Sunrise Lifestyle Village: Planning Proposal

Proposed Amendment to Port Stephens LEP 2013

APU and Rezoning for
Lot 51 DP 1175028, Lot 3622 DP 622485 and Lot 2 DP 622229,
Nelson Bay Road, Bobs Farm

PORT STEPHENS COUNCIL

ATTACHMENTS

ATTACHMENT 1 – Locality Plan
ATTACHMENT 2 – Aboriginal Due Diligence Assessment
ATTACHMENT 3 – Streamline Biodiversity Development Assessment Report
ATTACHMENT 4 – Strategic Bushfire Study & Bushfire Assessment Report
ATTACHMENT 5 – Traffic and Parking Assessment
ATTACHMENT 6 – Concept Plan
ATTACHMENT 7 – Ausgrid Servicing Advice
ATTACHMENT 8 – Hunter Water Servicing Advice
ATTACHMENT 9 – Stormwater Strategy
ATTACHMENT 10 – Preliminary Contamination Assessment
ATTACHMENT 11 – Preliminary Acid Sulfate Soil Assessment
ATTACHMENT 12 – Response Table
ATTACHMENT 13 – Hunter Regional Plan 2041 Compliance Table

VERSION CONTROL

Version	Date	Author	Details
Final	7 November 2022	Jessica Bayley (ADW Johnson)	Final for submission to Council
Amended Final	21 March 2023	Stephanie van Dissel (ADW Johnson)	Amended Final for submission to DPE
Post Gateway	8 May 2023	Stephanie van Dissel (ADW Johnson)	Amended Final post Gateway
Post Gateway	12 May 2023	Jessica Bayley (ADW Johnson)	Amended Final Post Gateway (Minor Updates for Flooding)
Pre Exhibition	30 June 2023	Stephanie van Dissel (ADW Johnson)	Amended Final Post Gateway Agency Consultation

FILE NUMBERS

Council: 38-2021-20-1

Department: To be provided at lodgement on the Planning Portal.

SUMMARY

Subject Land:	Lot 51 DP 1175028 (“Lot 51”) 4011 Nelson Bay Road, Bobs Farm Lot 3622 DP 622485 (“Lot 3622”) 4029 Nelson Bay Road, Bobs Farm Lot 2 DP 622229 (“Lot 2”) 4045 Nelson Bay Road, Bobs Farm
Proponent:	Hometown Australia c/- ADW Johnson Pty Ltd 5 Pioneer Avenue Tuggerah NSW 2259
Proposed Changes:	Inclusion of the Subject Land within Schedule 1 as an Additional Permitted Use to permit a Caravan Park. Rezone part of site to C2 Environmental Conservation.
Area of Land:	13.715 ha
Lot yield:	The Planning Proposal has potential for approximately 62 additional dwellings on the Subject Land. The existing approved caravan park comprises 193 dwelling sites.

BACKGROUND

The Planning Proposal seeks to amend Port Stephens Local Environmental Plan 2013 (PSLEP) to permit 'caravan parks' on the Subject Land.

The Planning Proposal will regularise the approved existing use on part of the Subject Land (Lot 51), where an approved caravan park is located. The caravan park is approved under DA-16-2013-790-4 and comprises 193 sites on which manufactured homes are currently located, or being installed. It currently operates as an over 55s resort-style community, known as Sunrise Port Stephens.

Although approved, the current zoning of the site no longer permits this use and the development operates relying upon existing use rights.

The Planning Proposal seeks to facilitate the extension of this use to the two (2) parcels of land east of Lot 51 DP 1175028, being Lot 3622 DP 622485 and Lot 2 DP 622229. Subject to development consent and further approvals, an additional 62 manufactured homes could potentially be accommodated on the Subject Land. In addition, the LEP amendment has the potential to support an expansion of the existing community facilities on the Subject Land.

It is acknowledged that any expansion of the existing approved caravan park would be subject to future applications and assessment.

To achieve the above objectives, it is proposed to amend Schedule 1 of the PSCLEP 2013 to include an additional permitted use over the Subject Land for the purposes of a 'caravan park'.

