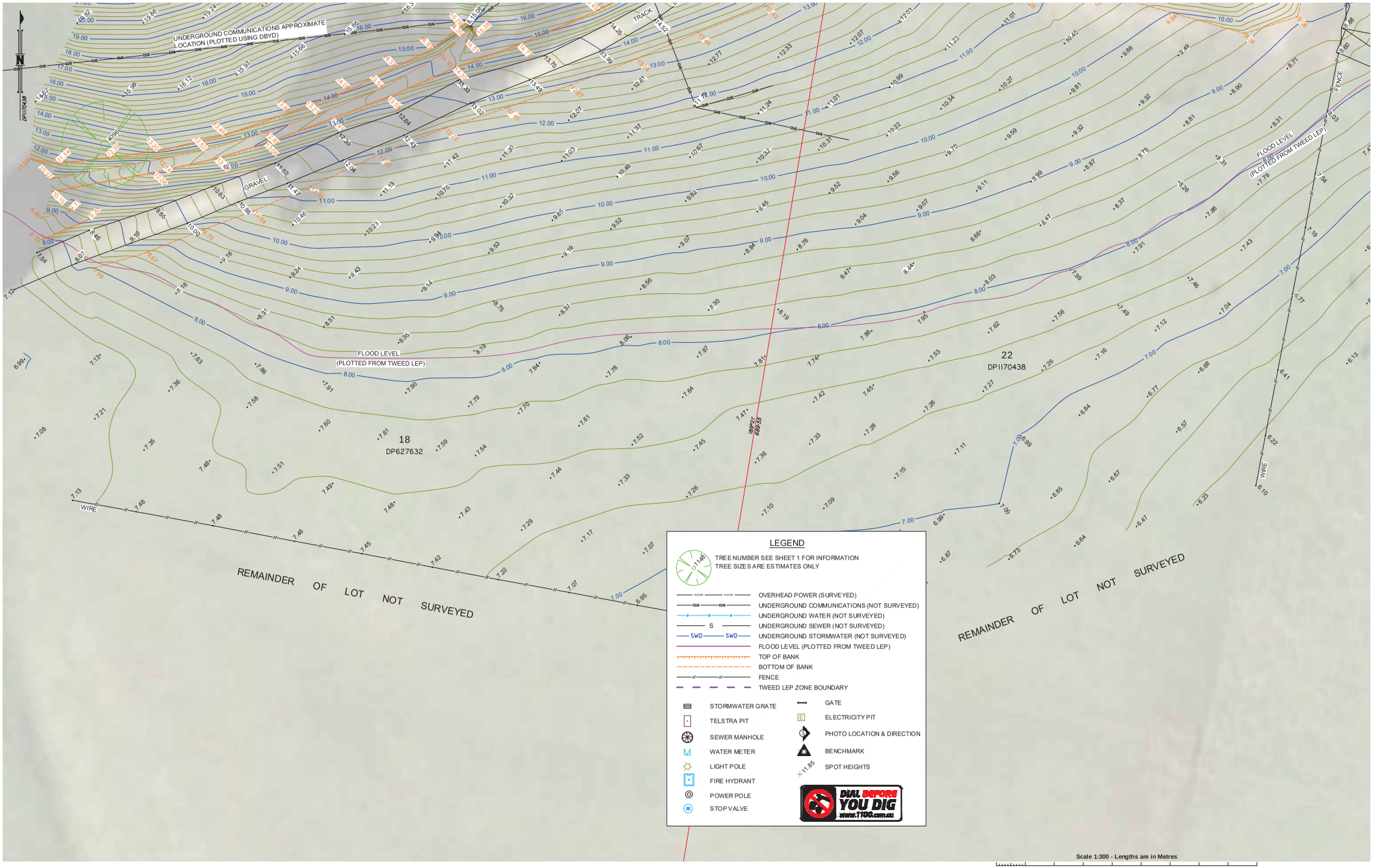

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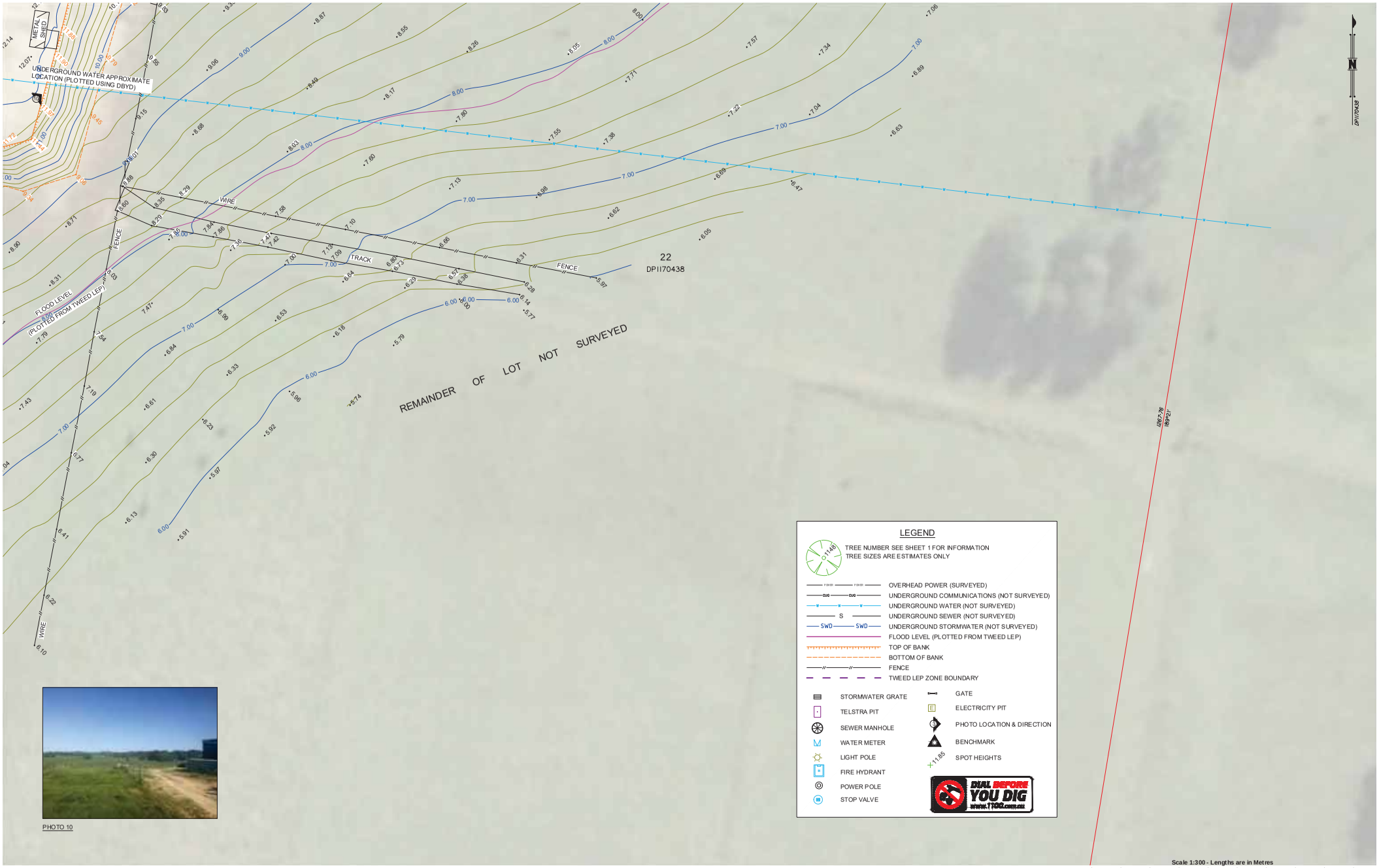

PHOTO 10

LEGEND

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- UNDERGROUND WATER (NOT SURVEYED)
- UNDERGROUND SEWER (NOT SURVEYED)
- UNDERGROUND STORMWATER (NOT SURVEYED)
- FLOOD LEVEL (PLOTTED FROM TWEED LEP)
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- STORMWATER GRATE
- TELSTRA PIT
- SEWER MANHOLE
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- GATE
- ELECTRICITY PIT
- PHOTO LOCATION & DIRECTION
- BENCHMARK
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Scale 1:300 - Lengths are in Metres

0 5 10 15 20 25 30 35 40 45

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ISSUE: E

Appendix B. Concept Development Plan

Elouera Terrace, Bray Park
Concept Layout Plan

Seniors Housing Type 1A
Seniors Housing Lots 18m depth average
Average Lot Size 150m²
Single Storey Attached Dwellings in groups of 2-3
Typical template used: 2 bedroom, single carpark per dwelling (one covered)
Yield: 82

Seniors Housing Type 1B
Seniors Housing Lots 18m depth average
Average Lot Size 200m² - 250m²
Single Storey Attached Dwellings in groups of 2-3
Typical template used: 2-3 bedroom, 2 x tandem carparks per dwelling (one covered)
Yield: 57

Primary Access Street (Indicative)
16.0m wide road reserve, 9.0m sealed. TSC 'Wider Access Street'. This street provides a loop road through the development, connecting the primary and secondary site entry points to Elouera Terrace.

Indicative Internal Street
10.0m wide road reserve, 6.0m sealed.

Indicative Internal Laneway
8.0m wide laneway reserve, 6.0m sealed.

Low Flow Flood Area
Area identified through topographic analysis as area of low flow flood area. Nil development proposed within this zone. Potential buffer planting located within this zone to transition to surrounding farmland. Development within this area would be subject to relevant flood considerations and design.

Indicative Community Facilities 01
Community facilities area. Primarily services the northern residential precinct (Residential Type C). Potential to include pool area, lawn bowls, landscaped gardens, areas of open turf. Community use building, footprint illustrated approximately 350-400m². Located to take advantage of views to the east and south across existing farmland. Located at the eastern end of the primary site entry to allow clear line of site through the development of the primary community facilities and to long views to the east.

Indicative Community Facilities 02
Community facilities area. Primarily services the southern residential precinct (Residential Type B). Potential to include pool area, lawn bowls, landscaped gardens, areas of open turf. Community use building, footprint illustrated approximately 350-400m². Located on an elevated site to take advantage of views to the east and south across the residential precincts and over existing farmland. Located at the primary entry of the estate to serve as the 'entry statement' of the development and create a clear and legible arrival.

Indicative Site Entry
Site entry off Elouera Terrace. To be confirmed through residential subdivision layout. Subject to relevant approval.

Visitor Parking
Visitor carparking indicative locations illustrated. Requirement based on number of dwelling sites - 20.
Car parking located primarily in close proximity to community facilities areas (qty: 20) with balance of spaces located throughout the development where layout permits.
Total visitor carparks illustrated: 40.

Existing Agricultural Land
Working farm located to balance of lot. Potential to provide informal pedestrian access from the proposed development (from Community Facilities 01) to facilitate potential for community gardens and integration of these landuses.

Existing Residential Area

Indicative Bus Pick up point

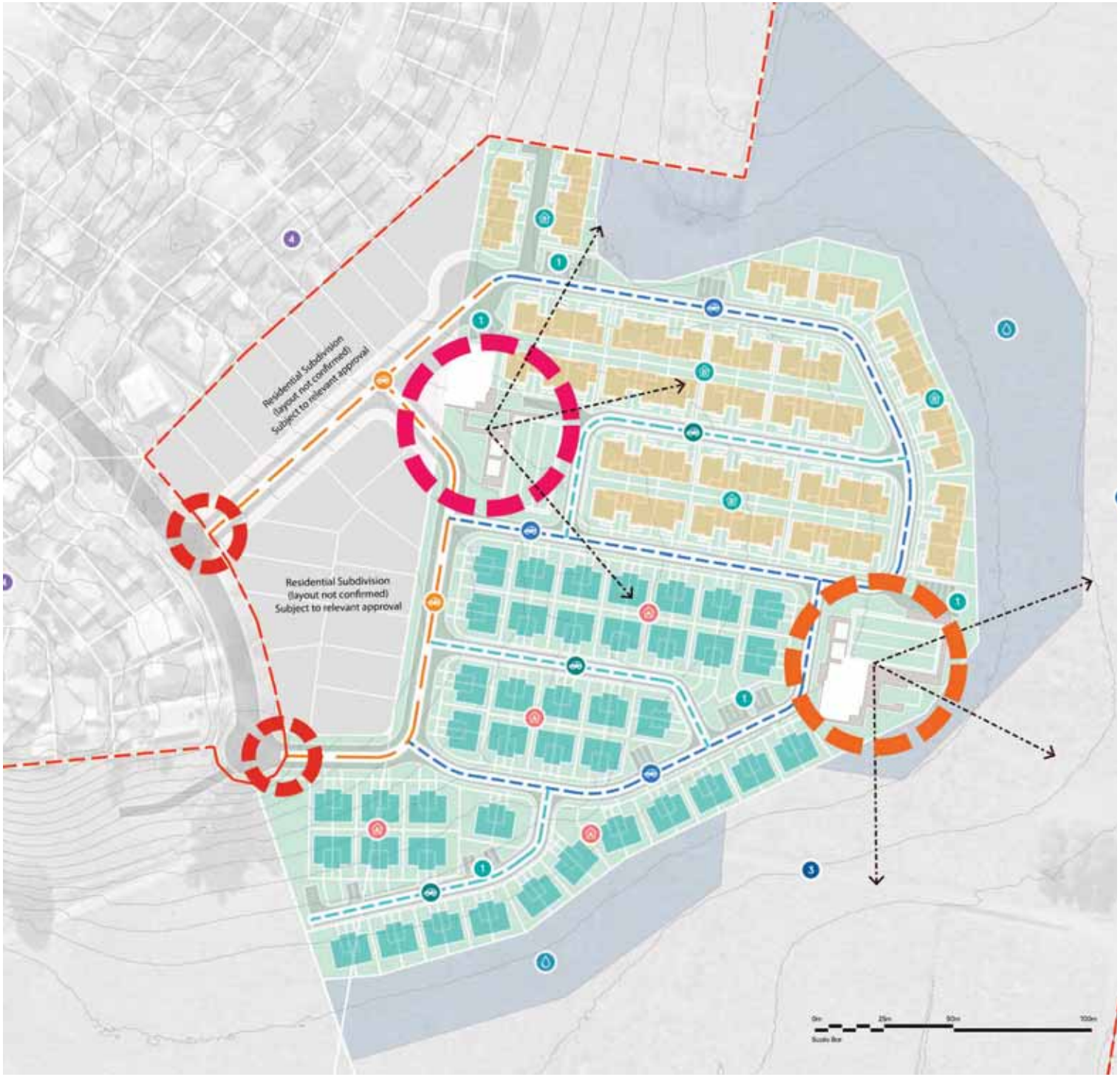
Area 1 Seniors: 45.272 m2

Area 2 Buffer: 20.039 m2

Area 3 Residential Subdivision: 12.728 m2

PLANIT

Elouera Terrace, Bray Park
Concept Layout Plan



Seniors Housing Type 1A
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Average Lot Size 150m²
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Seniors Housing Type 1B
Seniors Housing Lots 18m depth average
Average Lot Size 200m² - 250m²
Single Storey Attached Dwellings in groups of 2-3
Typical template used: 2-3 bedroom, 2 x tandem carparks per dwelling (one covered)
Yield: 57

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Area identified through topographic analysis as area of low flow flood area. Nil development proposed within this zone. Potential buffer planting located within this zone to transition to surrounding farmland. Development within this area would be subject to relevant flood considerations and design.

Indicative Community Facilities 01
Community facilities area. Primarily services the northern residential precinct (Residential Type C). Potential to include pool area, lawn bowls, landscaped gardens, areas of open turf. Community use building, footprint illustrated approximately 350-400m². Located to take advantage of views to the east and south across existing farmland. Located at the eastern end of the primary site entry to allow clear line of site through the development of the primary community facilities and to long views to the east.

Indicative Community Facilities 02
Community facilities area. Primarily services the southern residential precinct (Residential Type B). Potential to include pool area, lawn bowls, landscaped gardens, areas of open turf. Community use building, footprint illustrated approximately 350-400m². Located on an elevated site to take advantage of views to the east and south across the residential precincts and over existing farmland. Located at the primary entry of the estate to serve as the 'entry statement' of the development and create a clear and legible arrival.

Indicative Site Entry
Site entry off Elouera Terrace. To be confirmed through residential subdivision layout. Subject to relevant approval.

Visitor Parking
Visitor carparking indicative locations illustrated. Requirement based on number of dwelling sites: 20.
Car parking located primarily in close proximity to community facilities areas (qty: 20) with balance of spaces located throughout the development where layout permits.
Total visitor carparks illustrated: 40.

Existing Agricultural Land
Working farm located to balance of lot. Potential to provide informal pedestrian access from the proposed development (from Community Facilities 01) to facilitate potential for community gardens and integration of these landuses.

Existing Residential Area

Indicative Bus Pick up point

Area 1 Seniors: 45,272 m2

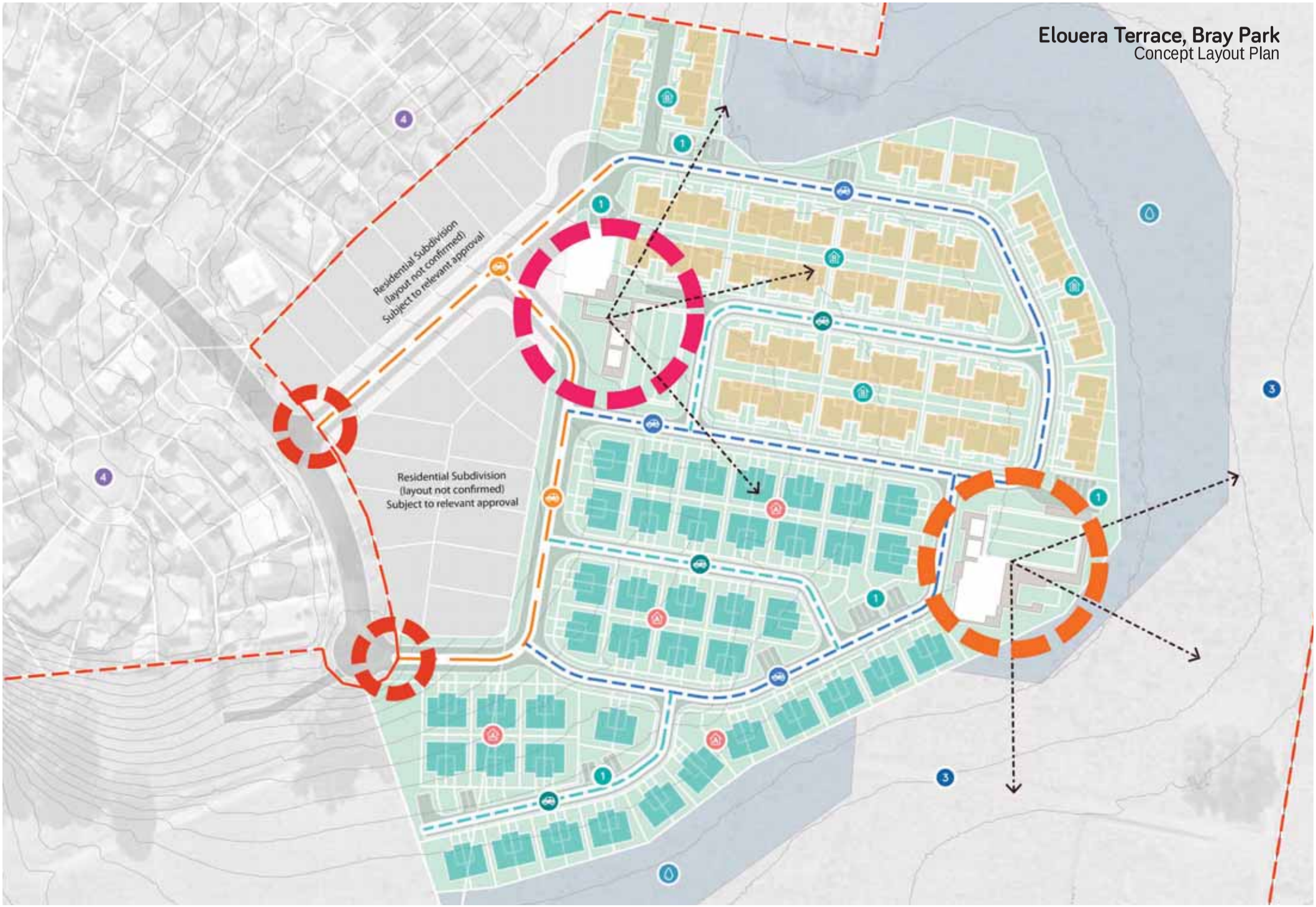
Area 2 Buffer: 20,039 m2

Area 3 Residential Subdivision: 12,728 m2

PLANIT

Elouera Terrace, Bray Park

Concept Layout Plan


Elouera Terrace, Bray Park
Concept Layout Plan
Residential Subdivision
(layout not confirmed)
Subject to relevant approval
Residential Subdivision
(layout not confirmed)
Subject to relevant approval

Elouera Terrace, Bray Park
Concept Layout Plan

Seniors Housing Type 1A
Seniors Housing Lots 18m depth average.
Average Lot Size 150m²
Single Storey Attached Dwellings in groups of 2-3
Typical template used: 2 bedroom, single carpark per dwelling (one covered)
Yield: 82

Seniors Housing Type 1B
Seniors Housing Lots 18m depth average.
Average Lot Size 200m² - 250m²
Single Storey Attached Dwellings in groups of 2-3
Typical template used: 2-3 bedroom, 2 x tandem carparks per dwelling (one covered)
Yield: 57

Primary Access Street (Indicative)
16.0m wide road reserve, 9.0m sealed. TSC 'Wider Access Street'. This street provides a loop road through the development, connecting the primary and secondary site entry points to Elouera Terrace.

Indicative Internal Street
10.0m wide road reserve, 6.0m sealed.

Indicative Internal Laneway
8.0m wide laneway reserve, 6.0m sealed.

Low Flow Flood Area
Area identified through topographic analysis as area of low flow flood area. Nil development proposed within this zone. Potential buffer planting located within this zone to transition to surrounding farmland. Development within this area would be subject to relevant flood considerations and design.

Indicative Community Facilities 01
Community facilities area. Primarily services the northern residential precinct (Residential Type C). Potential to include pool area, lawn bowls, landscaped gardens, areas of open turf. Community use building, footprint illustrated approximately 350-400m². Located to take advantage of views to the east and south across existing farmland. Located at the eastern end of the primary site entry to allow clear line of site through the development of the primary community facilities and to long views to the east.

Indicative Community Facilities 02
Community facilities area. Primarily services the southern residential precinct (Residential Type B). Potential to include pool area, lawn bowls, landscaped gardens, areas of open turf. Community use building, footprint illustrated approximately 350-400m². Located on an elevated site to take advantage of views to the east and south across the residential precincts and over existing farmland. Located at the primary entry of the estate to serve as the 'entry statement' of the development and create a clear and legible arrival.

Indicative Site Entry
Site entry off Elouera Terrace. To be confirmed through residential subdivision layout. Subject to relevant approval.

1 **Visitor Parking**
Visitor carparking indicative locations illustrated. Requirement based on number of dwelling sites: 20.
Car parking located primarily in close proximity to community facilities areas(qty: 20) with balance of spaces located throughout the development where layout permits.
Total visitor carparks illustrated: 40.

3 **Existing Agricultural Land**
Working farm located to balance of lot. Potential to provide informal pedestrian access from the proposed development (from Community Facilities 01) to facilitate potential for community gardens and integration of these landuses.

4 **Existing Residential Area**

Indicative Bus Pick up point

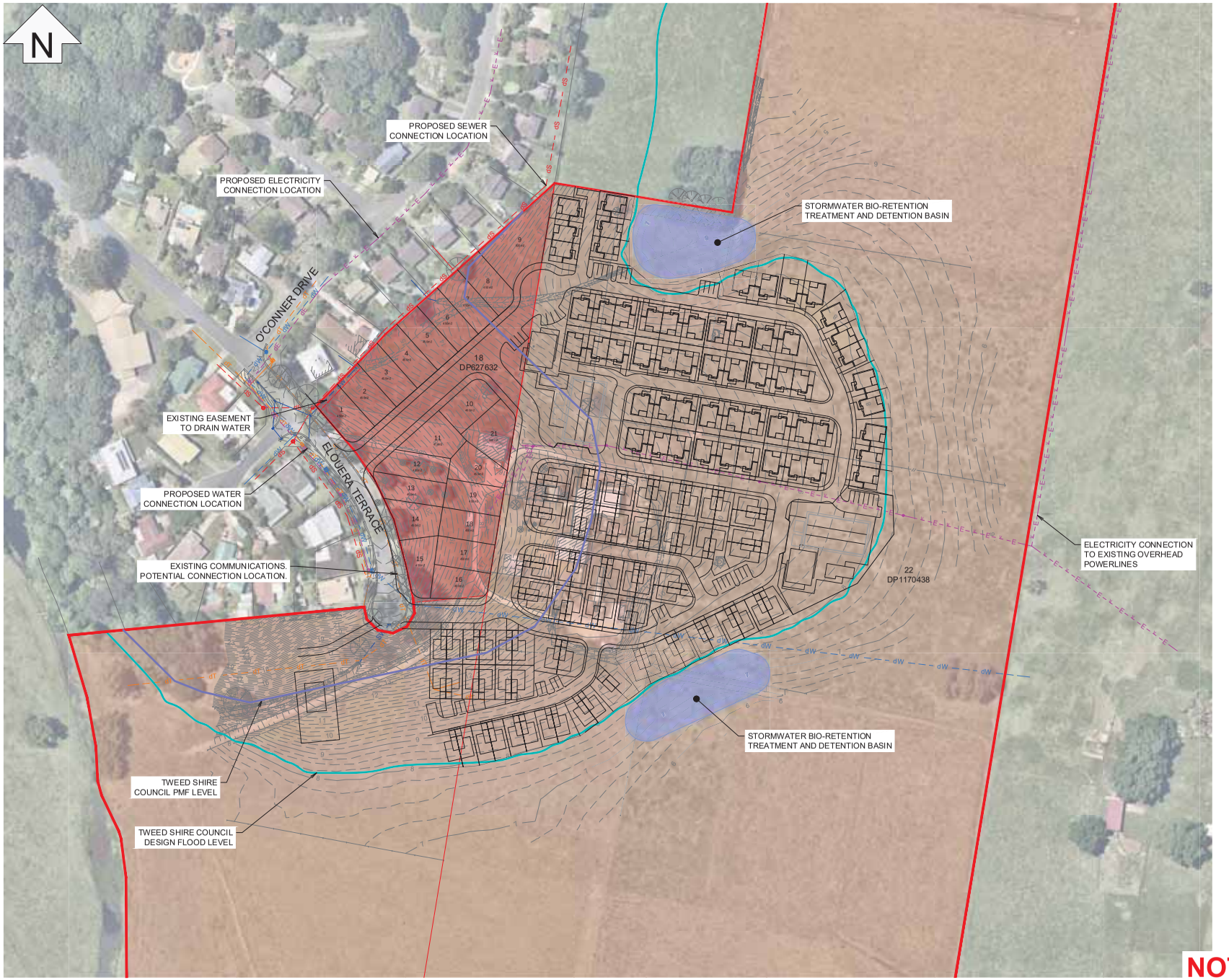
Area 1 Seniors: 45.272 m2

Area 2 Buffer: 20.039 m2

Area 3 Residential Subdivision: 12.728 m2

PLANIT

Appendix C. Concept Servicing Plan



LEGEND

- SITE BOUNDARY
- LOT BOUNDARY
- EXISTING SURFACE CONTOURS MINOR (0.25m)
- EXISTING SURFACE CONTOURS MAJOR (1.0m)
- EXISITING STORMWATER PIPE
- EXISITING STORMWATER PIPE DBYD
- EXISTING SEWER PIPE DBYD
- EXISTING WATER PIPE DBYD
- EXISTING ELECTRICAL OVERHEAD
- EXISTING ELECTRICAL UNDERGROUND DBYD
- EXISTING TELSTRA DBYD
- ZONE R2
- ZONE RU1
- TWEED SHIRE COUNCIL DESIGN FLOOD LEVEL
- TWEED SHIRE COUNCIL PMF LEVEL
- STORMWATER BIO-RETENTION TREATMENT AND DETENTION STRUCTURE

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	DRAWN	DESIGN	CHECK	APPROVED
A	FOR APPROVAL	11/06/19	BT	BT	KB	KB

SCALES:

0 10 20 40 60

Full Size 1:1000 ; Half Size 1:2000
Scale (m)

DO NOT SCALE FROM DRAWING

DRAWN BY:
DESIGN BY:
APPROVED BY:
DATE:

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

PLANIT CONSULTING
LEVEL 2, 11-13 PEARL STREET
PO BOX 1623
KINGSCLIFF NSW 2487

TELEPHONE: 02 6674 5001
ABN: 20 099 261 711
EMAIL: administration@planitconsulting.com.au

CLIENT: MARJAN MANAGEMENT PTY LTD

PROJECT: 49 ELOUERA TERRACE

DRAWING TITLE: SERVICES PLAN

LOCAL GOVERNMENT AUTHORITY: TWEED SHIRE COUNCIL

ORIGINAL SIZE:	PLANIT JOB No.:	DRAWING No.:	REV:
A1	J5957	0001	A

CAD FILE: T:\J5957 - 49 ELOUERA TCE SCC\6 - CAD\0001 SERVICES PLAN.DWG PLOTTED BY: BRENDANT PLOT DATE: 11/06/2019 1:56:06 PM

Appendix D. DBYD Information

Job No 15676738

Phone: 1100
www.1100.com.au

Caller Details

Contact:	Mr Brendan Thomson	**Caller Id:**	1866918	**Phone:**	02 6670 1301
Company:	Planit Engineering	**Mobile:**	Not Supplied	**Fax:**	Not Supplied
Address:	PO Box 1623 Kingscliff NSW 2487	**Email:**	brendant@planitconsulting.com.au		

Dig Site and Enquiry Details

WARNING: The map below only displays the location of the proposed dig site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

User Reference: J6135
Working on Behalf of: Tweed Shire Council

Enquiry Date:	Start Date:	End Date:
01/02/2019	11/02/2019	12/02/2019

Address:
Elouera Terrace
Bray Park NSW 2484

Job Purpose:	Onsite Activity:
Excavation	Vertical Boring
Location of Workplace:	**Location in Road:**
Both	CarriageWay,Footpath,Nature Strip

- Check the location of the dig site is correct. If not submit a new enquiry.
- If the scope of works change, or plan validity dates expire, resubmit your enquiry.
- Do NOT dig without plans. Safe excavation is your responsibility. If you do not understand the plans or how to proceed safely, please contact the relevant asset owners.

Notes/Description of Works:
Not Supplied

Your Responsibilities and Duty of Care

- If plans are not received within 2 working days, contact the asset owners directly & quote their Sequence No.
- ALWAYS perform an onsite inspection for the presence of assets. Should you require an onsite location, contact the asset owners directly. Please remember, plans do not detail the exact location of assets.
- Pothole to establish the exact location of all underground assets using a hand shovel, before using heavy machinery.
- Ensure you adhere to any State legislative requirements regarding Duty of Care and safe digging requirements.
- If you damage an underground asset you MUST advise the asset owner immediately.
- By using this service, you agree to Privacy Policy and the terms and disclaimers set out at **www.1100.com.au**
- **For more information on safe excavation practices, visit www.1100.com.au**

Asset Owner Details

The assets owners listed below have been requested to contact you with information about their asset locations within 2 working days.
Additional time should be allowed for information issued by post. It is **your responsibility** to identify the presence of any underground assets in and around your proposed dig site. Please be aware, that not all asset owners are registered with the Dial Before You Dig service, so it is **your responsibility** to identify and contact any asset owners not listed here directly.
** Asset owners highlighted by asterisks ** require that you visit their offices to collect plans.
# Asset owners highlighted with a hash require that you call them to discuss your enquiry or to obtain plans.

Seq. No.	Authority Name	Phone	Status
79760079	Essential Energy	132391	NOTIFIED
79760081	NBN Co, NswAct	1800626762	NOTIFIED
79760080	Telstra NSW, North	1800653935	NOTIFIED
79760078	Tweed Shire Council	0266702626	NOTIFIED

END OF UTILITIES LIST

Indicative Plans

Issue Date:	31/01/2019
Location:	Elouera Terrace , Bray Park , NSW , 2484

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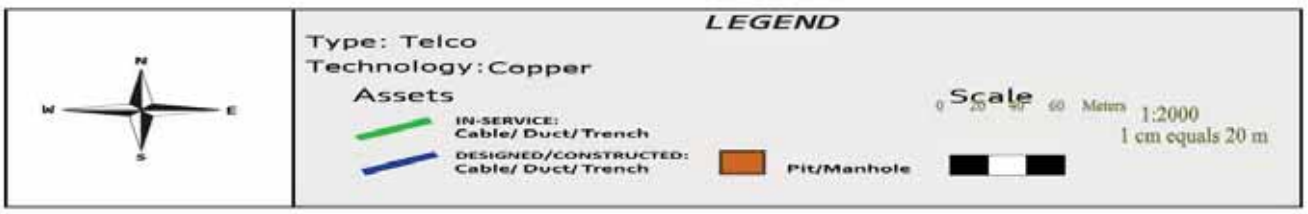
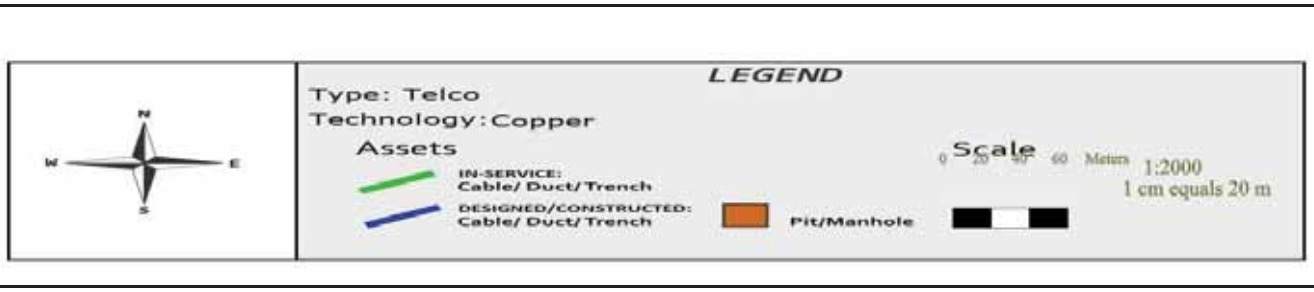
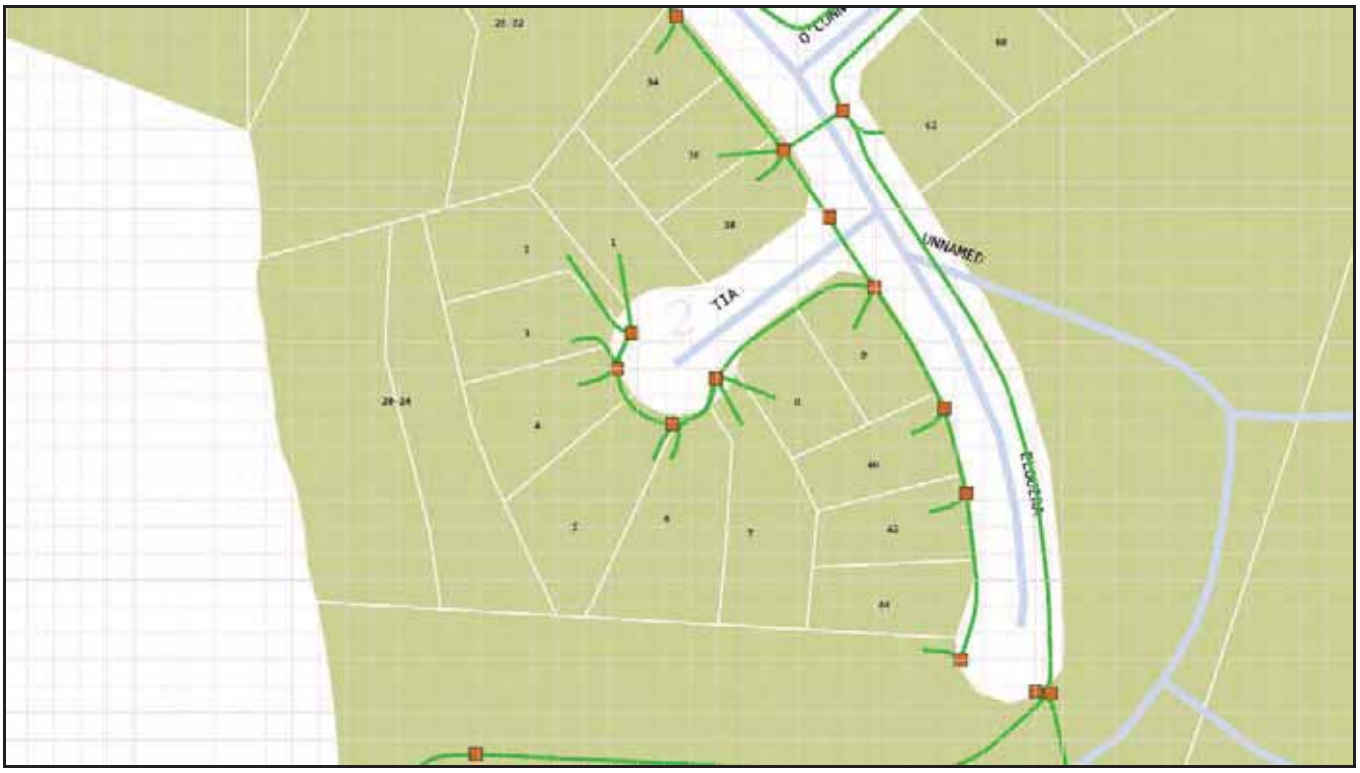
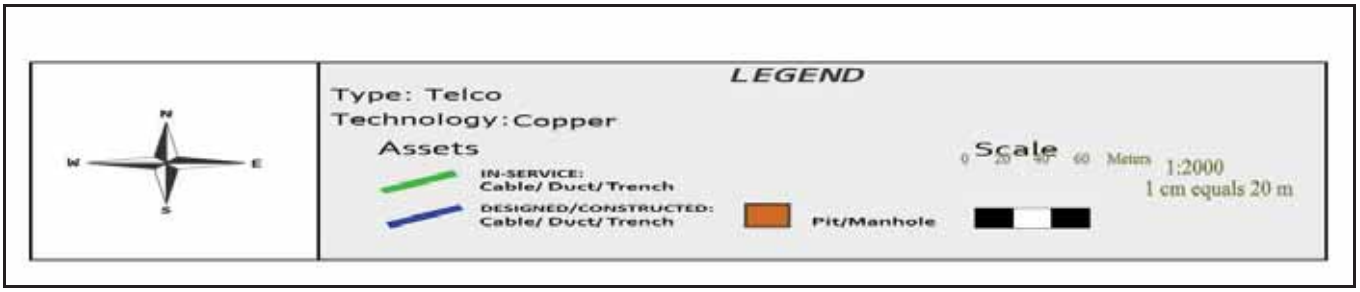
1	5
2	6
3	7
4	8



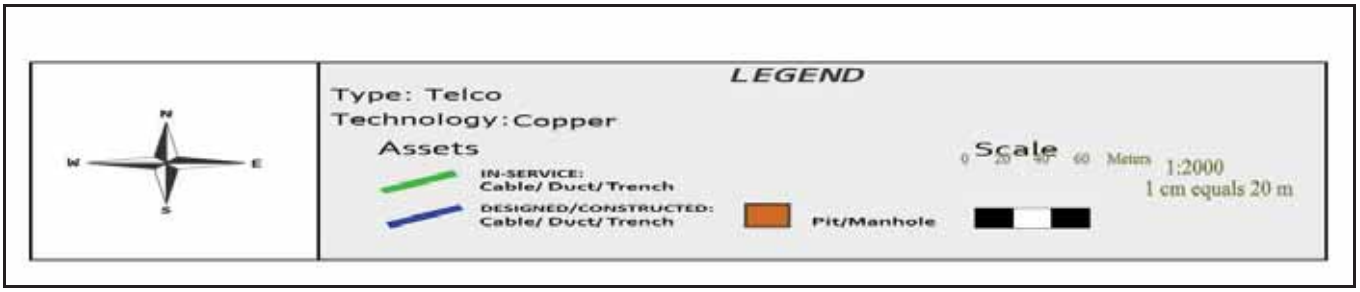






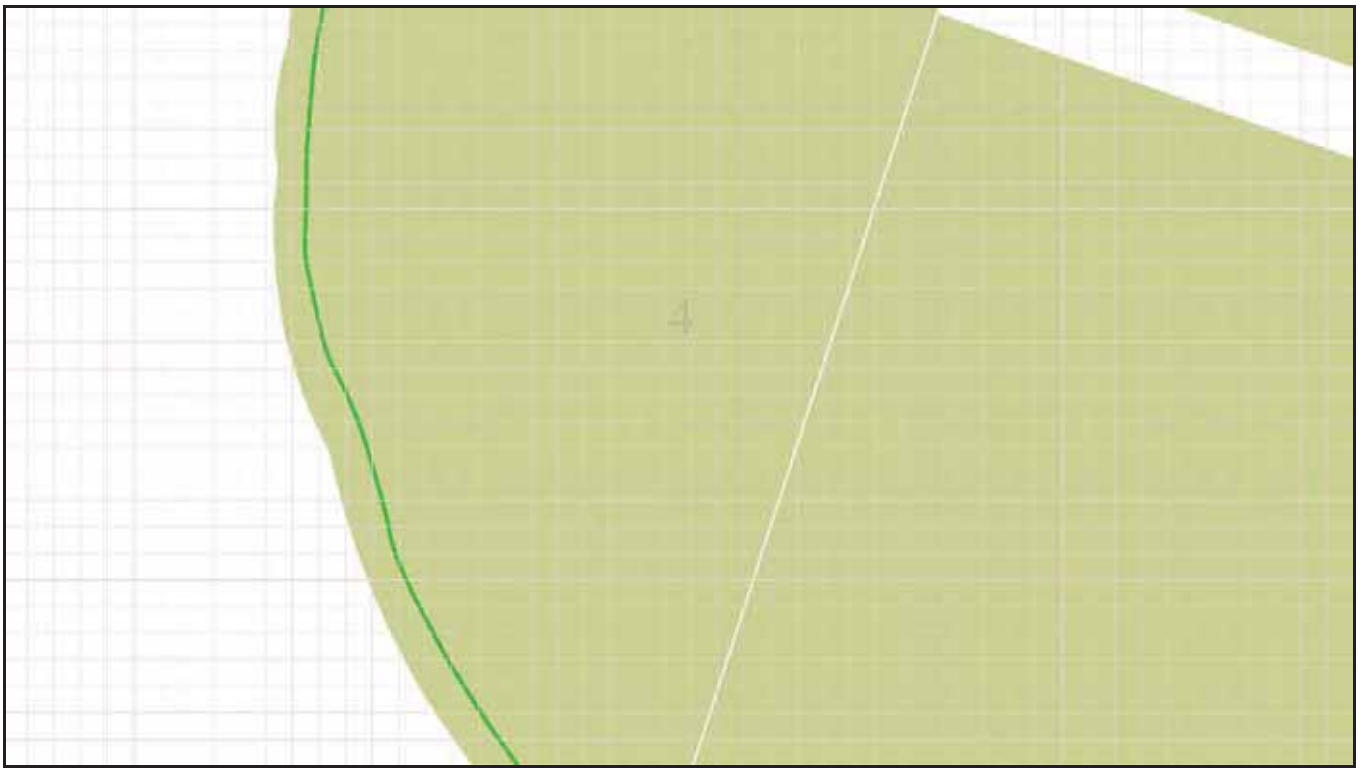
Level 11, 100 Arthur Street, North Sydney NSW 2060

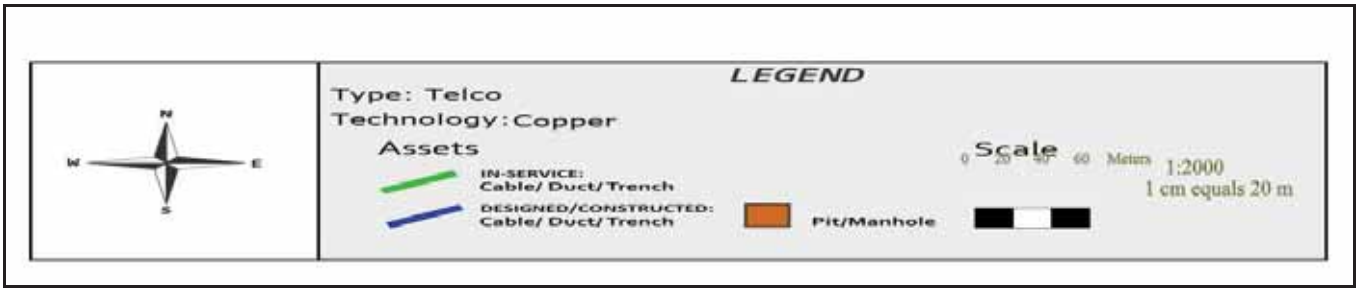
Email info@nbn.com.au Web nbn.com.au



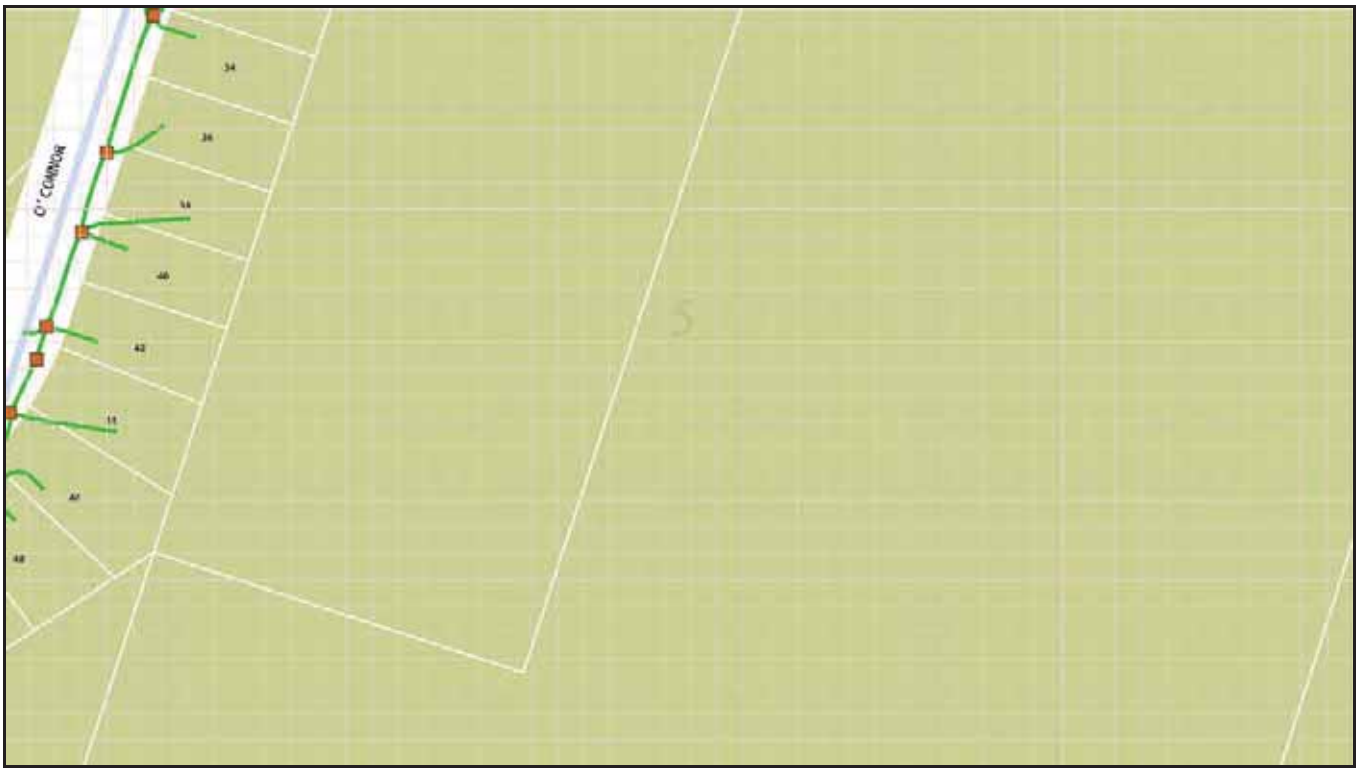
Level 11, 100 Arthur Street, North Sydney NSW 2060