In addition to the Schedule 1 amendment, this Planning Proposal will also rezone part of the site from RU2 Rural Landscape to C2 Environmental Conservation for the purposes of retaining vegetation as a corridor to connect vegetation north and south of the site. The retention of this land has resulted in the loss of sites and was proposed as part of the ecological "avoid and minimise" process.

This Planning Proposal is supported by the following plans and studies, as requested by Council at the initial rezoning request meeting held on 27th September 2021 and as required following the submission of the Scoping Proposal in Council's correspondence of 16th September 2022:

- Aboriginal Due Diligence Assessment;
- Streamline Biodiversity Development Assessment Report;
- Strategic Bushfire Study and Bushfire Assessment Report;
- Traffic and Parking Assessment;
- Concept Plan;
- Ausgrid Servicing Advice;
- Hunter Water Servicing Advice;
- Stormwater Strategy;
- Preliminary Contamination Assessment;
- Preliminary Acid Sulfate Soil Assessment.

SITE

Size and Configuration

The site comprises the following lots, and is shown in **Figure 1** below. A copy of the Site Plan is also contained as **Attachment 1**.

Lot	Address	Approx. Area (ha)
Lot 51 DP 1175028	4011 Nelson Bay Road, Bobs Farm	10.18
Lot 3622 DP 622485	4029 Nelson Bay Road, Bobs Farm	2.042
Lot 2 DP 622229	4045 Nelson Bay Road, Bobs Farm	1.493
	Total Site Area	**13.715**

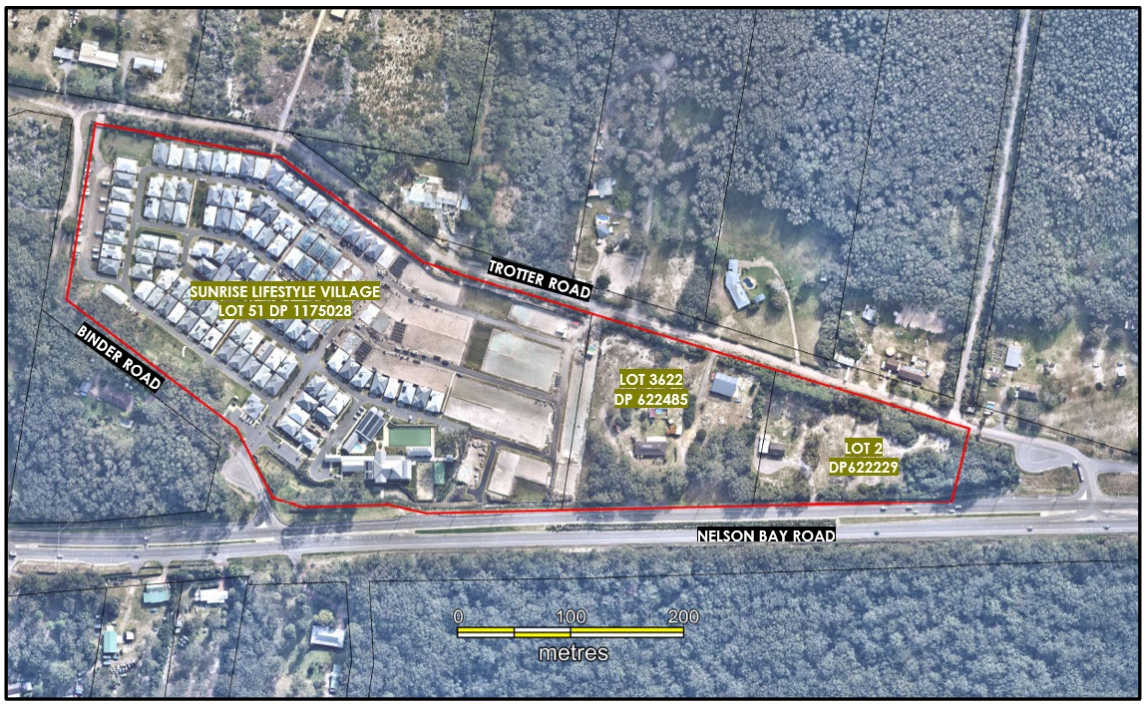


Figure 1: Site Plan (Source: NearMap Aerial dated 8th July 2021)

Current Zoning

The Subject Land is currently zoned RU2 Rural Landscape, as shown in **Figure 2** below.