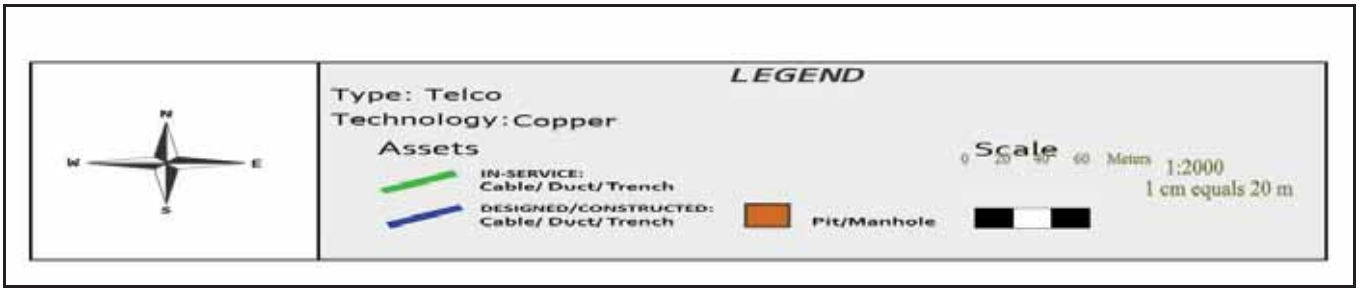
Email info@nbn.com.au Web nbn.com.au





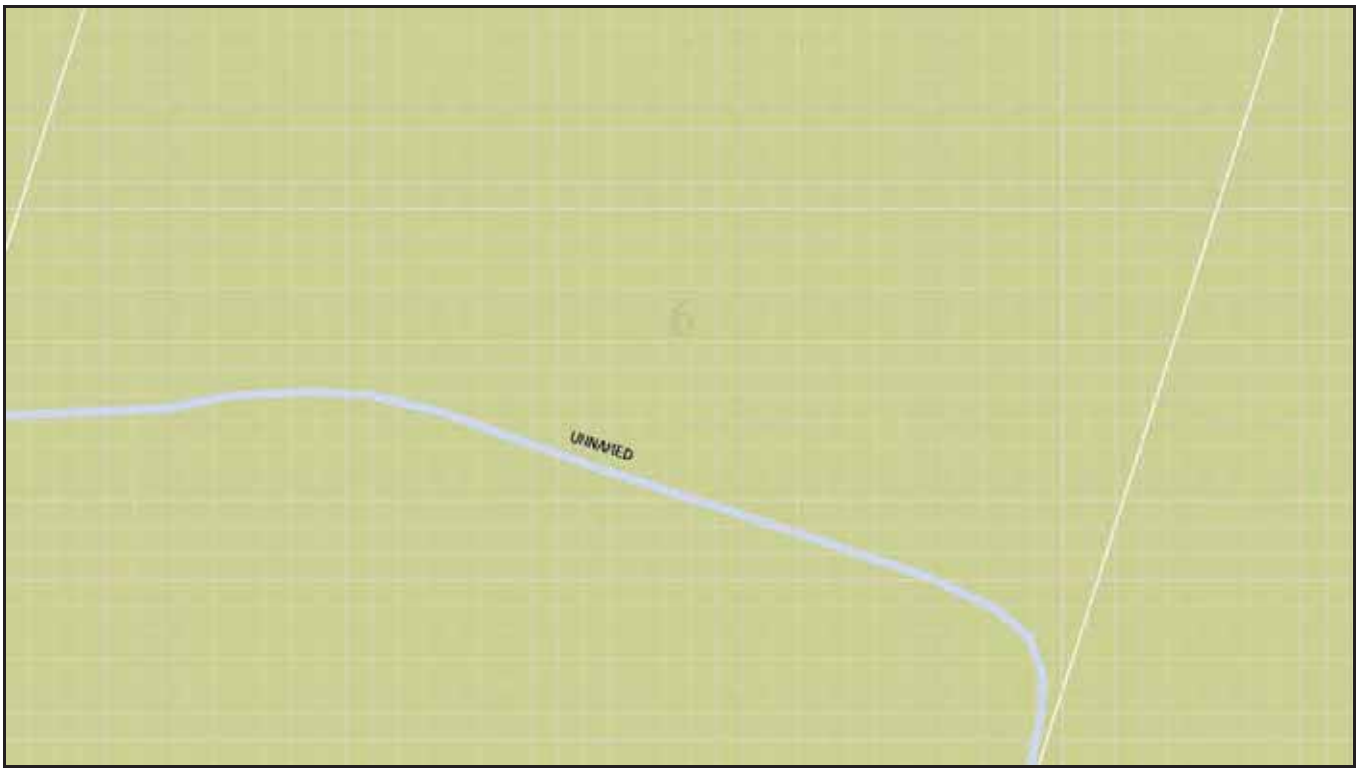
Email info@nbn.com.au Web nbn.com.au

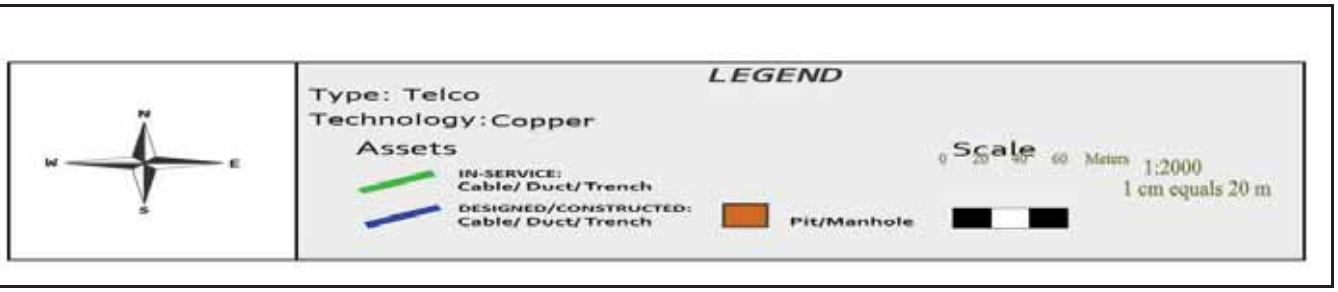




Level 11, 100 Arthur Street, North Sydney NSW 2060

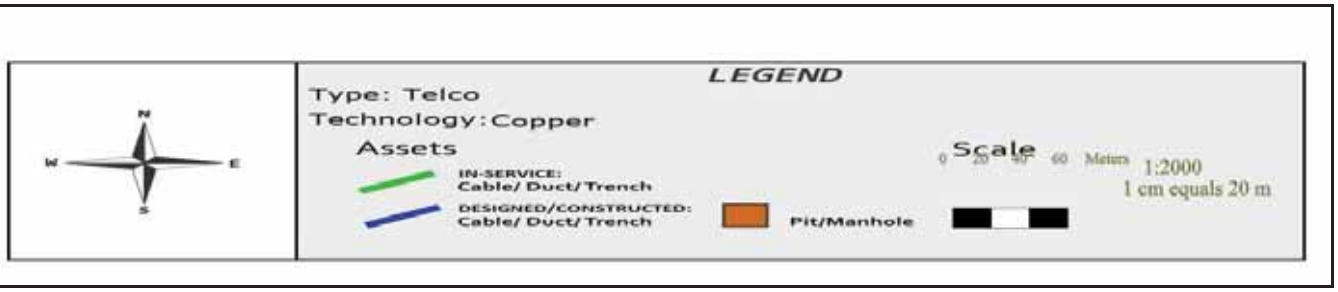
Email info@nbn.com.au Web nbn.com.au



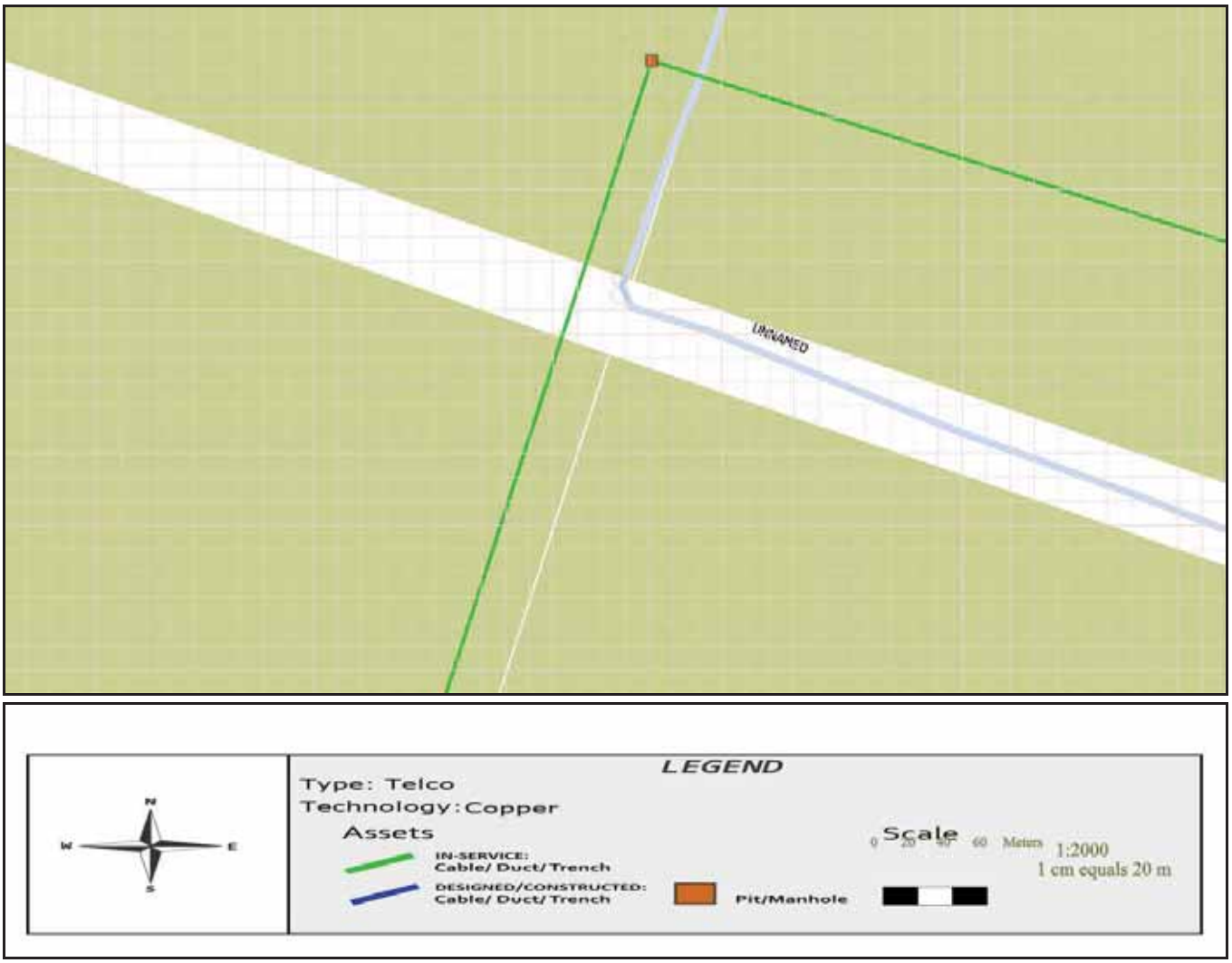


Level 11, 100 Arthur Street, North Sydney NSW 2060

Email info@nbn.com.au Web nbn.com.au



Email info@nbn.com.au Web nbn.com.au



Emergency Contacts

You must immediately report any damage to **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.

Dial Before You Dig (DBYD)
Pipeline Location Information

Customer Service | 1300 292 872 | (02) 6670 2400
PO Box 816 Murwillumbah NSW 2484
Fax (02) 6670 2429 | ABN 90 178 732 496
tsc@tweed.nsw.gov.au | www.tweed.nsw.gov.au

To:
Planit Engineering - Mr Brendan Thomson
PO Box 1623
Kingscliff NSW 2487

Email: brendant@planitconsulting.com.au **Phone:** 02 6670 1301
Fax: Not Supplied **Mobile:** Not Supplied

Enquiry Details

Utility ID	17550
Sequence Number	79760078
Enquiry Date	01/02/2019 10:46
Response	**AFFECTED**
Address	Elouera Terrace Bray Park
Location in Road	CarriageWay,Footpath,Nature Strip
Activity	Vertical Boring

Enquirer Details

Customer ID	1866918		
Contact	Mr Brendan Thomson		
Company	Planit Engineering		
Email	brendant@planitconsulting.com.au		
Phone	02 6670 1301	Mobile	Not Supplied

Enquirer Responsibilities

Asbestos Cement Pipes: Some of Council's pipe assets are constructed of AC (Asbestos Cement). In most instances our plans will indicate the pipe construction material. For any diggings in the vicinity of these pipes need to be aware of health implications of disruption to AC pipes. Individual risk assessments need to be conducted for working near these pipes to ensure protection of your staff.

Internal Drainage: Map does not cover internal drainage to property.

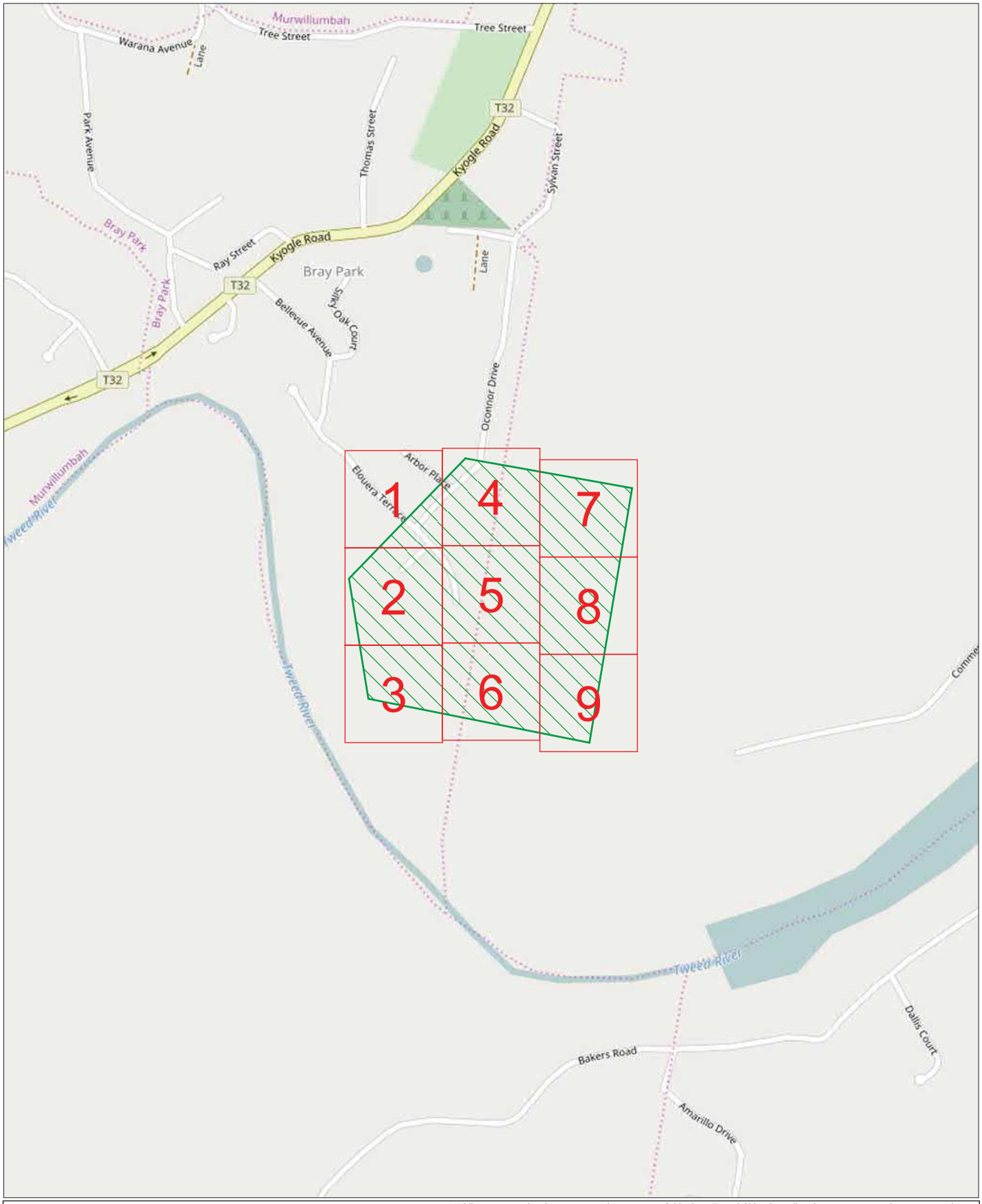
Damage: Tweed Shire Council reserves all rights to recover compensation for any damage to Sewer mains, Water mains and Stormwater.

On Site Locations: Tweed Shire Council provides on site location for D.B.Y.D. requests only. For onsite sewer mains, water mains and stormwater drain locations please contact Tweed Shire Council on (02) 6670 2600 at least 2 to 3 days prior to commencement.

Overview Map

Sequence No: 79760078
Elouera Terrace Bray Park

Date: 01/02/2019



1:5000 @ A3 Portrait

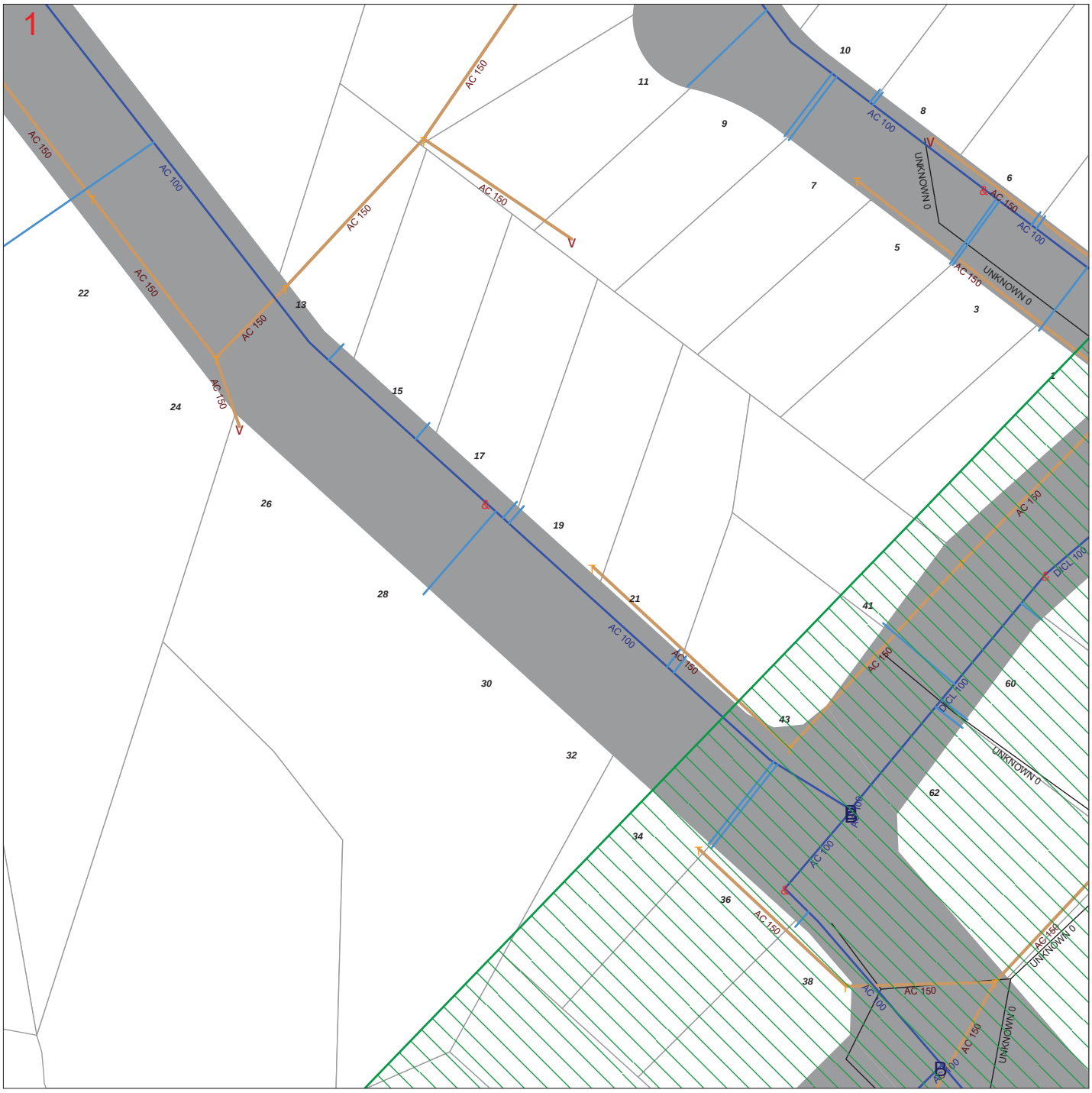
Legend:
DBYD Work Area

Imagery sourced from OpenStreetMaps

Map 1

Sequence No: 79760078
Elouera Terrace Bray Park

Date: 01/02/2019



Sewer Pipeline
- Sewer Rising Main
- Sewer Rising Main (Abandoned)
- Sewer Rising Main (Private)
- Sewer Vacuum Main
- Sewer Gravity Overflow
- Sewer Gravity Main (0-200mm)
- Sewer Gravity Main (225-600mm)
- Sewer Gravity Main (700-900mm)
- Sewer Gravity Main (Abandoned)
- Sewer Gravity Main (Private)

Stormwater Pipeline
- Stormwater Culvert
- Stormwater Culvert (Abandoned)
- Stormwater Channel
- Stormwater Channel (Abandoned)
- Stormwater Pipe (0-975mm)
- Stormwater Pipe (1000-2100mm)
- Stormwater Pipe (Abandoned)
- Stormwater Pipe (Private)

Communication Cable
- Communications Cable

Water Pipeline
- Water Service
- Water Main (0-250mm)
- Water Main (300-1000mm)
- Water Main (Abandoned)
- Water Pipe (Private)

Sewer Node
- Vent Stack
- Vacuum Chamber
- Sewer Pump Station
- Sewer Pump
- Sewer Valve
- Sewer Endcap
- Sewer Manhole
- Private Sewer Point

Stormwater Node
- Stormwater Manhole
- Drop Inlet
- Kerb Inlet
- Wingwall
- Private Stormwater Point

Communication Node
- Communications Node

Water Node
- Water Pump Station
- Reservoir
- Water Valve
- Water Endcap
- Hydrant
- Private Water Point

General
- Property Boundary
- DBYD Work Area

1:500 @ A3 Portrait

Date printed: 01/02/2019
© Land and Property Information (LPI) & Tweed Shire Council. Boundaries shown should be considered approximate only

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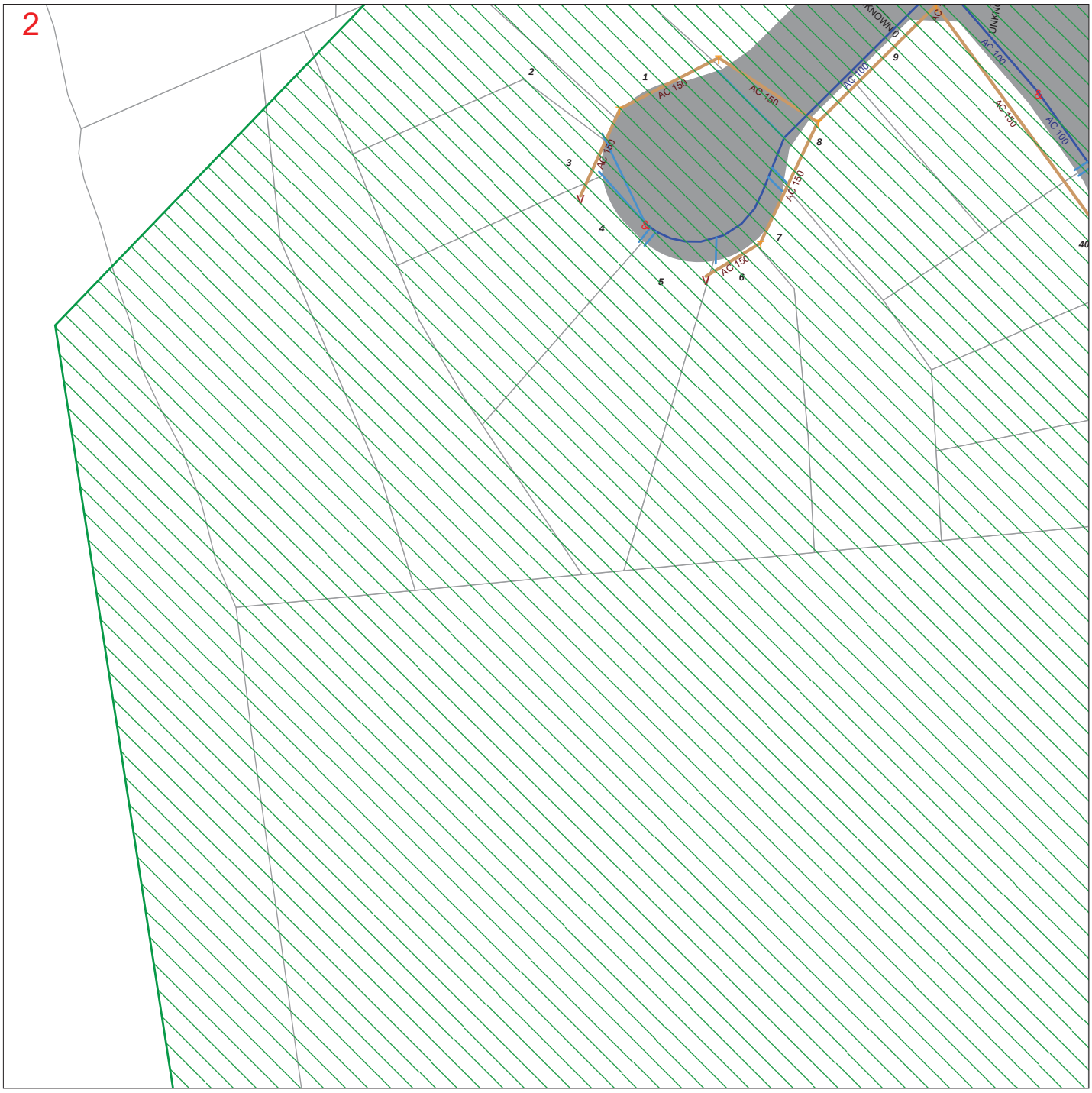
Map 2

Sequence No: 79760078

Elouera Terrace Bray Park

TWEED SHIRE COUNCIL

Date: 01/02/2019



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Communication Node
- Communications Node

Water Node
- Water Pump Station
- Reservoir
- Water Valve
- Water Endcap
- Hydrant
- Private Water Point

General
- Property Boundary
- DBYD Work Area

N

1:500 @ A3 Portrait

Date printed: 01/02/2019

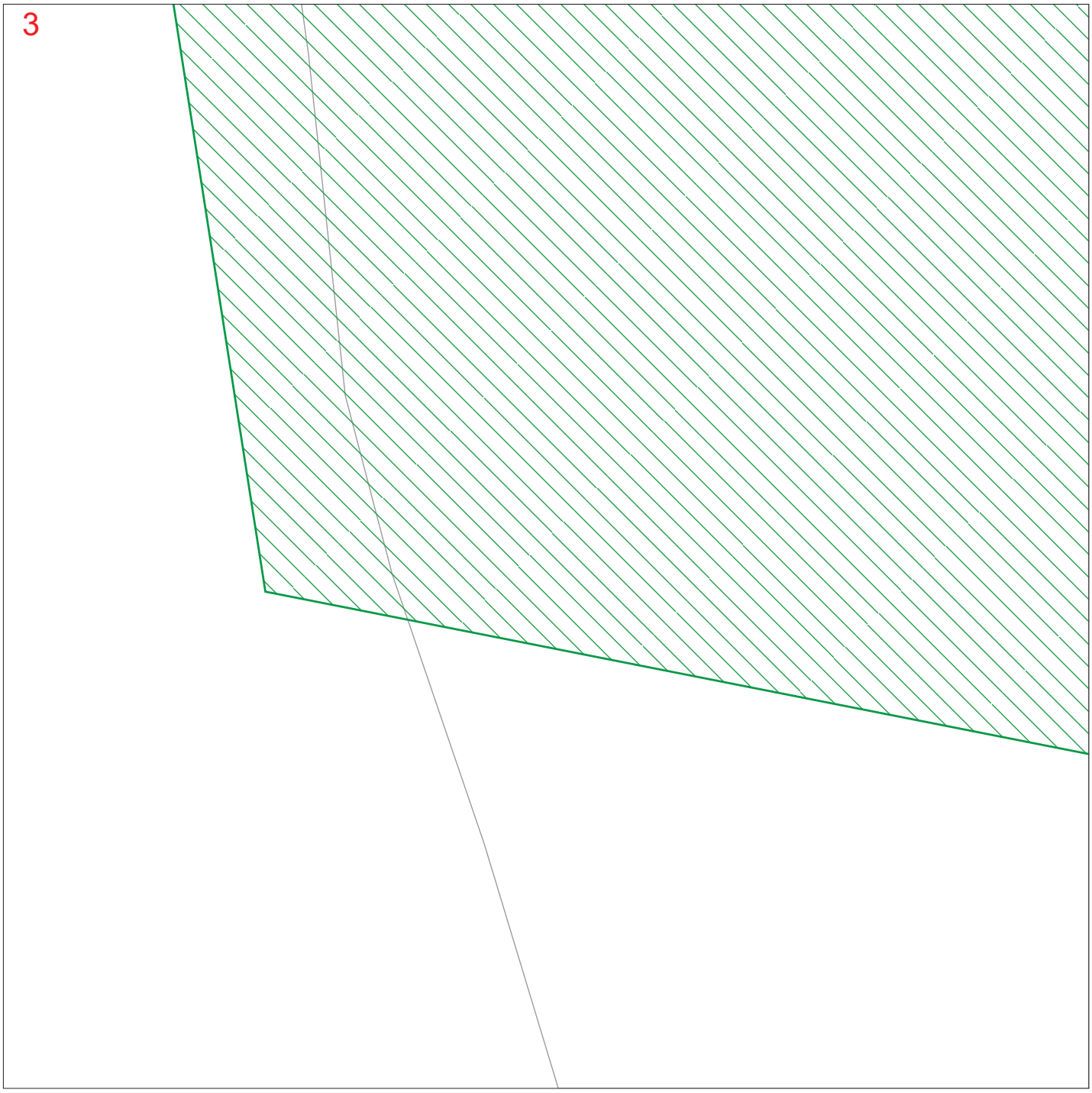
Boundaries shown should be considered approximate only

Please note that water pipes and sewer rising mains operate under high pressure and present a significant risk for any work around them while live. These mains will have associated thrust blocks that should also be considered in design/construction clearances.