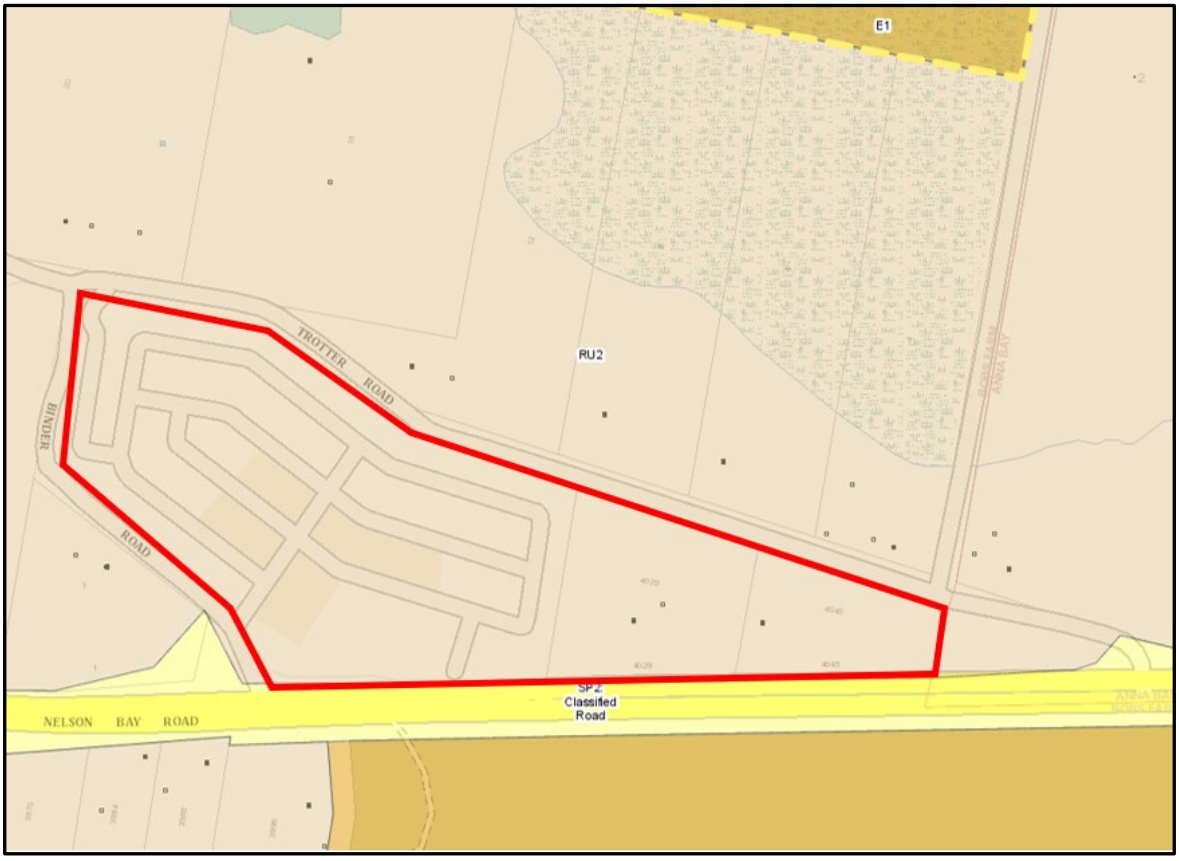


Figure 2: Site Zoning (Source: NSW Planning Portal)

Location

The site is located on the northern side of Nelson Bay Road in the suburb of Bobs Farm. The site is approximately 4.5km north-west of the Anna Bay township. south of the site, beyond Nelson Bay Road, is Worimi National Park and Birubi Beach (refer to **Figure 3** overleaf).

The site has road frontage to Binder Road, Nelson Bay Road and Trotter Road.



Figure 3: Locality Map (Source: SixMaps, accessed 14 October 2021)

Adjoining Land Uses

The site is largely surrounded by rural residential properties, comprising single dwellings, associated outbuildings and tracts of cleared land. Beyond the rural residential land uses, the land is predominately vegetated. Tiligerry Nature Reserve and Worimi National Park exist to the north and south of the site respectively.

Whilst not yet developed, land directly north of the site (16 Trotter Road) has approval for a caravan park accommodating 119 long term sites (DA-16-2007-15-1).

Land surrounding the site is predominately zoned RU2 Rural Landscape, with Tilligery Nature Reserve and Worimi National Park zoned E1 National Parks and Nature Reserves. Nelson Bay Road is zoned SP2 Classified Road.

History of Land Use

The site appears to have been utilised for rural-residential purposes. A search of the PSC DA tracker does not provide details of any historical land uses.

Current Use and Existing Improvements

Approved development on Lot 51 consists of a caravan park, known as Sunrise Lifestyle Village.

It comprises 193 sites, with manufactured homes having been installed and occupied on a significant proportion of the individual sites. Lot 51 also comprises community facilities to support the residents of Sunrise Lifestyle Village.

This development (DA-16-2013-790-4) was approved under a historic zoning, and currently operates relying on that approval and existing use rights.

Lot 3622 and Lot 2 do not form part of the approved caravan park. Both parcels contain a single dwelling and associated outbuildings. The land is predominately vacant, comprising areas of grassland with scattered vegetation and denser vegetation along the road frontages and in the east.

Site Attributes

- ***Heritage***

The site does not contain any historic heritage items, nor is it located within a heritage conservation area.

A search of the AHIMS Register on 16th September 2021 of the undeveloped portion of the land identified one (1) Aboriginal site recorded near the site. The site is located south of Nelson Bay Road, within Worimi National Park.

Due to the proximity of this site, Council has requested that a Due Diligence Aboriginal Heritage Assessment be prepared in accordance with the 'Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales'. This has been prepared by McCardle Heritage and concludes that the site does not contain any sites or potential archaeological deposits (PADs) of Aboriginal heritage significance, and as a result an Aboriginal Heritage Impact Permit (AHIP) would not be required for the future development.

- ***Bushfire***

The site is mapped as bushfire prone land, as shown in **Figure 4** below.

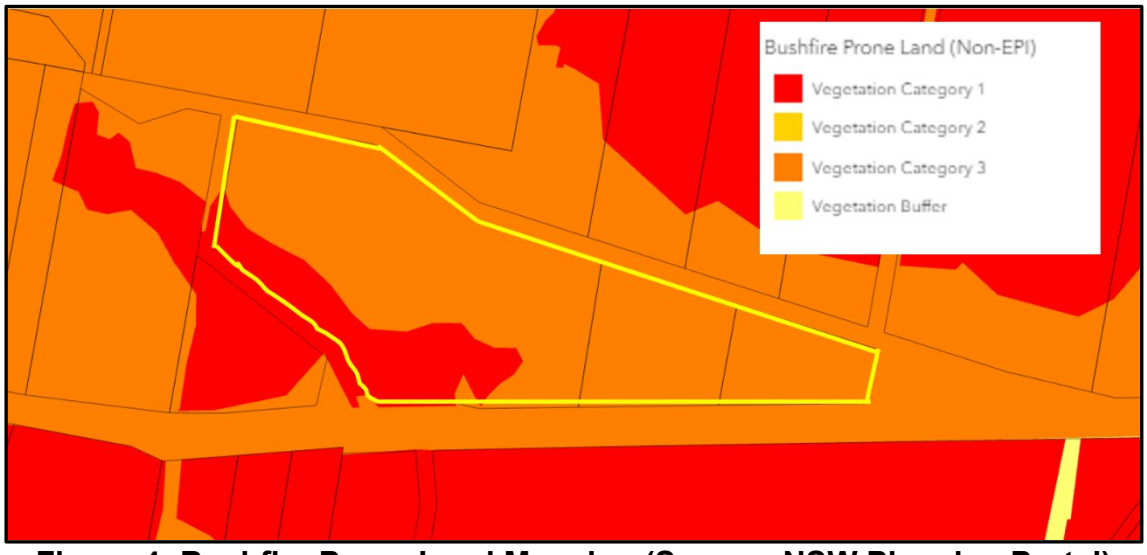


Figure 4: Bushfire Prone Land Mapping (Source: NSW Planning Portal)

A Strategic Bushfire Study (SBS) and Bushfire Assessment Report (BAR) has been prepared in accordance with the requirements of Part 4 of NSW Rural Fire Service, Planning for Bushfire Protection 2019 which concluded that the site would require asset protection zones (APZ) as shown in **Figure 5** below. It is acknowledged that some sites are located within the nominated APZ; however, the layout proposed is only a concept at this stage and can be adjusted following a more detailed assessment as part of the DA. The site is; however, suitable for the intended use and proposed rezoning to allow for the extension of the Sunrise Caravan Park.