Map 3

Sequence No: 79760078
Elouera Terrace Bray Park

Date: 01/02/2019



Sewer Pipeline
- Sewer Rising Main
- Sewer Rising Main (Abandoned)
- Sewer Rising Main (Private)
- Sewer Vacuum Main
- Sewer Gravity Overflow
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- Stormwater Culvert
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- Stormwater Channel
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- Stormwater Pipe (Abandoned)
- Stormwater Pipe (Private)

Communication Cable
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- Sewer Pump Station
- Sewer Pump
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- Stormwater Manhole
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- Wingwall
- Private Stormwater Point

Communication Node
- Communications Node

Water Node
- Water Pump Station
- Reservoir
- Water Valve
- Water Endcap
- Hydrant
- Private Water Point

General
- Property Boundary
- DBYD Work Area

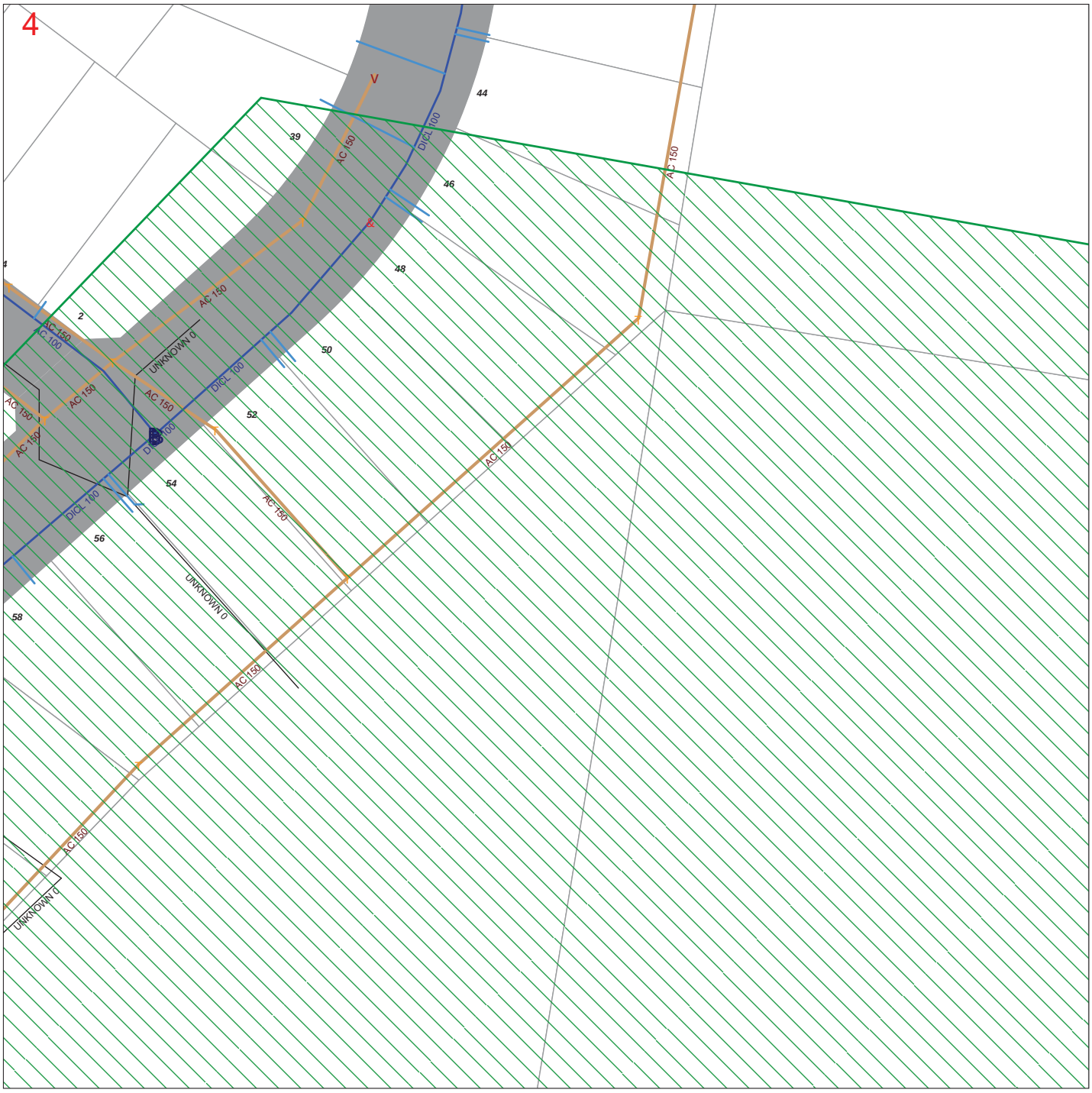
1:500 @ A3 Portrait

Date printed: 01/02/2019
© Land and Property Information (LPI) & Tweed Shire Council. Boundaries shown should be considered approximate only

Map 4

Sequence No: 79760078
Elouera Terrace Bray Park

Date: 01/02/2019



Sewer Pipeline
- Sewer Rising Main
- Sewer Rising Main (Abandoned)
- Sewer Rising Main (Private)
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- Stormwater Pipe (Private)

Communication Cable
- Communications Cable

Water Pipeline
- Water Service
- Water Main (0-250mm)
- Water Main (300-1000mm)
- Water Main (Abandoned)
- Water Pipe (Private)

Sewer Node
- Vent Stack
- Vacuum Chamber
- Sewer Pump Station
- Sewer Pump
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- Sewer Endcap
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- Private Sewer Point

Stormwater Node
- Stormwater Manhole
- Drop Inlet
- Kerb Inlet
- Wingwall
- Private Stormwater Point

Communication Node
- Communications Node

Water Node
- Water Pump Station
- Reservoir
- Water Valve
- Water Endcap
- Hydrant
- Private Water Point

General
- Property Boundary
- DBYD Work Area

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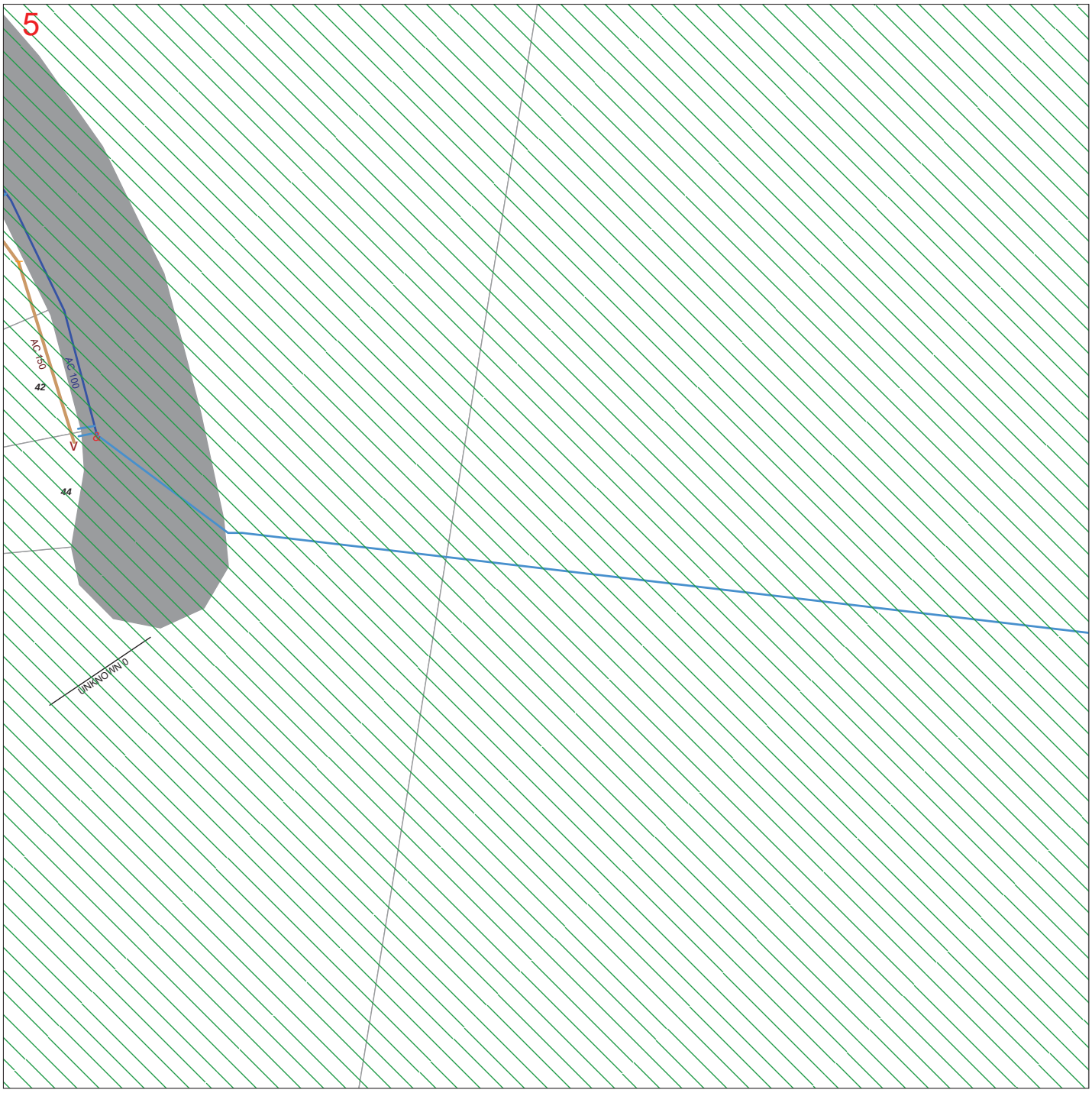
Boundaries shown should be considered approximate only

Map 5

Sequence No: 79760078
Elouera Terrace Bray Park

Date: 01/02/2019



Sewer Pipeline
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- Sewer Rising Main (Private)
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Communication Cable
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Water Pipeline
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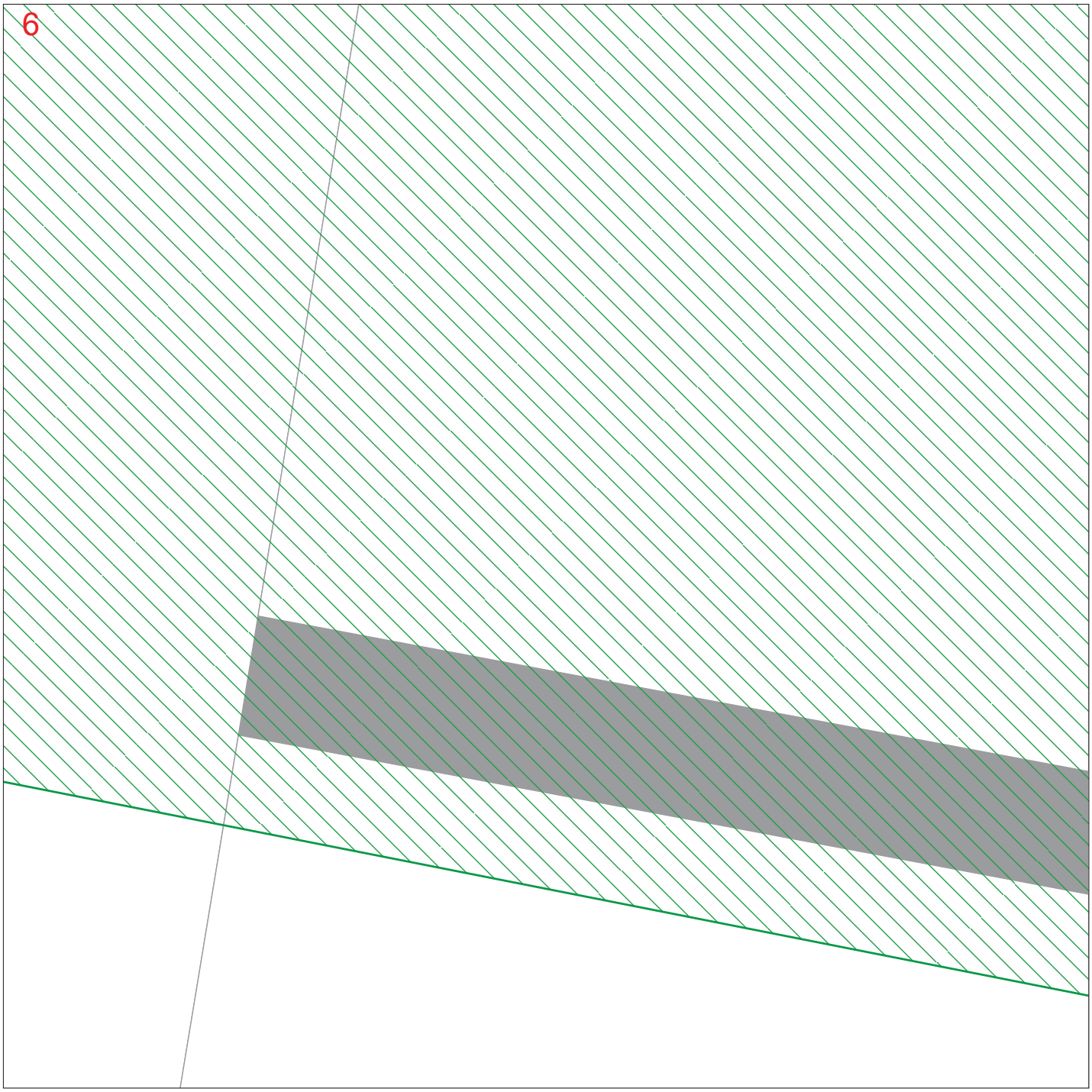

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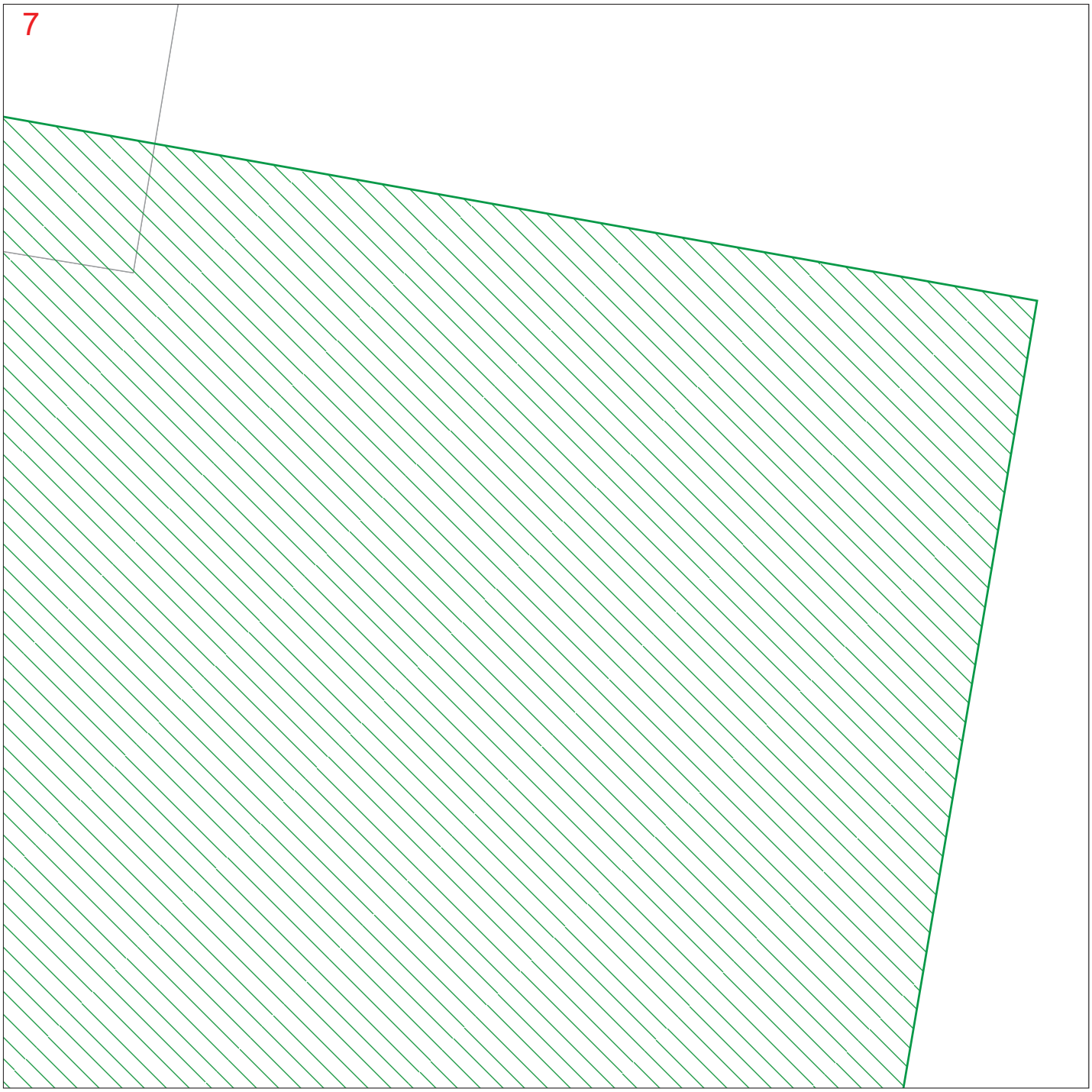
Map 7

Sequence No: 79760078
Elouera Terrace Bray Park

Date: 01/02/2019



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Map 8

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Elouera Terrace Bray Park

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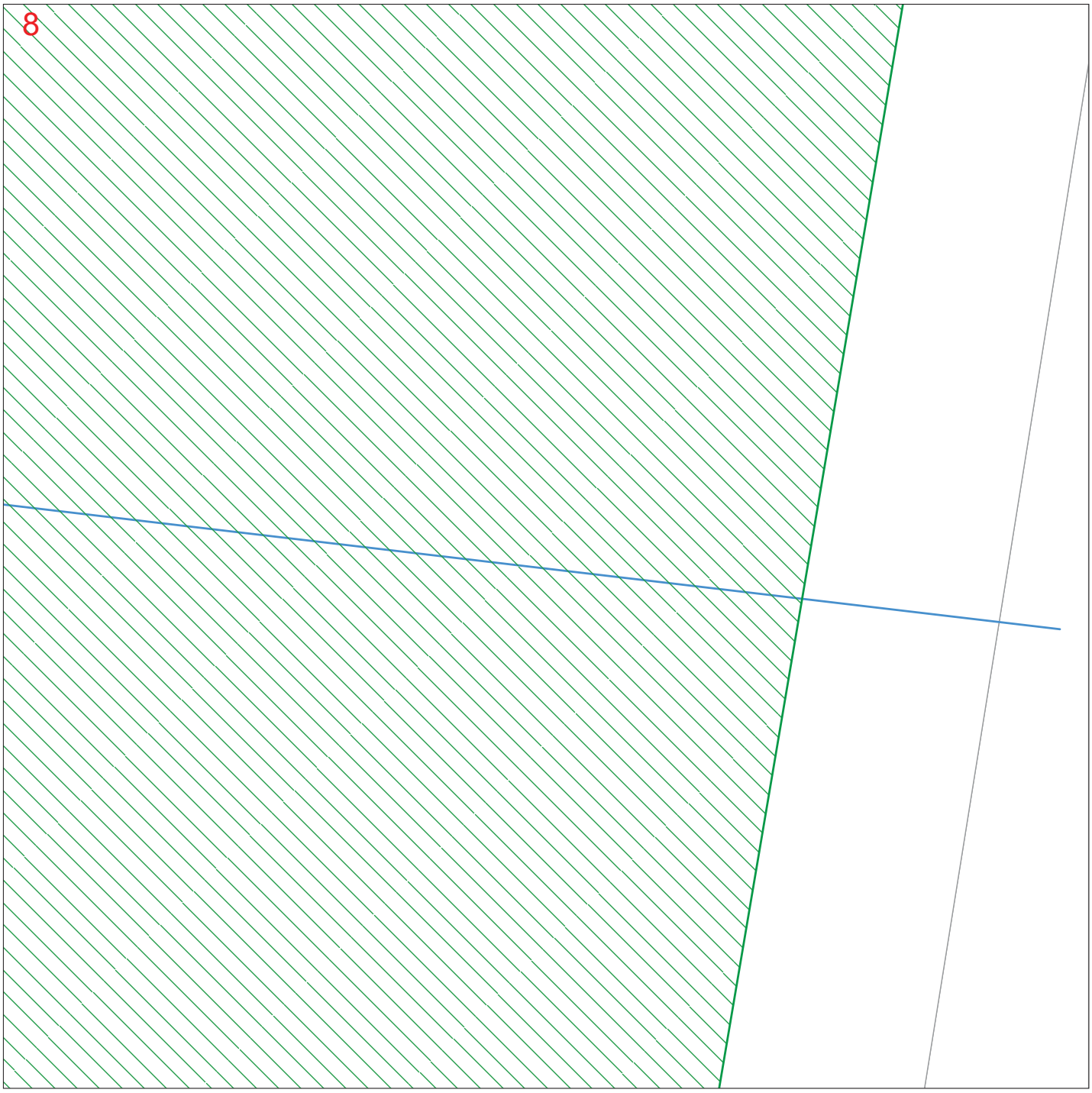

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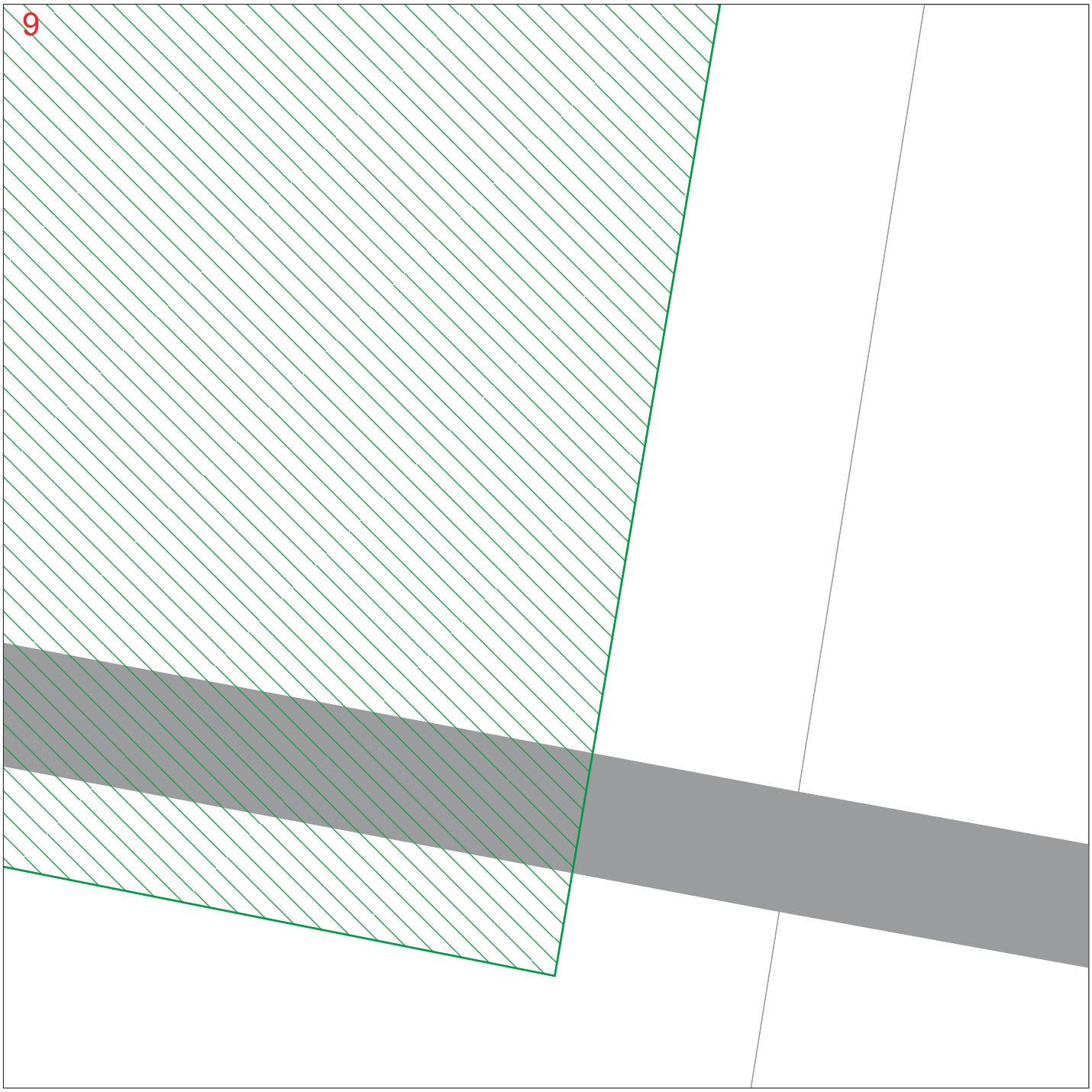
Please note that water pipes and sewer rising mains operate under high pressure and present a significant risk for any work around them while live. These mains will have associated thrust blocks that should also be considered in design/construction clearances.

Map 9

Sequence No: 79760078
Elouera Terrace Bray Park

Date: 01/02/2019



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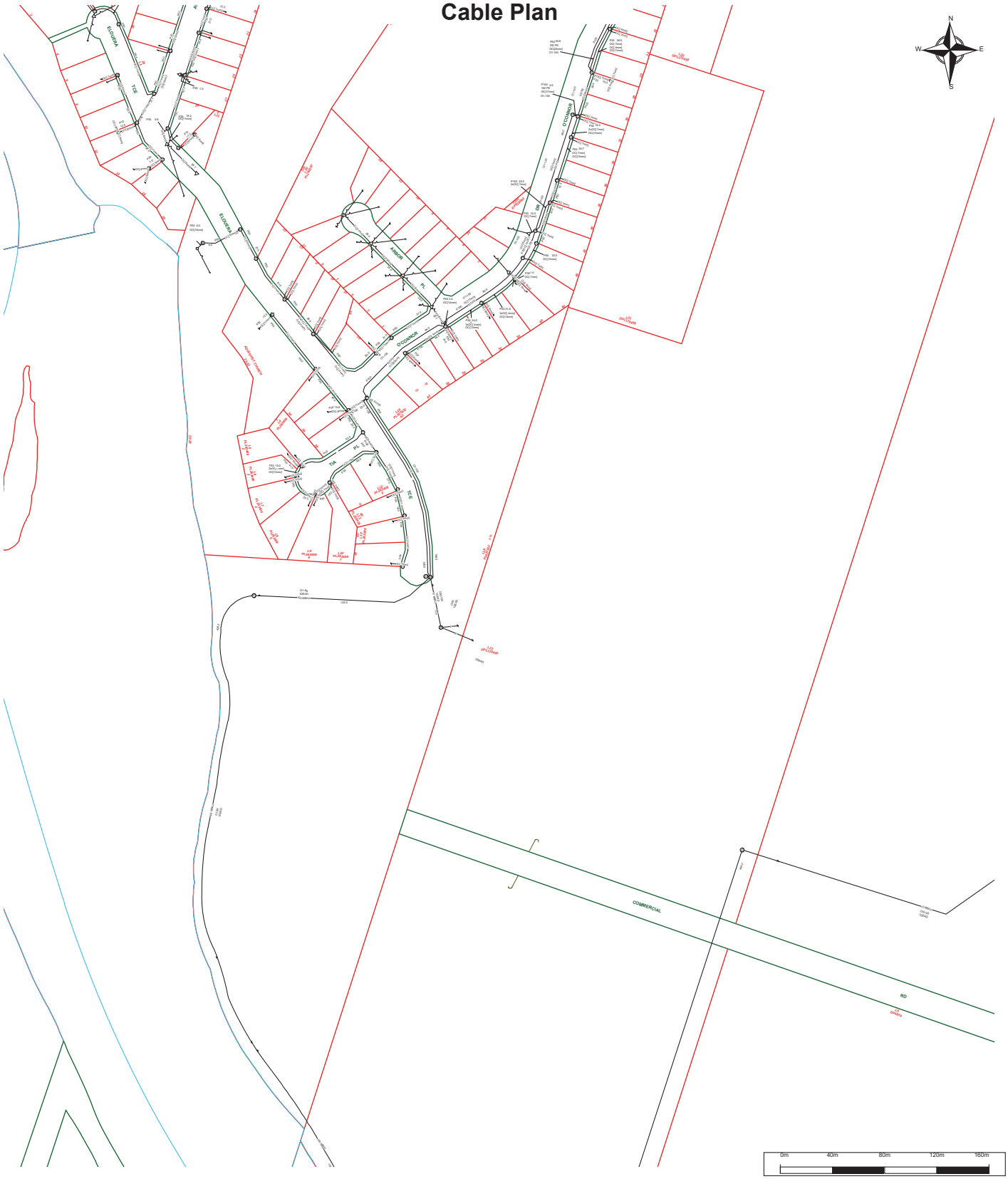
Cable Plan



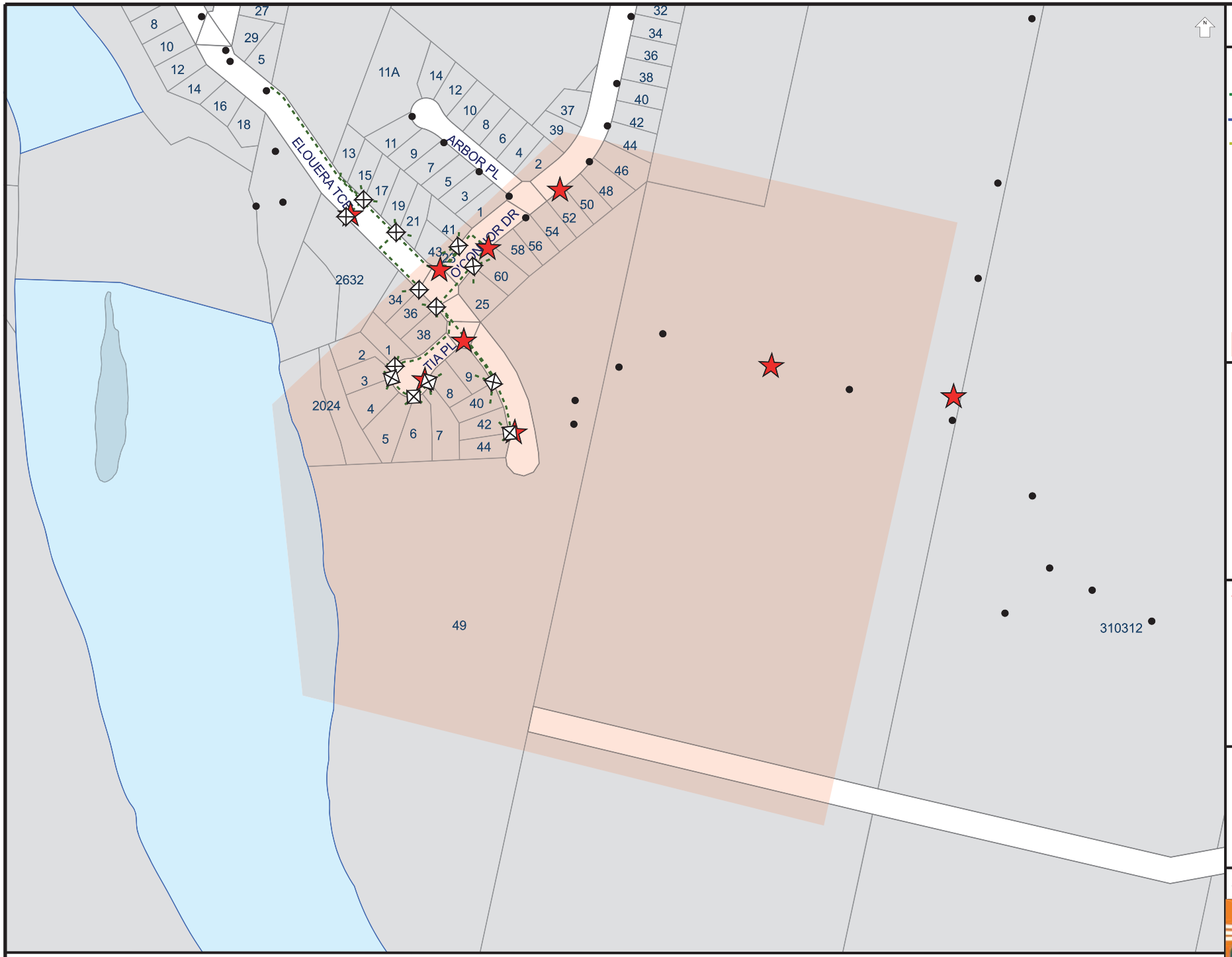
Telstra For all Telstra DBYD plan enquiries - email - Telstra.Plans@team.telstra.com For urgent onsite contact only - ph 1800 653 935 (bus hrs)	Sequence Number: 79760080
TELSTRA CORPORATION LIMITED A.C.N. 051 775 556	Please read Duty of Care prior to any excavating
Generated On 01/02/2019 10:49:35	

WARNING - Due to the nature of Telstra underground plant and the age of some cables and records, it is impossible to ascertain the precise location of all Telstra plant from Telstra's plans. The accuracy and/or completeness of the information supplied can not be guaranteed as property boundaries, depths and other natural landscape features may change over time, and accordingly the plans are indicative only. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans.

It is your responsibility to locate Telstra's underground plant by careful hand pot-holing prior to any excavation in the vicinity and to exercise due care during that excavation.

Please read and understand the information supplied in the duty of care statement attached with the Telstra plans. TELSTRA WILL SEEK COMPENSATION FOR LOSS CAUSED BY DAMAGE TO ITS PLANT.

Telstra plans and information supplied are valid for 60 days from the date of issue. If this timeframe has elapsed, please reapply for plans.



Overhead wires not shown
LOOK UP & LIVE!

LEGEND

- LV Underground Cable
- HV Underground Cable
- Underground Pipe
- Underground Earth or Wires
- Ground Substation
- Pole
- Cubicle
- Pit
- Area of Interest

Critical Assets

Contact Essential Energy on 13 23 91

- Zone Substation
- Underground Cable
- Underground Fibre

Proposed Works

- Area of proposed works

Proposed assets are shown as orange symbols

THE INFORMATION ON THIS MAP MAY NOT BE ACCURATE.
If details are incorrect, please notify Essential Energy on 13 23 91 (or fax 1800 354 636)

ISSUE DATE: 01/02/2019

You must resubmit your request if you have not started work within 4 weeks of the 'Issue Date' above

A4 | SCALE: 1:3912

essential energy

Job Number: 15676738 Sequence number: 79760079 Job location: Elouera Terrace, Bray Park Map Centre: 153° 22' 45.0", -28° 20' 46.9"

PLANIT
CONSULTING

Appendix F

Bushfire Threat Assessment Report

SCC for Seniors Housing

49 Elouera Terrace, Bray Park 2484

Prepared by Planit Consulting P/L

Prepared for

Marjan Management Pty Ltd
June 2019

Copyright / Usage Note

The content of this report was prepared for the exclusive use of the proponent to accompany an application to the Department and Tweed Shire Council for a Site Compatibility Certificate to facilitate seniors housing at 49 Elouera Terrace, Bray Park.

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Planit Consulting declares that it does not have, nor expect to have, a beneficial interest in the subject project.

PLANIT CONSULTING PTY LTD
June 2019

Table of Contents

Section 1 - Introduction

1.1 Brief

Planit Consulting has been commissioned by Marjan Management to prepare a Bushfire Threat Assessment for a proposed seniors housing development. The site is located at Elouera Terrace, Bray Park 2484.

Figure 1 – Aerial Photograph – Source: Six Maps.

1.2 Approvals Sought

It is noted that a bushfire safety authority from NSW Rural Fire Service would typically be required as the proposal is development for a special fire protection purpose (being seniors housing). However, the seniors housing development is located wholly outside the mapped bushfire prone land. As defined within Planning for Bush Fire Protection 2006 (PBP2006), draft PBP2018 and Australian Standards (AS3959-2009), development is therefore not within 'bushfire prone land/area'. Regardless, the proposal constitutes a special fire protection purpose (seniors housing) and access to the site is gained through bushfire prone land, as such it is beneficial for the proposal to address appropriate bushfire considerations.

This report applies for the purpose of supporting a Site Compatibility Certificate (SCC) process and has been compiled to satisfy the Northern Regional Planning Panel and Tweed Shire Council that the items raised in Clause 4.14 of the *Environmental Planning and Assessment Act 1979* have been complied with.

1.3 The Site and Surrounds

The subject property is legally described as Lot 18 DP 627632 and Lot 22 DP 1170438 and is more commonly referred to as 49 Elouera Terrace, Bray Park. The site particulars are detailed in **Table 1.**

Table 1- Basic Information

Site Particulars		
Address	49 Elouera Terrace, Bray Park	
Locality	Bray Park	
LGA	Tweed Shire	
Bushfire Prone Mapping	Vegetation Category 1; Vegetation Category 2; and Vegetation Buffer	
Boundaries	**West road front** – roadway of Elouera Terrace; **West and Southern boundary** – maintained and mown rural paddocks and grazing lands fronting Tweed River; **East and North** – Rural allotments generally maintained, mown and cultivated paddocks; and **North-west** – Standard residential allotments generally comprising dwelling houses.	
Area	Site – 35.36ha	
Property Descriptions	Lot 18 DP 627632	Lot 22 DP 1170438
Current Land Use	Rural farm	
Zone	RU1 – Primary Production R2 – Low Density Residential W2 – Recreational Waterway	
Proposed Land Use	Seniors Housing	

1.4 Bushfire Prone Areas/Land

In accordance with Bushfire Prone Land mapping held by the Department of Planning and Environment, the site contains areas of Vegetation Category 1 (orange) & 2 (yellow) and Vegetation Buffer area (red); please refer to **Figure 2**.

Figure 2– Bushfire Prone Land – Source: NSW Planning Portal.

Planning for Bushfire Protection 2006 (PBP 2006) sets out minimum standards for development including asset protection zones, construction standards, provision of services and access when proposed on land that is mapped as being subject to bushfire risk. It is noted that the proposed seniors housing sits entirely outside bushfire prone land, though access to the site is gained from Elouera Terrace and O'Connor Drive which are identified as bushfire mapped/affected. As such considerations of bushfire risk mitigation and strategy are important in supporting the development of the site for seniors housing.

1.5 Determination of Bushfire Attack Level

The following section determines the Bushfire Attack Level (BAL) by applying the methodology set out in AS3959-2009. The procedure for determining the BAL includes:

1. Clause 2.2.2 – Determination of FDI
2. Clause 2.2.3 – Vegetation Classification
3. Clause 2.2.4 – Distance to Vegetation
4. Clause 2.2.5 – Effective Slope
5. Clause 2.2.6 – BAL rating
6. Clause 2.2.7 – Construction Requirements

1. *Clause 2.2.2 – Determination of FDI*

The standard FDI applied in the subject locale, is 80.

2. *Clause 2.2.3 – Vegetation Classification*

The mapped bushfire threat to the west is associated with a strand of rainforest and riparian vegetation which fronts Tweed River. Vegetation to the south comprises small clusters of native and introduced vegetation species which are not identified as a bushfire threat as they are less than 1ha in area and suitably dispersed. Vegetation to the north is sclerophyll forest. Please see the excerpt from Tweed Shire vegetation mapping (**Figure 3**). The littoral rainforest vegetation is classified as **Rainforest,** the tallowwood open forest is classified as **Forest**.

Figure 3 – Vegetation Communities – Source: Tweed Vegetation Management Strategy.

In identifying the correct Bushfire Attack Level (BAL) the below extract from Addendum Appendix 3 of PBP 2006 confirms the correlation between PBP2006 and *AS3959-2009*. The vegetation is identified as Rainforest ad Forests to the west and north-west respectively under David Keith's 'Ocean Shores to Desert Dunes' (as used in PBP2006) and correlates to **Rainforest** and **Forest** under *AS3959-2009*.

Table 1: Extract from Addendum Appendix 3 of PBP2006. Source: PBP2006.

David Keith's *Ocean Shores to Desert Dunes*	AUSLIG (1990) Pictorial Analysis (AS3959-2009)
Forests (Wet & Dry Sclerophyll)	*Forest*
Pine Plantations	
Forested Wetlands	
Woodlands (Grassy, Semi-Arid)	*Woodland*
Tall Heath (Scrub)	*Scrub*
Freshwater Wetlands	
Short Heath (Open Scrub)	*Shrubland*
Arid Shrubland	*Mallee/Mulga*
Alpine Complex (Sedgelands)	*Tussock Moorland*
Rainforest	*Rainforest*
Grassland	*Grassland*

3. *Clause 2.2.4 – Distance to Vegetation*

The immediate bushfire threat vegetation is located approximately 100m west and 90m north-west of the proposed developable area and over 100m of any indicative seniors housing structures. This vegetation is buffered by grazing land which will continue to be maintained, roadways and dwellings. As such, a bushfire threat from the west and north-west would be highly unlikely and adequately buffered from the subject site.

Please refer to **Figure 4** Bushfire Threat Vegetation Map prepared by Planit Consulting.

Figure 4– Bushfire Threat Vegetation – Source: Planit Consulting modified from Nearmap.

4. Clause 2.2.5 – Effective Slope

The slope between the developable areas and surrounding vegetation communities is generally level across slope and upslope; see **Figures 5** & **6**.

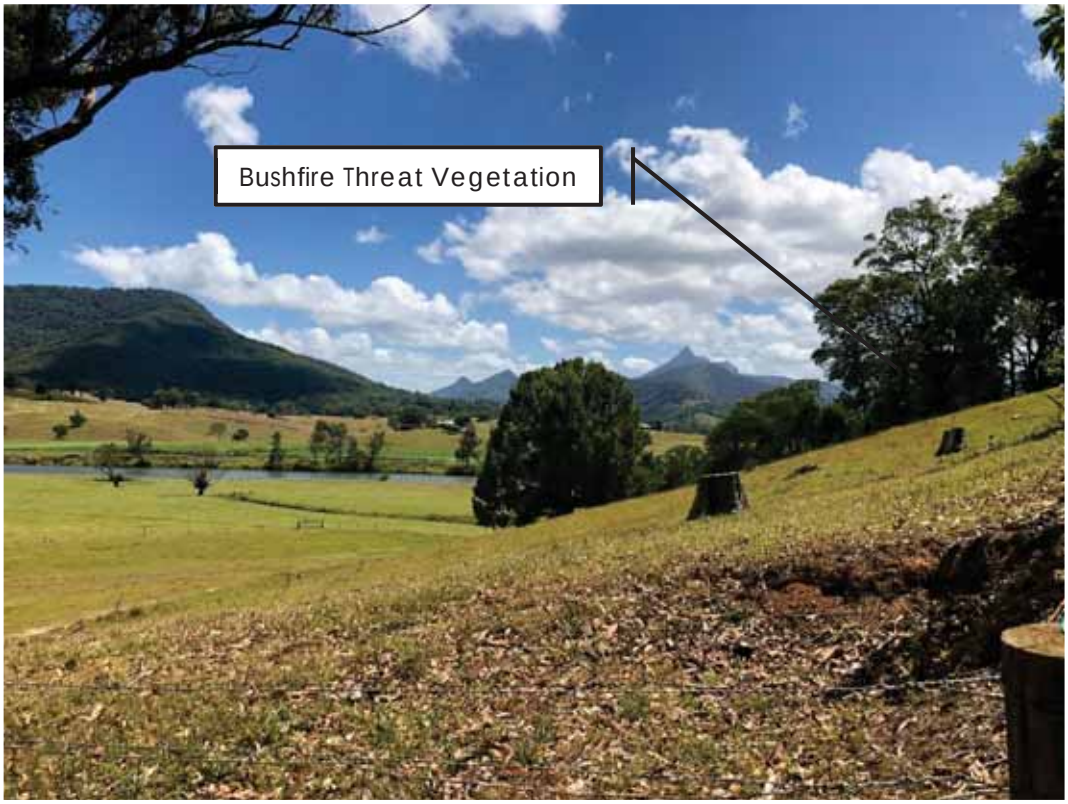


Figure 5 – Photo location Elouera Terrace, facing bushfire threat vegetation to the west.

Figure 6 – Site plan with indicative slope to vegetation.

5. Clause 2.2.6 – BAL rating

In accordance with Table 2.4.3 (FD 80) the proposal has been assessed as requiring consideration of the following Bushfire Attack Level (BAL).

Table 2: Modified from Table 2.4.3 of AS3959 – 2009			
All Upslopes and flat land (0 degrees)			
Veg Location	**Vegetation Classification**	**Distance**	**BAL Rating**
North	Forest	105m (>100m)	No requirement
East	No threat vegetation	N/A	No requirement
South	No threat vegetation	N/A	No requirement
West	Rainforest	100m (>50m)	No requirement

6. Clause 2.2.7 – Construction Considerations

No additional construction limitations are envisioned due to negligible bushfire threat for the site.

Section 2 – Bushfire Assessment

The following provides an assessment of the proposed development in accord with the matters under Clause 4.14 of the *Environmental Planning and Assessment Act 1997*. By definition within BCA and PBP2006, the proposed developable area is not a 'bushfire prone area' (as not mapped or prone to bushfire risk) and therefore not subject to specific bushfire requirements. Regardless, the proposal considers the controls of Planning for Bushfire Protection 2006 and AS 3959-2009 as assessed below.

A1.1 of Appendix 1 within PBP2006 identifies matters to be satisfied prior to the issue of development consent. A review of the relative matters has been provided below for Council's consideration.

2.1 Assessment against Performance Criteria and Acceptable Solutions

The below table sets the relative acceptable solutions the consent authority is required to assess prior to consenting to development within bushfire prone land.

	Performance Criteria	***Acceptable Solution***	**Response**
1	***In relation to Asset Protection Zones:*** *- a defendable space is provided onsite.* *- an asset protection zone is provided*	*APZ determined in accordance with Appendix 2.*	See 2.1.1 of this report.
2	***In relation to siting and design:*** *- buildings are sited and designed to minimise the risk of bushfire attack*	*- Buildings are designed and sited in accordance with the siting and design principles in this section (see also figure 4.7).*	The proposal has not detailed structure siting and design. However, the indicative location results in negligible bushfire threat and design will be appropriately considered through DA stage/s.
3	***In relation to construction standards:*** ***-*** *it is demonstrated that the proposed building can withstand bush fire attack in the form of wind, smoke, embers, radiant heat and flame contact.*	*-Construction determined in accordance with the siting and design principles in this section (see also figure 4.7).*	The proposal results in negligible bushfire risk and will incorporate design and construction considerations through DA stage/s as applicable.
4	***In relation to access requirements:*** *- safe, operational access is provided (and maintained) for emergency services personnel in suppressing a bush fire while residents are seeking to relocate, in advance of a bushfire, (satisfying the intent and performance criteria for access roads in sections 4.1.3 and 4.2.7.*	*- Compliance with section 4.1.3 for property access roads.* *- Compliance with section 4.2.7 for access standards for internal roads.*	See 2.1.2 of this report.

5	***In relation to water and utility services:*** *- adequate water and electricity services are provided for firefighting operations* *- gas and electricity services are located so as not to contribute to the risk of fire to a building.*	*- Compliance with section 4.1.3 for water, electricity and gas.*	See 2.1.3 of this report.
6	***In relation to landscaping:*** *- it is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind driven embers to cause ignitions*	*- Compliance with appendix 5.*	See 2.1.4 of this report.

2.1.1 Asset Protection Zones:

Upon site inspection and review of the proposal plans, it was confirmed that setbacks and buffers between the proposed developable area and mapped bushfire threat vegetation exists. These form developed residential structures and roads to the north, and maintained rural grazing and grassland to the west.

The existing conditions of the site are to be retained without the need for formalised Asset Protection Zones (APZ) as discussed below.

- North – No APZ is required. The existing residential developed land, formed roadway, pedestrian pathways and maintained/landscaped public domain provides a buffer distance of approximately 100m which exceeds prescribed 60m APZ to the north and results in negligible risk of bushfire.
- East – No APZ is required. Grass areas and grazing areas do not contain (nor are they mapped as) bushfire threat vegetation.
- West – No APZ is required. Grass areas and grazing areas will remain as existing to the west of the proposed developable footprint. The proposal may result in structures positioned 125m from any bushfire threat which is deemed sufficient to ensure no risk to life or property. The 125m separation area will continue to operate as grazing land and remain cleared. As the proposal is positioned on land free of any bushfire prone vegetation and hazard, the provision of a formal APZ in this instance is not proposed.
- South – No APZ is required. Grass areas and grazing areas do not contain (nor are they mapped as) bushfire threat vegetation.

2.1.3 Access

The proposal utilises access from Elouera Terrace and O'Connor Drive. In this regard, access and egress of the site could be prone to minor bushfire impact in the unlikely event of a bushfire through the residential area due north (**Figure 7**), though this is highly unlikely to result in isolation of the site, with these public roadways appropriately and routinely maintained.

Elouera Terrace and O'Connor Drive are two way sealed public roadways allowing safe and operational access in the event of a bushfire. Further, reticulated water and

hydrant connection points are located at several locations along Elouera Terrace and O'Connor Drive which would allow fire suppression to facilitate vehicle movements through to Kyogle Road to evacuate the area. O'Connor Drive also provides maintained separation between the uplope vegetation and roadway to ensure access is maintained.

Figure 7 – Site Context, Access and Bushfire Prone Land Mapping

Bushfire mapped vegetation does not continue beyond O'Connor Drive, meaning a bushfire would not have fuel to continue burning 'through' this point. Rather, O'Connor Drive is considered the absolute extremity of the bushfire prone land. O'Connor Drive would be unlikely to remain segregated for an extended period of time, if at all. This would permit evacuation of the site prior to the bushfire reaching O'Connor Drive. Alternatively, the proposed seniors housing area remains free of bushfire risk vegetation and hazard, offering the opportunity for 'refuge in place' on the site in the unlikely event that Elouera Terrace and O'Connor Drive are 'cut off' simultaneously.

It is therefore submitted that the proposal presents a negligible risk to life or property and suitable access, egress and refuge is provided.

2.1.4 Water and utility services

The area is serviced with reticulated water with bushfire fighting capability as existing along Elouera Terrace and O'Connor Drive. The electricity supply options available to the site are via an overhead service from the east or underground service from Elouera Terrace. These are unlikely to be impacted by bushfire. No gas network is supplied to the site, any installation of gas service would be via on-site tanks and would be in accordance with Australian standards.

2.1.5 Landscaping

Landscaping around bushfire prone vegetation is existing and is currently and routinely maintained in its entirety. Landscaping over the site will generally comprise of street planting and will be routinely maintained. This is not proposed proximate to any bushfire risk areas

Section 3 - Conclusion

Having reviewed the NSW Rural Fire Service documents PBP2006, draft PBP2018 and Australian Standards *AS-3959*, it is submitted that the proposed development and bushfire protection measures outlined within this report are consistent with the relevant policy and statutory requirements and demonstrates an appropriate development of the land.

All of the requirements set out under section 79BA of the *Environmental Planning and Assessment Act 1997* have been satisfied and therefore development approval is respectfully requested.

The proposed development does not result in any additional bushfire considerations, and from a bushfire perspective is considered warranting of support.

Daniel Mulherin
PLANIT CONSULTING PTY LTD

June 2019

PLANIT
CONSULTING

Appendix G

Issue History

File Name	Prepared	Reviewed	Issued by	Date	Issued to
P4065.001T 49 Elouera Terrace Bray Park TIS	S. Koskela	B. Newman	B. Newman	05/05/19	Daniel Mulherin – daniel@planitconsulting.com.au
P4065.002T 49 Elouera Terrace Bray Park TIS	S. Koskela	B. Newman	S.Koskela	13/06/19	Daniel Mulherin – daniel@planitconsulting.com.au

49 Elouera Terrace Bray Park

Traffic Impact Statement

1. Introduction

1.1 Background

Bitzios Consulting has been engaged by Marjan Management Pty Ltd to undertake a traffic impact statement (TIS) for the proposed residential subdivision and seniors housing development located at 49 Elouera Terrace, Bray Park. The purpose of this TIS is to be submitted as part of a Site Compatibility Certificate in order to demonstrate the suitability of a seniors housing development at the subject site location. The subject site is currently zoned as rural and residential.

The proposed development plans are provided in **Attachment A**.

1.2 Scope

To assess the suitability of the proposed land use compared to the current land use, the scope of this assessment is as follows:

- Estimate the proposed development's traffic generation and distribution on to the external road network
- Determine traffic impacts through a detailed traffic assessment at the year of opening and 10-year design horizon
- Update Tweed Shire Council's (Council's) Strategic Transport Model (STM) to determine the traffic impacts at key strategic locations in proximity to the subject site
- Assess the suitability of key intersections and roads impacted by the proposed development.

2. Traffic Assessment

2.1 Background Traffic

Existing traffic volumes were obtained from an intersection survey of the Kyogle Road / Sylvan Street priority-controlled intersection by Traffic Data & Control (TDC) on 28th March 2019, from 6:00AM to 9:00AM and from 3:00PM to 6:00PM. The traffic surveys showed that the peak hours were 8:00AM to 9:00AM and from 3:15PM to 4:15PM. The intersection survey results are provided in **Attachment B**.

Council's STM was used to determine a traffic growth rate for the area. This model forecasts to year 2041 and includes planned road upgrades, land use changes and demographics projections. Comparing the Council STM and traffic survey data showed a 1.54% per annum (compounding) traffic growth rate between years 2019 and 2041. This traffic growth rate has been adopted for this assessment. For comparison, Australian Bureau of Statics (ABS) data as shown on the *Profile.ID* website, shows the 'Murwillumbah and District' having a 1.16% per annum (compounding) population growth rate between years 2012 to 2018.

The existing traffic volumes were forecast to the anticipated year of opening (year 2021) and 10-year design horizon (year 2031) using the traffic growth rate previously mentioned. Diagrams showing the forecast background traffic volumes are provided in **Attachment C**.

2.2 Development Traffic

Traffic generation rates for low-density residential and seniors housing land uses have been sourced from the Roads and Maritime Service (Roads and Maritime) *Guide to Traffic Generating Developments* (2002). The estimated traffic generation is indicated in Table 2.1.

Table 2.1: Development Traffic Generation

Land Use	Quantity	Peak Rate	Daily Rate	Peak Trips (veh/h)	Daily Trips (veh/d)
Low-Density Residential	21 lots	0.85 trips per lot	8.5 trips per lot	18	179
Seniors Housing	139 dwellings	0.2 trips per dwelling	2 trips per dwelling	28	278
			Total	**46**	**457**

The expected development traffic directionality is shown in Table 2.2.

Table 2.2: Development Traffic Directionality

Land Use	AM Proportion		PM Proportion		AM Trips (veh/h)		PM Trips (veh/h)	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Residential	20%	80%	60%	40%	4	15	11	8
Seniors Housing	20%	80%	60%	40%	6	23	17	11
				Total	**10**	**38**	**28**	**19**

The development traffic was assigned to the external road network based on the following:

- The distribution of traffic was based on the nearby attractors (employment, retail, residential, etc.)
- 90% of development traffic is expected to travel eastbound (towards Murwillumbah or Tweed)
- 10% of development traffic is expected to travel westbound (towards Chillingham or Uki)
- Eastbound traffic (towards Murwillumbah or Tweed) uses the Kyogle Road / Sylvan Street intersection
- Westbound traffic (towards Chillingham or Uki) uses the Kyogle Road / Bellevue Avenue intersection.

As the increase in traffic at the Kyogle Road / Bellevue Avenue intersection is not significant, the detailed traffic assessment focusses on the Kyogle Road / Sylvan Street intersection.

The development traffic assignment to the external road network has been provided in **Attachment C**.

2.3 Design Traffic

The design traffic volumes were determined by combining the background traffic volumes at the anticipated year of opening (year 2021) and 10-year design horizon (year 2031). Diagrams showing the design traffic volumes are provided in **Attachment C**.

2.4 Traffic Impacts

2.4.1 Kyogle Road / Sylvan Street Intersection

The Kyogle Road / Sylvan Street intersection was assessed using SIDRA Intersection (Version 8) at the anticipated year of opening (year 2021) and 10-year design horizon (year 2031). Both the background (without development) and design (with development) scenarios were assessed during the peak hours. The SIDRA results have been summarised in Table 2.3 and Table 2.4, and detailed outputs are provided in **Attachment D**.

Table 2.3: Year 2021 Kyogle Road / Sylvan Street SIDRA Intersection Results Summary

Road Name	AM Peak			PM Peak		
	DOS	Delay (s)	Queue (m)	DOS	Delay (s)	Queue (m)
Year 2021 Background Traffic						
Kyogle Road (S)	0.32	0	1	0.21	0	1
Sylvan Street (E)	0.07	10	2	0.06	10	1
Kyogle Road (N)	0.15	0	0	0.30	0	0
Intersection	**0.32**	**1**	**2**	**0.30**	**1**	**1**
Year 2021 Design Traffic						
Kyogle Road (S)	0.32	0	1	0.21	0	1
Sylvan Street (E)	0.10	10	2	0.07	11	2
Kyogle Road (N)	0.15	1	0	0.31	0	0
Intersection	**0.32**	**1**	**2**	**0.31**	**1**	**2**

Table 2.4: Year 2031 Kyogle Road / Sylvan Street SIDRA Intersection Results Summary

Road Name	AM Peak			PM Peak		
	DOS	Delay (s)	Queue (m)	DOS	Delay (s)	Queue (m)
Year 2031 Background Traffic						
Kyogle Road (S)	0.38	0	1	0.24	0	1
Sylvan Street (E)	0.11	11	2	0.08	13	2
Kyogle Road (N)	0.17	0	0	0.35	0	0
Intersection	**0.38**	**1**	**2**	**0.35**	**1**	**2**
Year 2031 Design Traffic						
Kyogle Road (S)	0.38	0	1	0.24	0	1
Sylvan Street (E)	0.21	13	5	0.14	13	3
Kyogle Road (N)	0.18	1	0	0.37	0	0
Intersection	**0.38**	**1**	**5**	**0.37**	**1**	**3**

The Kyogle Road / Sylvan Street intersection is expected to operate within acceptable performance thresholds (i.e. DOS < 0.8, Delay < 56s and Queues not impacting on surrounding intersections) at the anticipated year of opening (year 2021) and 10-year design horizon (year 2031). The addition of the development traffic causes a minor worsening in intersection performance however no mitigation measures are required to be imposed.

2.4.2 Wollumbin Street Bridge

Based on preliminary discussions between the project team and Council officers, it is understood that the key strategic location within proximity of the subject site is the Wollumbin Street bridge over the Tweed River. Council's STM has been used to determine the increase in traffic on the Wollumbin Street bridge at year 2041. The proposed development is located within a larger zone in Council's STM which includes the entire Sylvan Street and Bellevue Avenue catchment south of Kyogle Road. The proposed development was included in Council's STM by increasing the population consistent with the proposed development's yield.

The outputs from Council's STM are presented in Figure 2.1.

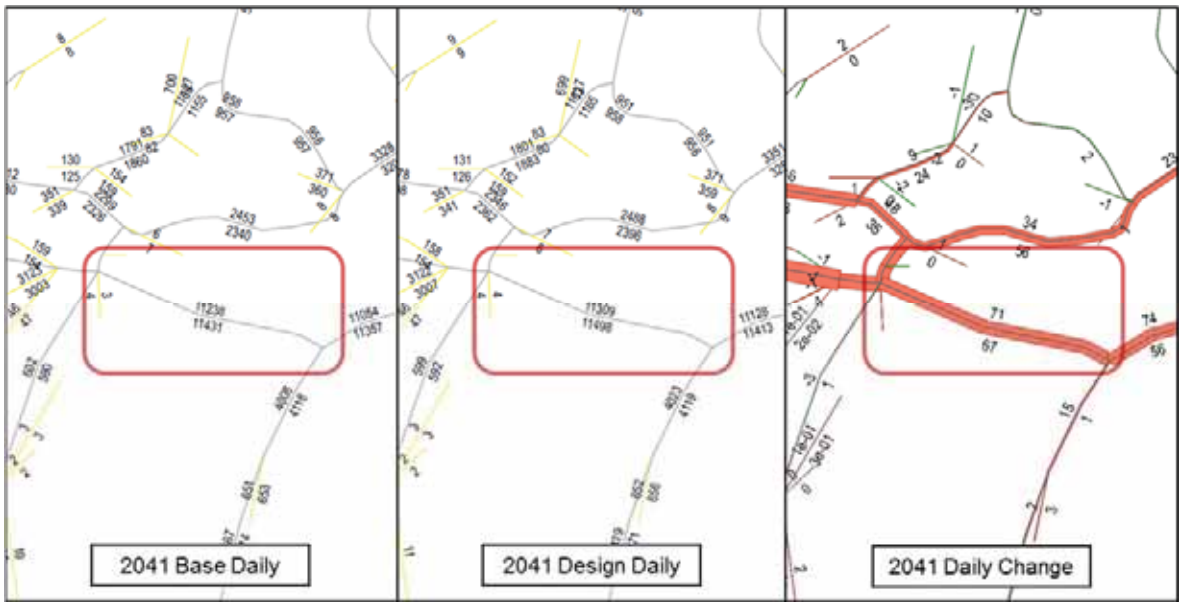


Figure 2.1: Council's STM at the Wollumbin Street Bridge

As shown in Figure 2.1, the proposed development is expected to generate an additional 138 daily trips along Wolllumbin Street bridge at year 2041. This equates to a traffic increase of 0.61% compared to the base (without development), which is considered negligible. As such, it is not expected that the development would trigger the need for network improvement works.

2.5 Intersection Assessment

2.5.1 Crash History

The crash history of the area surrounding the subject site is indicated in Table 2.5.

Table 2.5: Surrounding Area Crash History

Year	Crash ID	Severity	Code	Description	Location	Light	Injuries
2014	1011880	Tow-Away	93	Parked vehicle runaway into object	Two-way undivided	Daylight	-
2017	1156427	Moderate	74	On road out of control	T-junction	Daylight	1

Table 2.5 shows that two (2) single-vehicle crashes have occurred in the area along the key route from Kyogle Road to the subject site. Importantly, no crashes have been reported at the Kyogle Road / Sylvan Street intersection. The lack of crashes at the Kyogle Road / Sylvan Street intersection shows that there are no existing deficiencies that require mitigation.

2.5.2 Sight Distance

Sight distance requirements for the Kyogle Road / Sylvan Street intersection were sourced from the Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* (2017). Key sight distance are as follows:

- **Approach Sight Distance (ASD)**: the minimum sight distance which must be available on the minor road approach to an intersection to ensure drivers are aware of its presence
- **Safe Intersection Sight Distance (SISD)**: the minimum sight distance to be provided on the major road approach to an intersection and is defined as the vehicle distance travelled from observing the intersection to the point of contact
- **Minimum Gap Sight Distance (MGSD)**: the minimum distance corresponding to the critical acceptance gap that drivers are prepared to accept when undertaking a turning manoeuvre at an intersection.

Key sight distance requirements are detailed in Table 2.6.

Table 2.6: Kyogle Road / Sylvan Street Intersection Sight Distance

Sight distance	Requirement (m)	Available (m)	Compliant
ASD	55m	100m	Yes
SISD	97m	200m (north) 190m (south)	Yes
MGSD	69m	200m (north) 190m (south)	Yes

These sight distances are shown in Figure 2.2.

Source: Nearmap

Figure 2.2: Kyogle Road / Sylvan Street Intersection Sight Distance

The available sight distance at the Kyogle Road / Sylvan Street intersection exceeds the minimum Austroads' requirements. No changes are required at the intersection to improve sight lines.

2.5.3 Turn Treatments

The Kyogle Road / Sylvan Street intersection does not include turning lanes. The operational performance in Section 2.4.1, crash history in Section 2.5.1 and sight distance in Section 2.5.2 do not suggest that turning treatments are required. As a point of comparison, the need for turning treatments at the Kyogle Road / Sylvan Street intersection was assessed to determine if the proposed development changed the turn treatment required based on the turn warrant charts included in Austroads *Guide to Traffic Management Part 6: Intersections,*

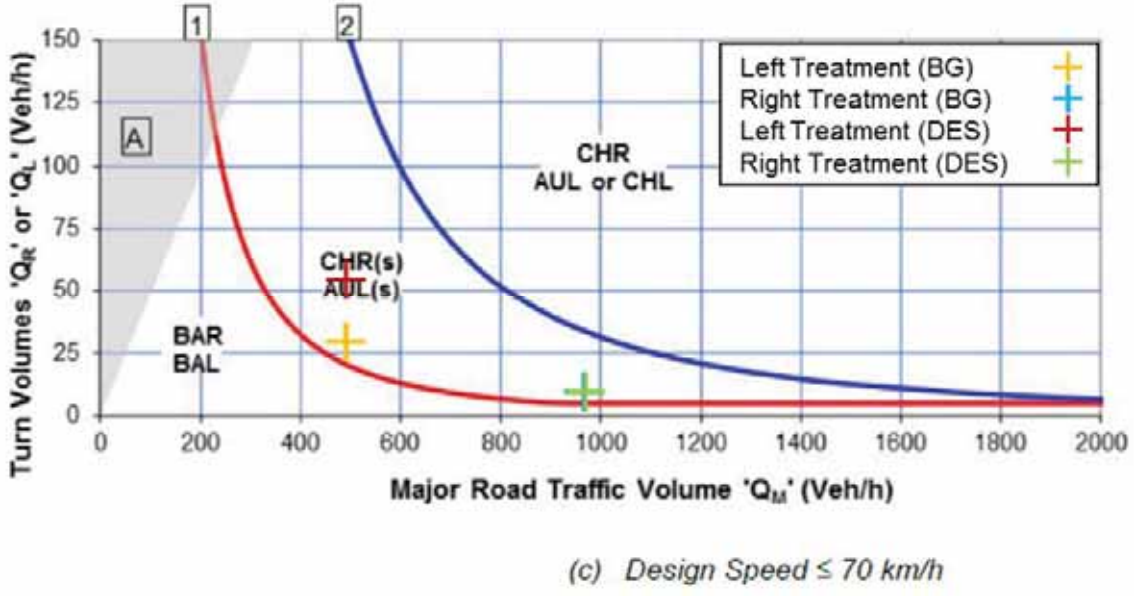
Interchanges and Crossings (2017). These warrants are primarily intended for the construction of new intersections.

The background (without development) and design (with development) traffic volumes at the 10-year design horizon (year 2031) used for the turn warrants assessment are detailed in Table 2.7.

Table 2.7: Year 2031 Turn Warrants Volumes

Turn Movement	Volume (veh/h)	Peak Period		Turn Treatment
		AM	PM	
Background (without development)				
Left	Major (Q_M)	270	580	Short Auxiliary Left
	Turn (Q_L)	24	29	
Right	Major (Q_M)	961	1020	Short Channelised Right
	Turn (Q_R)	12	5	
Design (with development)				
Left	Major (Q_M)	270	580	Short Auxiliary Left
	Turn (Q_L)	33	54	
Right	Major (Q_M)	970	1045	Short Channelised Right
	Turn (Q_R)	12	5	

The turn warrants volumes were plotted on the turn warrants charts as shown in Figure 2.3.



Source: Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings (2017)

Figure 2.3: Year 2031 Turn Warrants Chart

The turn warrants charts show that the addition of the proposed development does not increase the turning treatment requirements at the Kyogle Road / Sylvan Street intersection. This does not suggest that turning treatments are required. The provision of turn treatments at the intersection would be out of character with the surrounding intersections along Kyogle Road. As stipulated previously, the operational performance in Section 2.4.1, crash history in Section 2.5.1 and sight distance in Section 2.5.2 do not suggest that turning treatments are required.

2.5.4 Summary

The existing Kyogle Road / Sylvan Street intersection in its current form is adequate to cater for the proposed development. The assessment of the intersections showed the following:

- There is no history of crashes at the intersection that would warrant treatment
- The available sight lines are in excess of the minimum requirements
- The proposed development does not increase the requirement for turning treatments.

Based on the above, the Kyogle Road / Sylvan Street intersection in its current form is adequate to cater for future growth plus the proposed development.

2.6 Road Capacity

The capacity of the nearby roads was assessed for available capacity. The nearby roads of interest are Sylvan Street / Elouera Terrace and Kyogle Road. The capacity of these roads was adopted from Council's standard drawings. Kyogle Road functions as a sub-arterial road that links Murwillumbah in the northeast and Kyogle southwest. Council's standard drawings were reviewed for the likely environmental capacity of a road similar to Kyogle Road however the standard drawings did not include this information. Other nearby Council standard drawings were reviewed and used a reference as follows:

- City of Gold Coast standard drawing (reference number: 02-004) shows the environmental capacity of a single carriageway, two-lane rural sub-arterial road as 14,000 vehicles per day
- Logan City Council Planning Scheme Schedule 2.5 Table 3.4.1.4.1 states that a rural arterial single carriageway has an environmental capacity of 22,000 vehicles per day.

Based on the above, Kyogle Roads is likely to have an environmental capacity of no less than 14,000 vehicles per day.

Table 2.1 shows that the proposed development is estimated to add 457 vehicles per day to the external road network.

Details of the nearby roads are shown in Table 2.8.

Table 2.8: Road Network Details

Road Name	Formation Width (m)	Road Reserve Width (m)	Capacity (veh/d)	Design Volumes (veh/d)[2]
Sylvan Street	9	30	3,000[1]	1,277
Elouera Terrace	9	30	3,000[1]	1,277
Kyogle Road	7 (varies)	20 (varies)	14,000	9,910[3]

1 – Council's standard drawing S.D.001 'Wider Access Street'
2 – The design volumes were determined by multiplying the highest peak hour volume by a factor of 10
3 – Council's Local Traffic Data shows the AADT at 8 Kyogle Road, Bray Park in 2017 was 8,934 veh/d

The nearby roads have adequate capacity for the proposed development and not additional capacity is required.

3. Summary

The key findings of this TIA are summarised as follows:

- The intended development outcome is for 21 residential allotments and 139 seniors housing dwellings noting that the current zoning is for rural and residential
- The proposed development is expected to generate in the order of 46 peak hour trips and 457 daily trips
- The Kyogle Road / Sylvan Street priority-controlled intersection is expected to operate within acceptable capacity limits at the 10-year design horizon and no mitigation measures are required to improve performance
- The key strategic location within proximity of the subject site is the Wollumbin Street bridge over the Tweed River. The proposed development increases traffic by a negligible amount (0.61%) and would not trigger the need for network improvement works at this location
- The Kyogle Road / Sylvan Street intersection did not require any upgrades based on an assessment of crash history, available sight distance and turn treatments
- Sylvan Street, Elouera Terrace and Kyogle Road have adequate capacity to cater for the proposed development traffic at the 10 year design horizon.

Based on the above, the road network is adequate to cater for the intended development outcome.

Attachment A: Proposed Development Plans

BITZIOS consulting

Elouera Terrace, Bray Park
Concept Layout Plan

Seniors Housing Type 1A
Seniors Housing Lots 18m depth average.
Average Lot Size 150m²
Single Storey Attached Dwellings in groups of 2-3
Typical template used: 2 bedroom, single carpark per dwelling (one covered)
Yield: 82

Seniors Housing Type 1B
Seniors Housing Lots 18m depth average
Average Lot Size 200m² - 250m²
Single Storey Attached Dwellings in groups of 2-3
Typical template used: 2-3 bedroom, 2 x tandem carparks per dwelling (one covered)
Yield: 57

Primary Access Street (Indicative)
16.0m wide road reserve, 9.0m sealed. TSC 'Wider Access Street'. This street provides a loop road through the development, connecting the primary and secondary site entry points to Elouera Terrace.

Indicative Internal Street
10.0m wide road reserve, 6.0m sealed.

Indicative Internal Laneway
8.0m wide laneway reserve, 5.0m sealed.

Low Flow Flood Area
Area identified through topographic analysis as area of low flow flood area. Nil development proposed within this zone. Potential buffer planting located within this zone to transition to surrounding farmland. Development within this area would be subject to relevant flood considerations and design.

Indicative Community Facilities 01
Community facilities area. Primarily services the northern residential precinct (Residential Type C). Potential to include pool area, lawn bowls, landscaped gardens, areas of open turf. Community use building, footprint illustrated approximately 350-400m². Located to take advantage of views to the east and south across existing farmland. Located at the eastern end of the primary site entry to allow clear line of site through the development of the primary community facilities and to long views to the east.

Indicative Community Facilities 02
Community facilities area. Primarily services the southern residential precinct (Residential Type B). Potential to include pool area, lawn bowls, landscaped gardens, areas of open turf. Community use building, footprint illustrated approximately 350-400m² . Located on an elevated site to take advantage of views to the east and south across the residential precincts and over existing farmland. Located at the primary entry of the estate to serve as the 'entry statement' of the development and create a clear and legible arrival.

Indicative Site Entry
Site entry off Elouera Terrace. To be confirmed through residential subdivision layout. Subject to relevant approval.

Visitor Parking
Visitor carparking indicative locations illustrated. Requirement based on number of dwelling sites: 20
Car parking located primarily in close proximity to community facilities areas(qty 20) with balance of spaces located throughout the development where layout permits.
Total visitor carparks illustrated: 40.

Existing Agricultural Land
Working farm located to balance of lot. Potential to provide informal pedestrian access from the proposed development (from Community Facilities 01) to facilitate potential for community gardens and integration of these landuses.

Existing Residential Area

Indicative Bus Pick up point

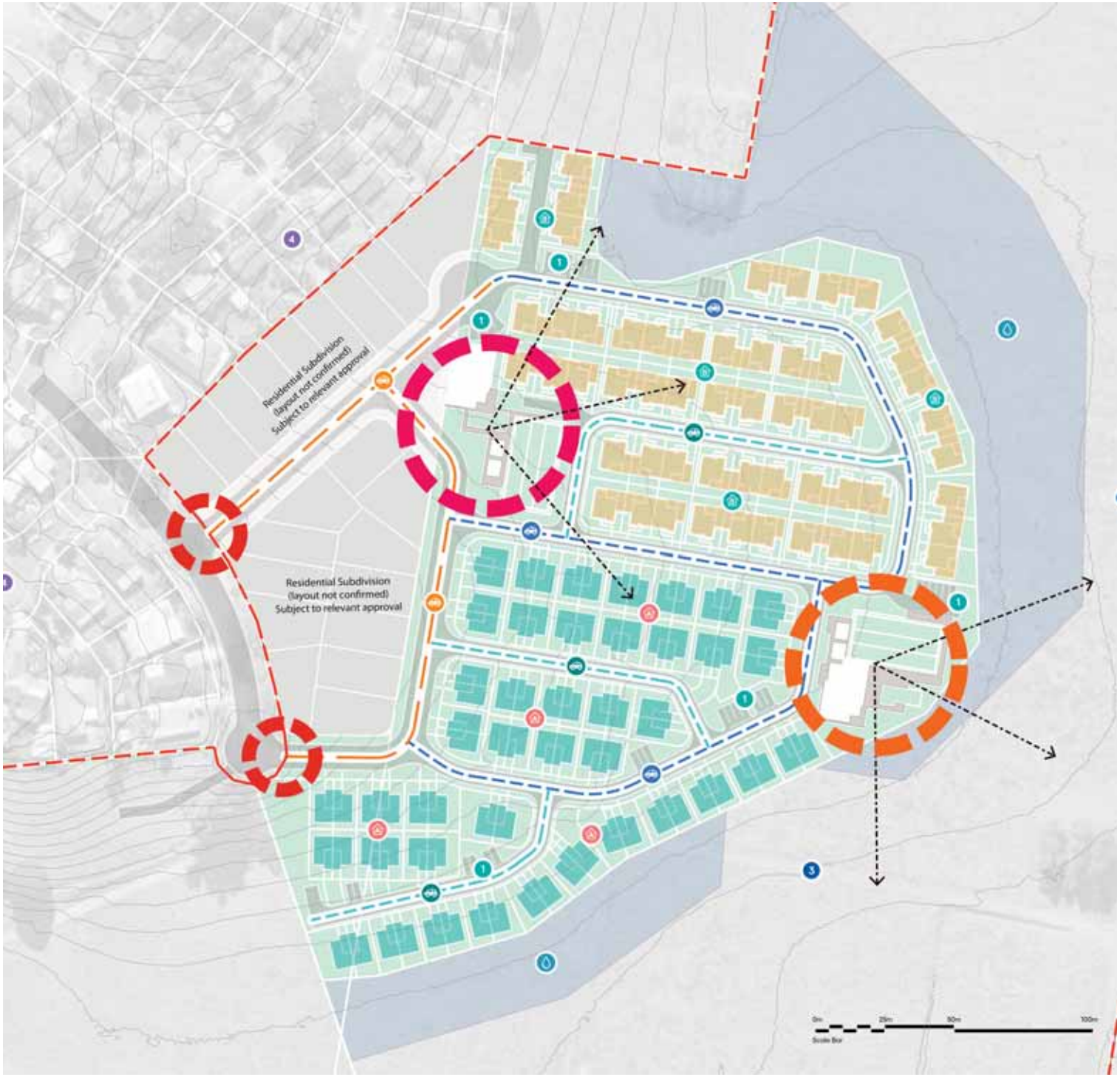
Area 1 Seniors: 45.272 m2

Area 2 Buffer: 20.039 m2

Area 3 Residential Subdivision: 12.728 m2

PLANIT

Elouera Terrace, Bray Park
Concept Layout Plan



Seniors Housing Type 1A
Seniors Housing Lots 18m depth average.
Average Lot Size 150m²
Single Storey Attached Dwellings in groups of 2-3
Typical template used: 2 bedroom, single carpark per dwelling (one covered)
Yield: 82

Seniors Housing Type 1B
Seniors Housing Lots 18m depth average.
Average Lot Size 200m² - 250m²
Single Storey Attached Dwellings in groups of 2-3
Typical template used: 2-3 bedroom, 2 x tandem carparks per dwelling (one covered)
Yield: 57

Primary Access Street (Indicative)
16.0m wide road reserve, 9.0m sealed. TSC 'Wider Access Street'. This street provides a loop road through the development, connecting the primary and secondary site entry points to Elouera Terrace.

Indicative Internal Street
10.0m wide road reserve, 6.0m sealed.

Indicative Internal Laneway
8.0m wide laneway reserve, 5.0m sealed.

Low Flow Flood Area
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Indicative Community Facilities 01
Community facilities area. Primarily services the northern residential precinct (Residential Type C). Potential to include pool area, lawn bowls, landscaped gardens, areas of open turf. Community use building footprint illustrated approximately 350-400m². Located to take advantage of views to the east and south across existing farmland. Located at the eastern end of the primary site entry to allow clear line of site through the development of the primary community facilities and to long views to the east.

Indicative Community Facilities 02
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Indicative Site Entry
Site entry off Elouera Terrace. To be confirmed through residential subdivision layout. Subject to relevant approval.

Visitor Parking
Visitor carparking indicative locations illustrated. Requirement based on number of dwelling sites: 201
Car parking located primarily in close proximity to community facilities areas(qty 20) with balance of spaces located throughout the development where layout permits.
Total visitor carparks illustrated: 40.

Existing Agricultural Land
Working farm located to balance of lot. Potential to provide informal pedestrian access from the proposed development (from Community Facilities 01) to facilitate potential for community gardens and integration of these landuses.

Existing Residential Area

Indicative Bus Pick up point

Area 1 Seniors: 45,272 m2

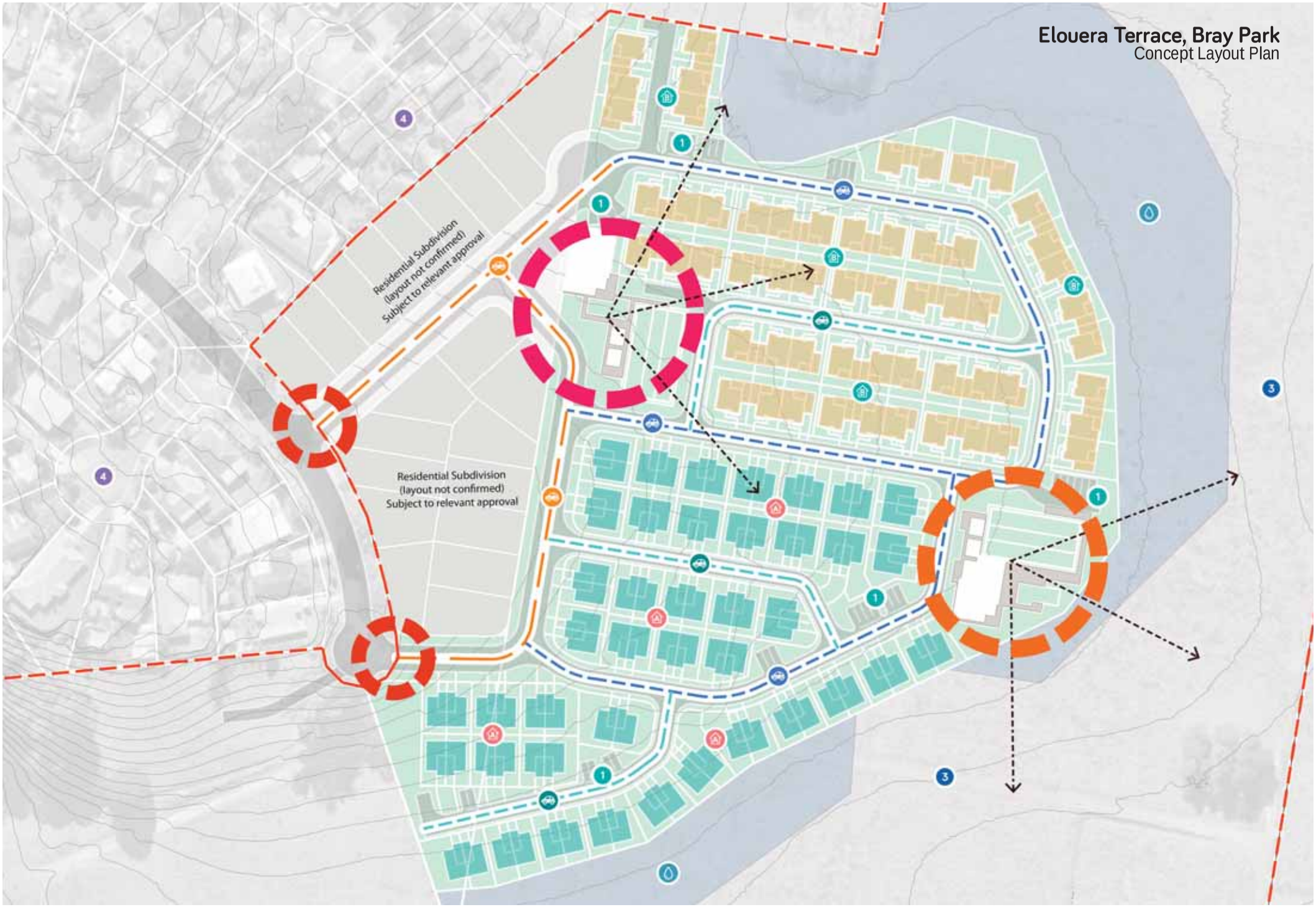
Area 2 Buffer: 20,039 m2

Area 3 Residential Subdivision: 12,728 m2

PLANIT

Elouera Terrace, Bray Park

Concept Layout Plan


Elouera Terrace, Bray Park
Concept Layout Plan
Residential Subdivision
(layout not confirmed)
Subject to relevant approval
Residential Subdivision
(layout not confirmed)
Subject to relevant approval

Elouera Terrace, Bray Park
Concept Layout Plan

Seniors Housing Type 1A
Seniors Housing Lots 18m depth average.
Average Lot Size 150m²
Single Storey Attached Dwellings in groups of 2-3
Typical template used: 2 bedroom, single carpark per dwelling (one covered)
Yield: 82

Seniors Housing Type 1B
Seniors Housing Lots 18m depth average.
Average Lot Size 200m² - 250m²
Single Storey Attached Dwellings in groups of 2-3
Typical template used: 2-3 bedroom, 2 x tandem carparks per dwelling (one covered)
Yield: 57

Primary Access Street (Indicative)
16.0m wide road reserve, 9.0m sealed. TSC 'Wider Access Street'. This street provides a loop road through the development, connecting the primary and secondary site entry points to Elouera Terrace.

Indicative Internal Street
10.0m wide road reserve, 6.0m sealed.

Indicative Internal Laneway
8.0m wide laneway reserve, 6.0m sealed.

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Community facilities area. Primarily services the northern residential precinct (Residential Type C). Potential to include pool area, lawn bowls, landscaped gardens, areas of open turf. Community use building, footprint illustrated approximately 350-400m². Located to take advantage of views to the east and south across existing farmland. Located at the eastern end of the primary site entry to allow clear line of site through the development of the primary community facilities and to long views to the east.

Indicative Community Facilities 02
Community facilities area. Primarily services the southern residential precinct (Residential Type B). Potential to include pool area, lawn bowls, landscaped gardens, areas of open turf. Community use building, footprint illustrated approximately 350-400m² . Located on an elevated site to take advantage of views to the east and south across the residential precincts and over existing farmland. Located at the primary entry of the estate to serve as the 'entry statement' of the development and create a clear and legible arrival.

Indicative Site Entry
Site entry off Elouera Terrace. To be confirmed through residential subdivision layout. Subject to relevant approval.

Visitor Parking
Visitor carparking indicative locations illustrated. Requirement based on nember of dwelling sites: 20.
Car parking located primarily in close proximity to community facilities areas(qty: 20) with balance of spaces located throughout the development where layout permits.
Total visitor carparks illustrated: 40.

Existing Agricultural Land
Working farm located to balance of lot. Potential to provide informal pedestrian access from the proposed development (from Community Facilities 01) to facilitate potential for community gardens and integration of these landuses.

Existing Residential Area

Indicative Bus Pick up point

Area 1 Seniors: 45.272 m2

Area 2 Buffer: 20.039 m2

Area 3 Residential Subdivision: 12.728 m2

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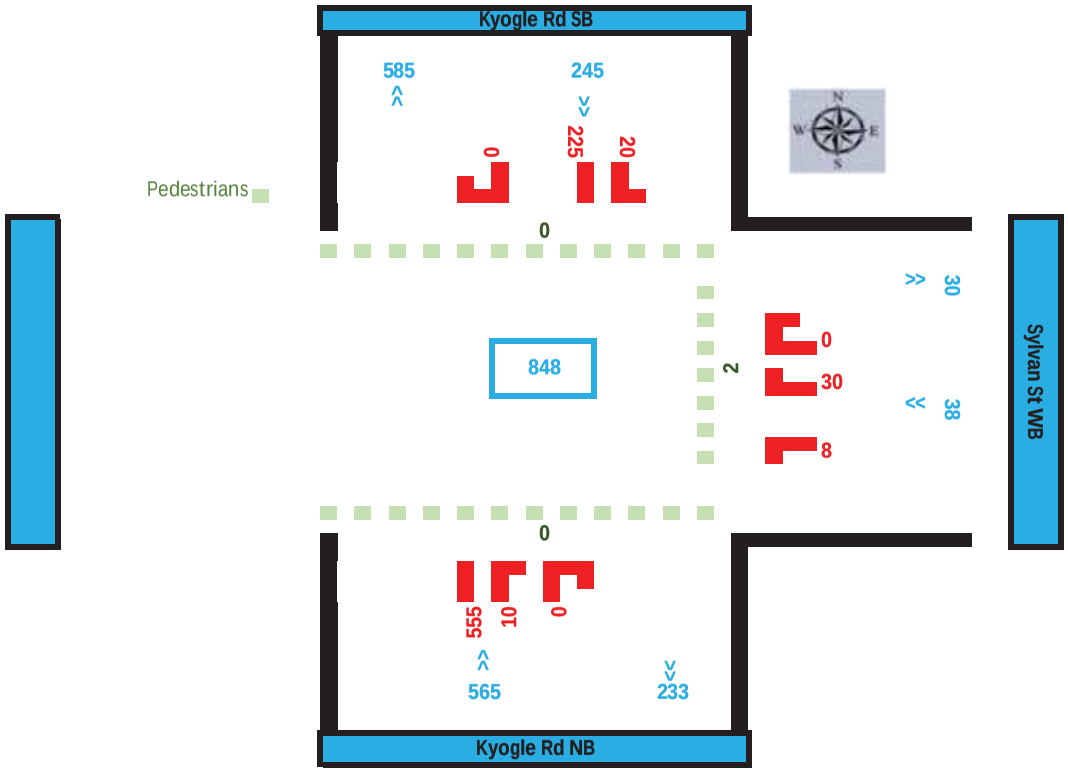
Attachment B: Intersection Survey Results

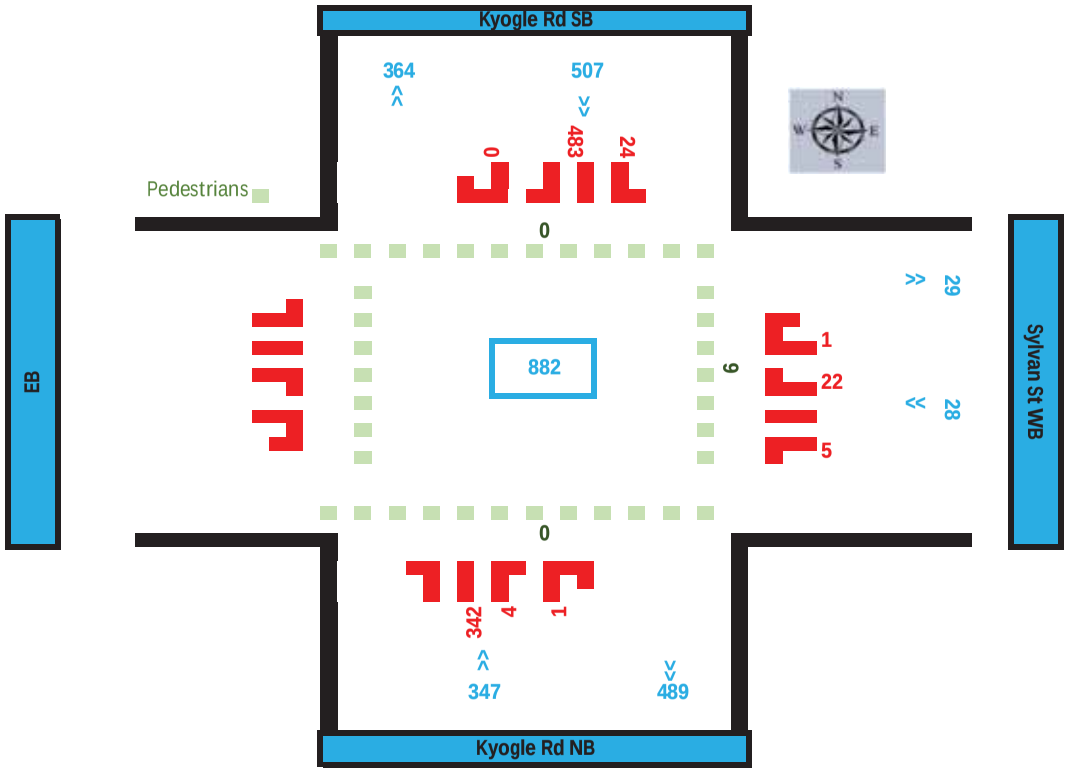
Turning Movement Count Summary

Site ID:	1
Location:	Kyogle Rd & Sylvan St, Bray Park
Date:	21-Mar-2019
Surveyed Time:	6:00 AM to 9:00 AM
Weather:	Fine
Data for hour starting:	8:00 AM to 9:00 AM
Vehicle Class:	ALL VEHICLES



Turning Movement Count Summary

Site ID:	1
Location:	Kyogle Rd & Sylvan St, Bray Park
Date:	21-Mar-2019
Surveyed Time:	3:00 PM to 6:00 PM
Weather:	Fine
Data for hour starting:	3:15 PM to 4:15 PM
Vehicle Class:	ALL VEHICLES



Attachment C: Traffic Diagrams

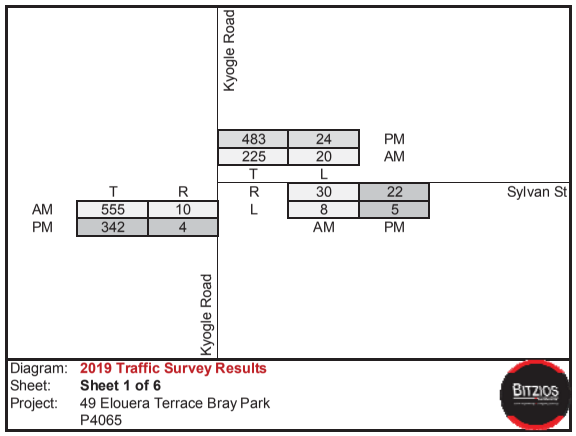


Diagram: **2019 Traffic Survey Results**
Sheet: **Sheet 1 of 6**
Project: 49 Elouera Terrace Bray Park
P4065

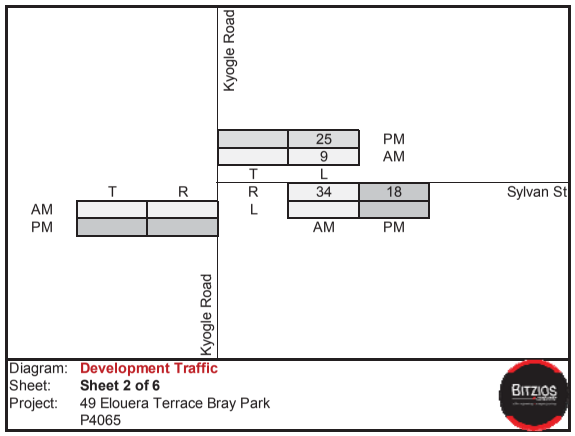


Diagram: **Development Traffic**
Sheet: **Sheet 2 of 6**
Project: 49 Elouera Terrace Bray Park
P4065

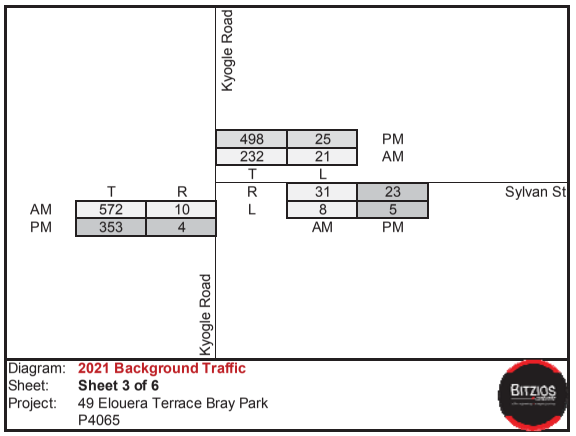


Diagram: **2021 Background Traffic**
Sheet: **Sheet 3 of 6**
Project: 49 Elouera Terrace Bray Park
P4065

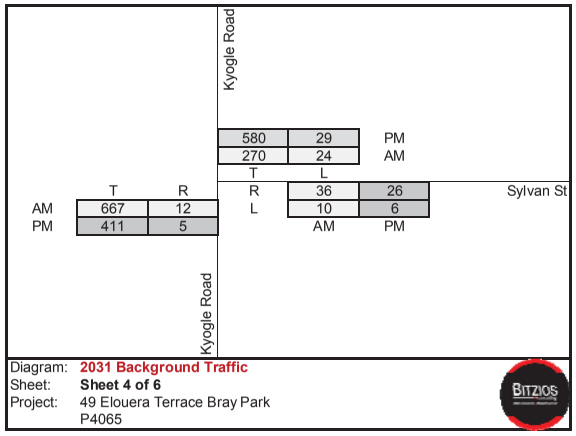


Diagram: **2031 Background Traffic**
Sheet: **Sheet 4 of 6**
Project: 49 Elouera Terrace Bray Park
P4065

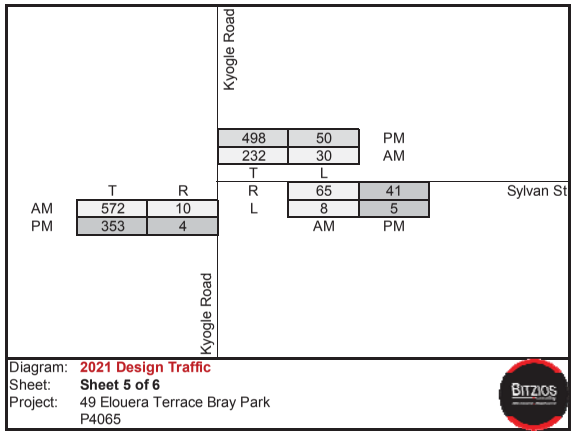


Diagram: **2021 Design Traffic**
Sheet: **Sheet 5 of 6**
Project: 49 Elouera Terrace Bray Park
P4065

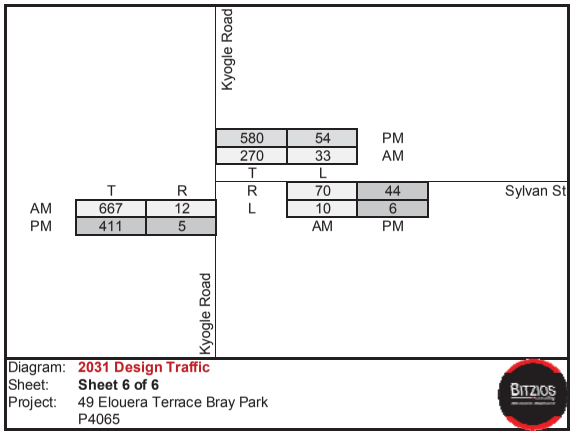


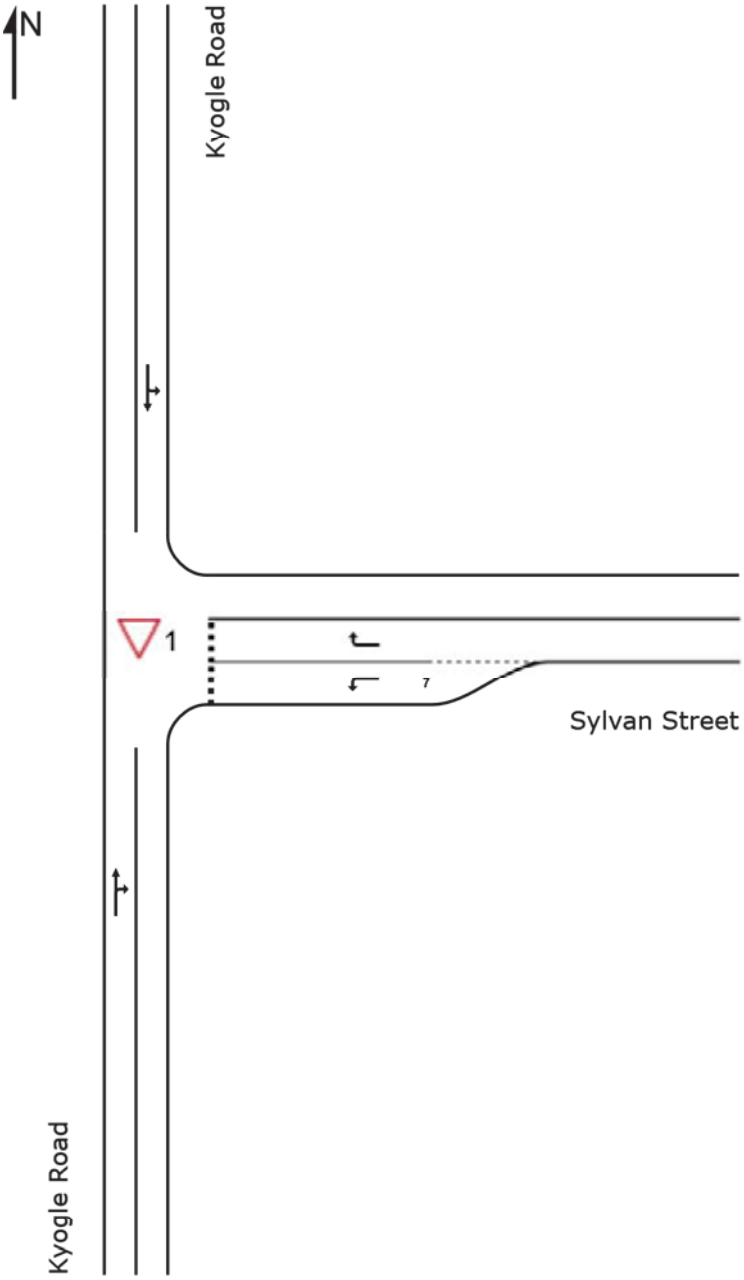
Diagram: **2031 Design Traffic**
Sheet: **Sheet 6 of 6**
Project: 49 Elouera Terrace Bray Park
P4065

Attachment D: SIDRA Outputs

SITE LAYOUT

Site: 1 [2019BG AM]

Kyogle Road / Sylvan Street Priority-Controlled Intersection
2019 Survey Traffic
AM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 1 [2019BG AM]

Kyogle Road / Sylvan Street Priority-Controlled Intersection
2019 Survey Traffic
AM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Kyogle Road												
2	T1	584	3.0	0.314	0.0	LOS A	0.1	0.8	0.02	0.01	0.02	49.9
3	R2	11	10.0	0.314	6.1	LOS A	0.1	0.8	0.02	0.01	0.02	49.3
Approach		595	3.1	0.314	0.1	NA	0.1	0.8	0.02	0.01	0.02	49.9
East: Sylvan Street												
4	L2	8	0.0	0.006	5.3	LOS A	0.0	0.2	0.31	0.51	0.31	45.9
6	R2	32	7.0	0.067	10.3	LOS B	0.2	1.5	0.64	0.84	0.64	43.2
Approach		40	5.5	0.067	9.2	LOS A	0.2	1.5	0.57	0.77	0.57	43.7
North: Kyogle Road												
7	L2	21	10.0	0.142	4.7	LOS A	0.0	0.0	0.00	0.04	0.00	49.1
8	T1	237	11.0	0.142	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		258	10.9	0.142	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles		893	5.5	0.314	0.6	NA	0.2	1.5	0.04	0.05	0.04	49.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1 [2019BG PM]

Kyogle Road / Sylvan Street Priority-Controlled Intersection
2019 Survey Traffic
PM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Kyogle Road												
2	T1	360	8.0	0.200	0.1	LOS A	0.1	0.5	0.02	0.01	0.02	49.9
3	R2	4	25.0	0.200	8.7	LOS A	0.1	0.5	0.02	0.01	0.02	49.1
Approach		364	8.2	0.200	0.2	NA	0.1	0.5	0.02	0.01	0.02	49.9
East: Sylvan Street												
4	L2	5	20.0	0.006	7.2	LOS A	0.0	0.2	0.50	0.60	0.50	44.9
6	R2	23	5.0	0.052	10.6	LOS B	0.2	1.2	0.65	0.84	0.65	43.0
Approach		28	7.8	0.052	10.0	LOS A	0.2	1.2	0.63	0.80	0.63	43.3
North: Kyogle Road												
7	L2	25	10.0	0.294	4.7	LOS A	0.0	0.0	0.00	0.03	0.00	49.2
8	T1	508	11.0	0.294	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.8
Approach		534	11.0	0.294	0.3	NA	0.0	0.0	0.00	0.03	0.00	49.8
All Vehicles		926	9.8	0.294	0.5	NA	0.2	1.2	0.03	0.04	0.03	49.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1 [2021BG AM]

Kyogle Road / Sylvan Street Priority-Controlled Intersection
2021 Forecast Background Traffic
AM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Kyogle Road												
2	T1	602	3.0	0.323	0.0	LOS A	0.1	0.9	0.02	0.01	0.02	49.9
3	R2	11	10.0	0.323	6.2	LOS A	0.1	0.9	0.02	0.01	0.02	49.3
Approach		613	3.1	0.323	0.1	NA	0.1	0.9	0.02	0.01	0.02	49.9
East: Sylvan Street												
4	L2	8	0.0	0.006	5.3	LOS A	0.0	0.2	0.32	0.51	0.32	45.9
6	R2	33	7.0	0.072	10.6	LOS B	0.2	1.6	0.65	0.84	0.65	43.0
Approach		41	5.6	0.072	9.5	LOS A	0.2	1.6	0.59	0.78	0.59	43.5
North: Kyogle Road												
7	L2	22	10.0	0.147	4.7	LOS A	0.0	0.0	0.00	0.04	0.00	49.1
8	T1	244	11.0	0.147	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		266	10.9	0.147	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles		920	5.5	0.323	0.6	NA	0.2	1.6	0.04	0.05	0.04	49.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1 [2021BG PM]

Kyogle Road / Sylvan Street Priority-Controlled Intersection
2021 Forecast Background Traffic
PM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Kyogle Road												
2	T1	372	8.0	0.206	0.1	LOS A	0.1	0.6	0.02	0.01	0.02	49.9
3	R2	4	25.0	0.206	8.9	LOS A	0.1	0.6	0.02	0.01	0.02	49.1
Approach		376	8.2	0.206	0.2	NA	0.1	0.6	0.02	0.01	0.02	49.9
East: Sylvan Street												
4	L2	5	20.0	0.007	7.4	LOS A	0.0	0.2	0.51	0.60	0.51	44.8
6	R2	24	5.0	0.056	11.0	LOS B	0.2	1.3	0.67	0.85	0.67	42.8
Approach		29	7.7	0.056	10.4	LOS B	0.2	1.3	0.64	0.81	0.64	43.2
North: Kyogle Road												
7	L2	26	10.0	0.303	4.7	LOS A	0.0	0.0	0.00	0.03	0.00	49.2
8	T1	524	11.0	0.303	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.8
Approach		551	11.0	0.303	0.3	NA	0.0	0.0	0.00	0.03	0.00	49.8
All Vehicles		956	9.8	0.303	0.5	NA	0.2	1.3	0.03	0.04	0.03	49.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1 [2021DES Tot AM]

Kyogle Road / Sylvan Street Priority-Controlled Intersection
2021 Design Traffic
AM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Kyogle Road												
2	T1	602	3.0	0.324	0.0	LOS A	0.1	0.9	0.02	0.01	0.02	49.9
3	R2	11	10.0	0.324	6.2	LOS A	0.1	0.9	0.02	0.01	0.02	49.3
Approach		613	3.1	0.324	0.1	NA	0.1	0.9	0.02	0.01	0.02	49.9
East: Sylvan Street												
4	L2	8	0.0	0.006	5.3	LOS A	0.0	0.2	0.32	0.51	0.32	45.9
6	R2	67	7.0	0.150	11.0	LOS B	0.5	3.5	0.68	0.85	0.68	42.8
Approach		76	6.2	0.150	10.4	LOS B	0.5	3.5	0.64	0.81	0.64	43.1
North: Kyogle Road												
7	L2	31	10.0	0.152	4.7	LOS A	0.0	0.0	0.00	0.06	0.00	49.0
8	T1	244	11.0	0.152	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	49.6
Approach		275	10.9	0.152	0.5	NA	0.0	0.0	0.00	0.06	0.00	49.6
All Vehicles		963	5.6	0.324	1.1	NA	0.5	3.5	0.06	0.09	0.06	49.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1 [2021DES Tot PM]

Kyogle Road / Sylvan Street Priority-Controlled Intersection
2021 Design Traffic
PM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Kyogle Road												
2	T1	372	8.0	0.206	0.1	LOS A	0.1	0.6	0.02	0.01	0.02	49.9
3	R2	4	25.0	0.206	9.3	LOS A	0.1	0.6	0.02	0.01	0.02	49.1
Approach		376	8.2	0.206	0.2	NA	0.1	0.6	0.02	0.01	0.02	49.9
East: Sylvan Street												
4	L2	5	20.0	0.007	7.4	LOS A	0.0	0.2	0.51	0.60	0.51	44.8
6	R2	41	5.0	0.098	11.4	LOS B	0.3	2.2	0.69	0.86	0.69	42.6
Approach		46	6.7	0.098	10.9	LOS B	0.3	2.2	0.67	0.83	0.67	42.9
North: Kyogle Road												
7	L2	52	10.0	0.318	4.7	LOS A	0.0	0.0	0.00	0.05	0.00	49.0
8	T1	524	11.0	0.318	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	49.7
Approach		576	10.9	0.318	0.5	NA	0.0	0.0	0.00	0.05	0.00	49.6
All Vehicles		998	9.7	0.318	0.8	NA	0.3	2.2	0.04	0.07	0.04	49.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1 [2031BG AM]

Kyogle Road / Sylvan Street Priority-Controlled Intersection
2031 Forecast Background Traffic
AM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Kyogle Road												
2	T1	702	3.0	0.378	0.1	LOS A	0.2	1.3	0.03	0.01	0.03	49.9
3	R2	13	10.0	0.378	6.7	LOS A	0.2	1.3	0.03	0.01	0.03	49.3
Approach		715	3.1	0.378	0.2	NA	0.2	1.3	0.03	0.01	0.03	49.9
East: Sylvan Street												
4	L2	11	0.0	0.008	5.5	LOS A	0.0	0.2	0.35	0.53	0.35	45.8
6	R2	38	7.0	0.107	13.0	LOS B	0.3	2.4	0.74	0.88	0.74	41.8
Approach		48	5.5	0.107	11.4	LOS B	0.3	2.4	0.65	0.80	0.65	42.6
North: Kyogle Road												
7	L2	25	10.0	0.171	4.7	LOS A	0.0	0.0	0.00	0.04	0.00	49.1
8	T1	284	11.0	0.171	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		309	10.9	0.171	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles		1073	5.5	0.378	0.7	NA	0.3	2.4	0.05	0.06	0.05	49.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1 [2031BG PM]

Kyogle Road / Sylvan Street Priority-Controlled Intersection
2031 Forecast Background Traffic
PM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Kyogle Road												
2	T1	433	8.0	0.242	0.2	LOS A	0.1	0.9	0.03	0.01	0.03	49.8
3	R2	5	25.0	0.242	10.5	LOS B	0.1	0.9	0.03	0.01	0.03	49.0
Approach		438	8.2	0.242	0.3	NA	0.1	0.9	0.03	0.01	0.03	49.8
East: Sylvan Street												
4	L2	6	20.0	0.009	8.1	LOS A	0.0	0.3	0.55	0.65	0.55	44.4
6	R2	27	5.0	0.082	13.5	LOS B	0.2	1.8	0.75	0.89	0.75	41.6
Approach		34	7.8	0.082	12.5	LOS B	0.2	1.8	0.71	0.84	0.71	42.1
North: Kyogle Road												
7	L2	31	10.0	0.353	4.7	LOS A	0.0	0.0	0.00	0.03	0.00	49.1
8	T1	611	11.0	0.353	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.8
Approach		641	11.0	0.353	0.3	NA	0.0	0.0	0.00	0.03	0.00	49.8
All Vehicles		1113	9.8	0.353	0.6	NA	0.2	1.8	0.03	0.04	0.03	49.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1 [2031DES Tot AM]

Kyogle Road / Sylvan Street Priority-Controlled Intersection
2031 Design Traffic
AM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Kyogle Road												
2	T1	702	3.0	0.378	0.1	LOS A	0.2	1.3	0.03	0.01	0.03	49.9
3	R2	13	10.0	0.378	6.8	LOS A	0.2	1.3	0.03	0.01	0.03	49.3
Approach		715	3.1	0.378	0.2	NA	0.2	1.3	0.03	0.01	0.03	49.9
East: Sylvan Street												
4	L2	11	0.0	0.008	5.5	LOS A	0.0	0.2	0.35	0.53	0.35	45.8
6	R2	73	7.0	0.206	13.8	LOS B	0.7	4.9	0.76	0.91	0.81	41.4
Approach		83	6.1	0.206	12.7	LOS B	0.7	4.9	0.71	0.86	0.75	41.9
North: Kyogle Road												
7	L2	34	10.0	0.176	4.7	LOS A	0.0	0.0	0.00	0.06	0.00	49.0
8	T1	284	11.0	0.176	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	49.6
Approach		318	10.9	0.176	0.5	NA	0.0	0.0	0.00	0.06	0.00	49.6
All Vehicles		1116	5.6	0.378	1.2	NA	0.7	4.9	0.07	0.09	0.07	49.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1 [2031DES Tot PM]

Kyogle Road / Sylvan Street Priority-Controlled Intersection
2031 Design Traffic
PM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Kyogle Road												
2	T1	433	8.0	0.242	0.2	LOS A	0.1	1.0	0.03	0.01	0.03	49.8
3	R2	5	25.0	0.242	10.9	LOS B	0.1	1.0	0.03	0.01	0.03	49.0
Approach		438	8.2	0.242	0.3	NA	0.1	1.0	0.03	0.01	0.03	49.8
East: Sylvan Street												
4	L2	6	20.0	0.009	8.1	LOS A	0.0	0.3	0.55	0.65	0.55	44.4
6	R2	45	5.0	0.138	14.1	LOS B	0.4	3.0	0.77	0.89	0.77	41.3
Approach		52	6.8	0.138	13.4	LOS B	0.4	3.0	0.74	0.86	0.74	41.7
North: Kyogle Road												
7	L2	56	10.0	0.368	4.7	LOS A	0.0	0.0	0.00	0.05	0.00	49.0
8	T1	611	11.0	0.368	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	49.7
Approach		666	10.9	0.368	0.4	NA	0.0	0.0	0.00	0.05	0.00	49.6
All Vehicles		1156	9.7	0.368	1.0	NA	0.4	3.0	0.04	0.07	0.05	49.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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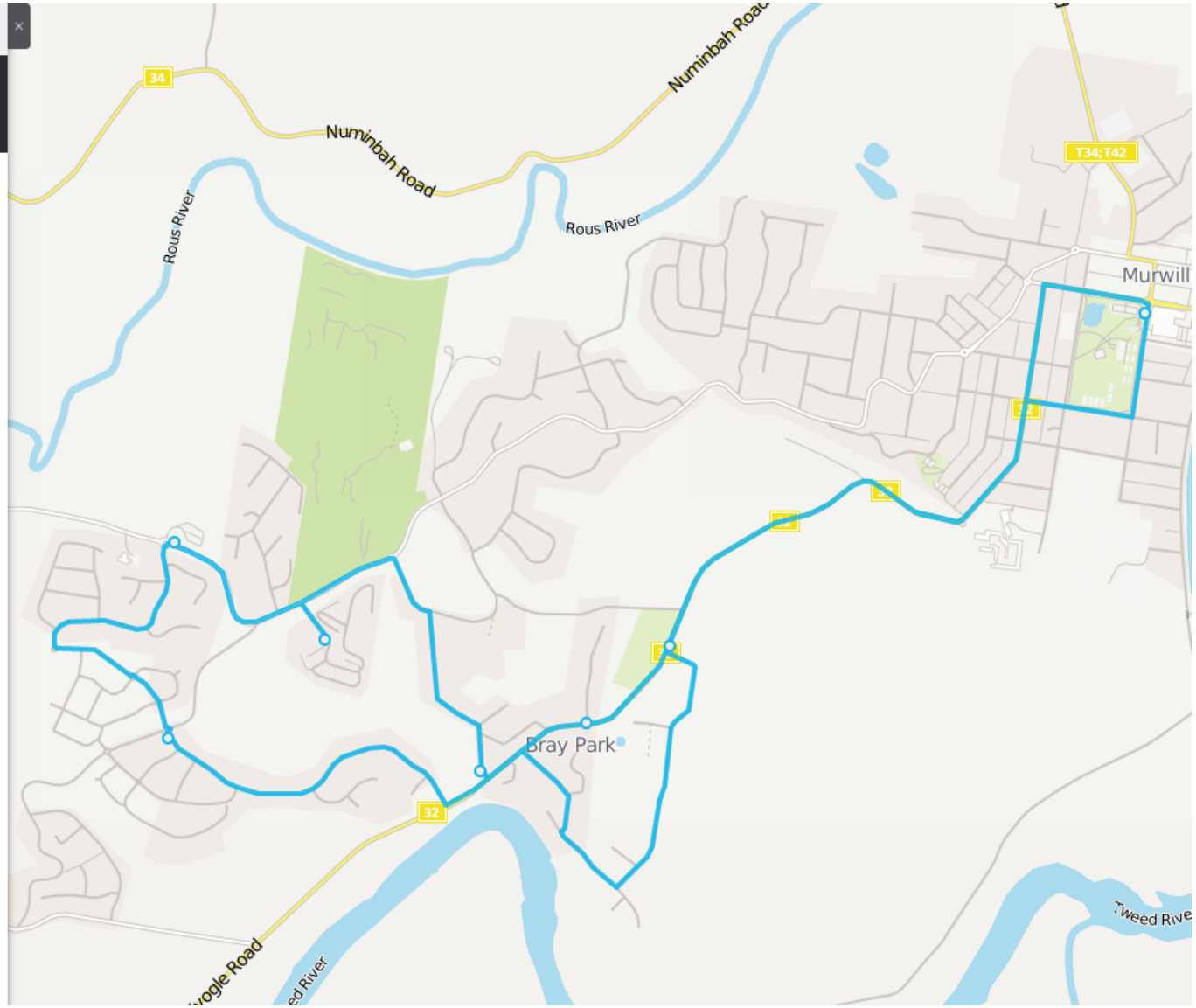
Appendix H

Brisbane St Before Wollumbin St

Today Change day	First 08:25	Last 16:45
621A Sunnyside Mall To Golden Links (Loop Service)	08:25	
621A Sunnyside Mall To Golden Links (Loop Service)	08:55	
621A Sunnyside Mall To Golden Links (Loop Service)	09:30	
621A Sunnyside Mall To Golden Links (Loop Service)	10:00	
621A Sunnyside Mall To Golden Links (Loop Service)	10:35	
621A Sunnyside Mall To Golden Links (Loop Service)	11:05	
621A Sunnyside Mall To Golden Links (Loop Service)	11:40	
621A Sunnyside Mall To Golden Links (Loop Service)	12:10	
621A Sunnyside Mall To Golden Links (Loop Service)	13:10	
621A Sunnyside Mall To Golden Links (Loop Service)	13:40	
621A Sunnyside Mall To Golden Links (Loop Service)	16:15	
621A Sunnyside Mall To Golden Links (Loop Service)	16:45	



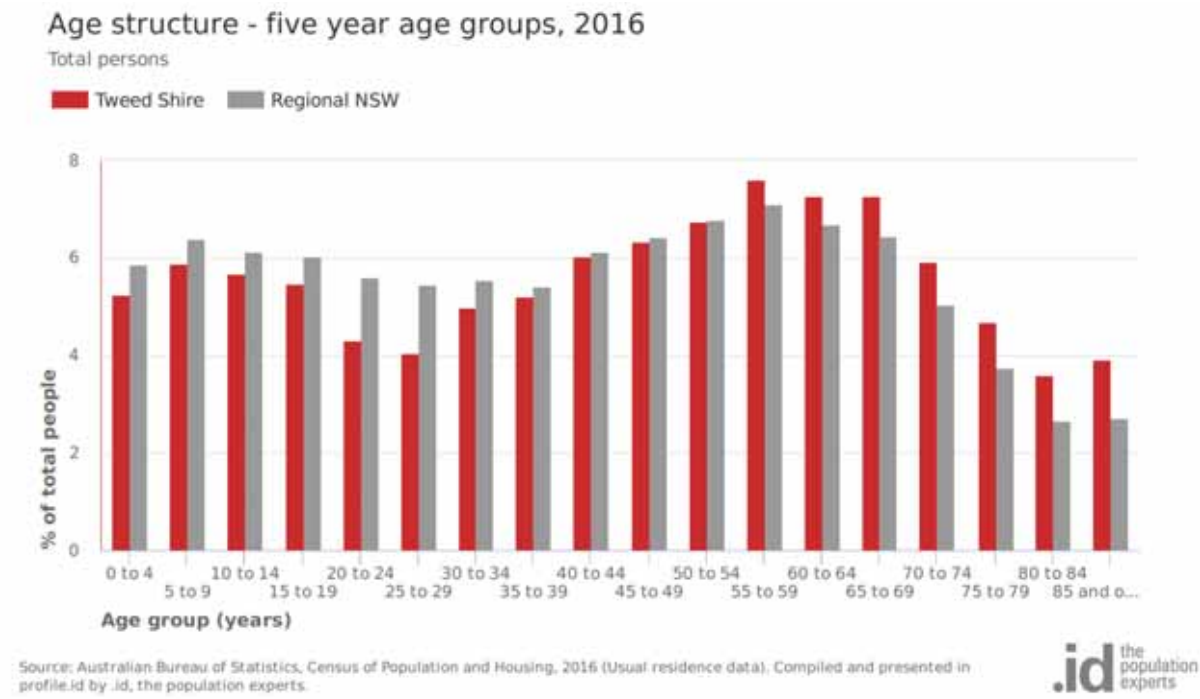
Appendix I

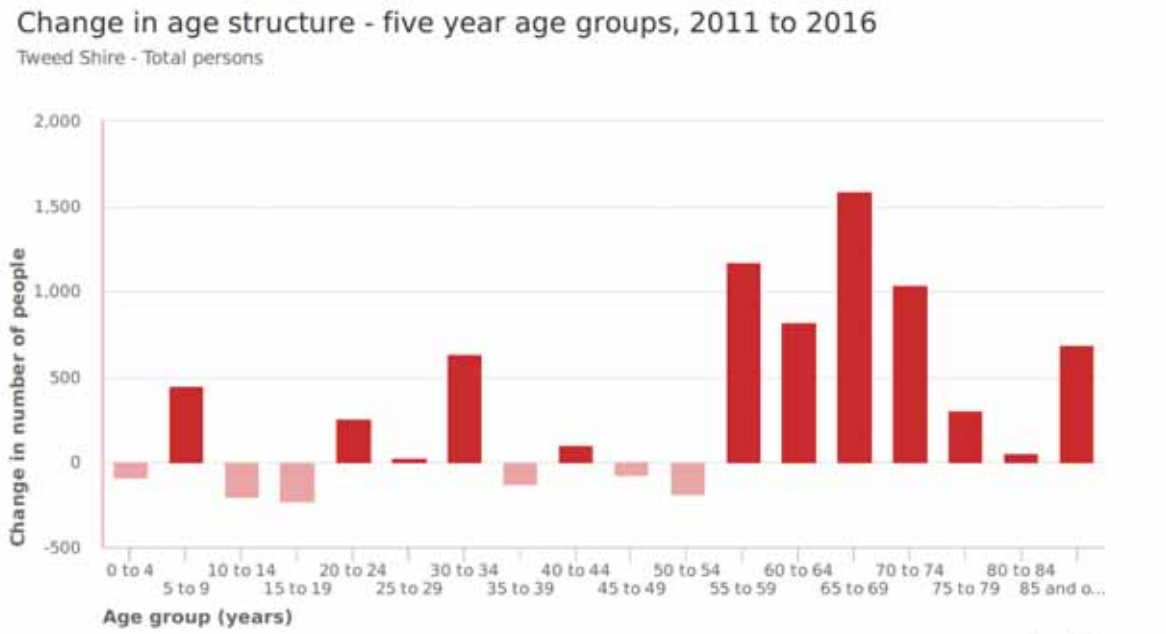
Tweed Head Population Statistics 2016 summary

Data sourced from Australian Bureau of Statistics and Tweed Shire Council Economic Profile

Age structure - Five year age groups

Tweed Shire - Total persons (Usual residence)	2016			2011			Change
Five year age groups (years)	Number	%	Regional NSW %	Number	%	Regional NSW %	2011 to 2016
0 to 4	4,779	5.2	5.8	4,870	5.7	6.3	-91
5 to 9	5,365	5.9	6.4	4,914	5.8	6.3	+451
10 to 14	5,183	5.7	6.1	5,380	6.3	6.7	-197
15 to 19	4,990	5.5	6.0	5,210	6.1	6.6	-220
20 to 24	3,929	4.3	5.6	3,670	4.3	5.6	+259
25 to 29	3,675	4.0	5.5	3,643	4.3	5.2	+32
30 to 34	4,542	5.0	5.5	3,908	4.6	5.2	+634
35 to 39	4,763	5.2	5.4	4,883	5.7	6.1	-120
40 to 44	5,502	6.0	6.1	5,400	6.3	6.5	+102
45 to 49	5,771	6.3	6.4	5,846	6.9	6.9	-75
50 to 54	6,145	6.7	6.8	6,323	7.4	7.2	-178
55 to 59	6,942	7.6	7.1	5,769	6.8	6.7	+1,173
60 to 64	6,639	7.3	6.7	5,818	6.8	6.5	+821
65 to 69	6,637	7.3	6.4	5,049	5.9	5.4	+1,588
70 to 74	5,392	5.9	5.0	4,353	5.1	4.3	+1,039
75 to 79	4,260	4.7	3.7	3,953	4.6	3.4	+307
80 to 84	3,271	3.6	2.6	3,215	3.8	2.7	+56
85 and over	3,581	3.9	2.7	2,902	3.4	2.3	+679
Total population	**91,366**	**100.0**	**100.0**	**85,106**	**100.0**	**100.0**	**+6,260**





Source: Australian Bureau of Statistics, Census of Population and Housing, 2011 and 2016 (Usual residence data). Compiled and presented in profile.id by .id, the population experts.

Dominant groups

Analysis of the five year age groups of Tweed Shire in 2016 compared to Regional NSW shows that there was a lower proportion of people in the younger age groups (under 15) and a higher proportion of people in the older age groups (65+).

Overall, 16.8% of the population was aged between 0 and 15, and 25.3% were aged 65 years and over, compared with 18.4% and 20.6% respectively for Regional NSW.

The major differences between the age structure of Tweed Shire and Regional NSW were:

- A *larger* percentage of persons aged 85 and over (3.9% compared to 2.7%)
- A *larger* percentage of persons aged 80 to 84 (3.6% compared to 2.6%)
- A *smaller* percentage of persons aged 25 to 29 (4.0% compared to 5.5%)
- A *smaller* percentage of persons aged 20 to 24 (4.3% compared to 5.6%)

Emerging groups

From 2011 to 2016, Tweed Shire's population increased by 6,260 people (7.4%). This represents an average annual population change of 1.43% per year over the period.

The largest changes in age structure in this area between 2011 and 2016 were in the age groups:

- 65 to 69 (+1,588 persons)
- 55 to 59 (+1,173 persons)
- 70 to 74 (+1,039 persons)
- 60 to 64 (+821 persons)

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Appendix J

Urban Growth Area Variation Principles	
Policy	The variation needs to be consistent with the objectives and outcomes in the North Coast Regional Plan 2036 and any relevant Section 117 Directions and State Environmental Planning Policies, and should consider the intent of any applicable local growth management strategy

Comment:

While the proposal does not rely on a variation to the Urban Growth Area Principles, this SCC seeks to demonstrate that this site is suitable for more intensive development.

The proposal would provide new seniors housing supply and diversity on land which adjoins an existing urban settlement and in an area particularly suited for affordable and seniors housing opportunity. Development of the land would not impact significant environmental, aboriginal or farmland resources and result in the logical rounding off of the developable area of Bray Park. Development of the site is aligned with existing infrastructure. Extensions to existing services would not generate additional cost to Government.

The proposal in this regard, and as discussed throughout this SCC request is consistent with the objectives and outcomes in the North Coast Regional Plan, is justified against the relevant section 9.1 (former 117) Directions and SEPPs and meets the intent of the Tweed Urban and Employment Lands Release Strategy 2009.

Infrastructure	The variation needs to consider the use of committed and planned major transport, water and sewerage infrastructure, and have no cost to government. The variation should only be permitted if adequate and cost-effective infrastructure can be provided to match the expected population.

Comment:

The site is located on the periphery of the Bray Park residential area. Power, water, sewer and telecommunication services are currently available to the property.

Preliminary engineering assessments have been undertaken to determine various civil matters including traffic and access, water and sewer reticulation, stormwater drainage, electricity and communications.

Environmental and Farmland Protection	The variation should avoid areas: • of high environmental or heritage value; and • mapped as important farmland, unless consistent with the interim variation criteria prior to finalising the farmland mapping review.

Comment:

Environmental or heritage value

The site is predominantly clear of vegetation and used for low scale grazing purposes. The likelihood of the land containing high environmental or heritage value is low.

With that said, measures to protect areas of vegetation and cultural significance can be determined under any future DA that seeks to undertake works onsite.

Important farmland

The site is mapped as important farmland. The use of the land as seniors housing is consistent with the Important Farmland Interim Variation Criteria as discussed further below.

The proposal is supported by an agricultural land use capability assessment which also confirms that the land is not capable of supporting sustainable agricultural production.

Land Use Conflict	The variation must be appropriately separated from incompatible land uses, including agricultural activities, sewage treatment plants, waste facilities and productive resource lands.

Comment:

The site is located at the periphery of developable land of Bray Park and will provide appropriate separation and interface between the seniors housing and rural operations. Initial site investigations and discussion with Tim Fitzroy (Environmental Health) has outlined preliminary buffer and transition considerations which will continue to develop as part of future DA processes.

The proposal is also supported by an agricultural land use capability assessment which confirms that seniors housing on the land would not increase the likelihood of conflict and does not impact on current or future agricultural activities of the site or in the locality.

The site is close to a water treatment facility due north east, however this provides appropriate separation in excess of 200m, dense vegetation buffering and developed residential land (including roadway and dwellings). The proposal is therefore appropriately separated from incompatible land uses.

Avoiding Risks	The variation must avoid physically constrained land identified as: • flood prone; • bushfire-prone; • highly erodible; • having a severe slope; and • having acid sulfate soils

Comment:

The site contains mapped high flow and flood prone land, development is not proposed within any such areas. The site is mapped as containing Class 1, 2 and vegetation buffer bushfire mapped areas, no development is proposed within these areas. Further, the site is not highly erodible nor steep. The site contains mapped acid sulfate soils, the proposal is positioned generally within Class 5 mapped areas and appropriately considers this.

It is therefore submitted that the proposal avoids physically constrained land.

Heritage	The variation must protect and manage Aboriginal and non-Aboriginal heritage.

Comment:

The site is cleared and used for low scale grazing purposes. It is surrounded by land which has been developed for infrastructure, urban or rural residential purposes. The likelihood of aboriginal significance on the land is low.

Measures to manage cultural significance can be investigated and determined under any future DA that seeks to undertake works onsite. Alternatively, further detailed investigation could be undertaken as part of this planning proposal process to determine the significance of the land and if further site-specific provisions or development controls are required to manage it.

Coastal Area	Only minor and contiguous variations to urban growth areas in the coastal area will be considered due to its environmental sensitivity and the range of land uses competing for this limited area.

Comment:

The site is identified as Coastal Environment and Coastal Use area. However, the SCC footprint sits outside the Coastal Use area and is compatible as a logical extension to the developable land of Bray Park. While not a rezoning, the site is contiguous with urban growth area land and not environmentally sensitive land.

Important Farmland Interim Variation Criteria	
Land may be suitable for other uses other than farmland if:	
Agricultural Capability	• The land is isolated from other important farmland and is not capable of supporting sustainable agricultural production

Comment:

The proposal seeks to unlock a small portion of 'important farmland' approximately 4ha in area and directly adjoining residential lands north and west for seniors housing. This minor extension to the developable area of Bray Park does not result in isolation of the rural lands nor does this impact the capability of the site to support agricultural production. The area in question has been assessed through an Agricultural Assessment as low quality agricultural land.

The proposal retains the majority of the site and mapped 'important farmland' to facilitate ongoing operation of the site as a working farm. The land owner being a 3rd generation farmer of the land supports the proposal, acknowledging benefit in improving the interface and buffer conditions which are currently lacking.

Land use conflict	• The land use does not increase the likelihood of conflict and does not impact on current or future agricultural activities in the locality

Comment:

The site is located at the periphery of developable land of Bray Park and will provide appropriate separation and interface between the seniors housing and rural operations. Initial site investigations and discussion with Tim Fitzroy (Environmental Health) has outlined preliminary buffer and transition considerations which will continue to develop as part of future DA processes.

The proposal is also supported by an agricultural land use capability assessment which confirms that seniors housing on the land would not increase the likelihood of conflict and does not impact on current or future agricultural activities of the site or in the locality. With suitable consideration of buffering and transition, the proposal will improve the interaction between the residential, seniors and rural uses.

Infrastructure	• The delivery of infrastructure (utilities, transport, open space, communications and stormwater) required to service the land is physically and economically feasible at no cost to State and Local Government

Comment:

The site is located on the periphery of the Bray Park residential area. Power, water, sewer and telecommunication services are currently available to the property.

Preliminary engineering assessments have been undertaken to determine various civil matters including traffic and access, water and sewer reticulation, stormwater drainage, electricity and communications.

Environment and heritage	• The proposed land uses do not have an adverse impact on areas of high environmental value, and Aboriginal or historic heritage significance

Comment:

Environmental or heritage value

The site is predominantly clear of vegetation and used for low scale grazing purposes. The likelihood of the land containing high environmental or heritage value is low.

With that said, measures to protect areas of vegetation and cultural significance can be determined under any future DA that seeks to undertake works onsite.

Important Farmland Interim Variation Criteria	

Avoiding risk	• Risks associated with physically constrained land are identified and avoided, including:
	  • flood prone;
	  • bushfire-prone;
	  • highly erodible;
	  • severe slope; and
	  • acid sulfate soils.

Comment:

The site contains mapped high flow and flood prone land, development is not proposed within any such areas. The site is mapped as containing Class 1, 2 and vegetation buffer bushfire mapped areas, no development is proposed within these areas. Further, the site is not highly erodible, nor steep. The site contains mapped acid sulfate soils, the proposal is positioned generally within Class 5 mapped areas and appropriately considers this.

It is therefore submitted that the proposal identifies and avoids physically constrained land as suitable.