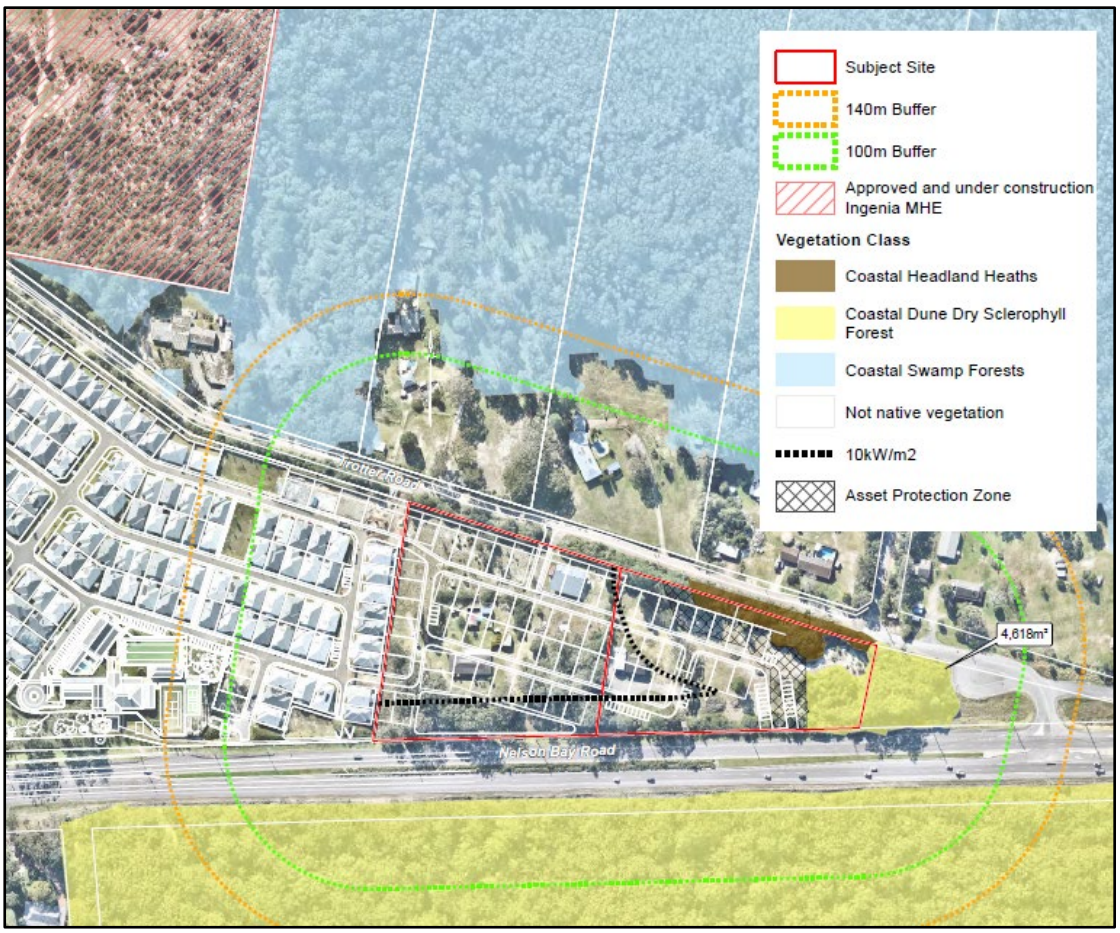


Figure 5: Asset Protection Zones

Full details in this regard are provided within the Bushfire Threat Assessment within **Attachment 4**.

- ***Hydrology / Flooding***

The site is predominately flat, with minimal slope. The site does not contain any watercourses, with the nearest mapped watercourses being tributaries to Bobs Farm Creek further downstream. These watercourses are approximately 115m to the north and 135m to the west of the site, as shown on **Figure 6** overleaf.

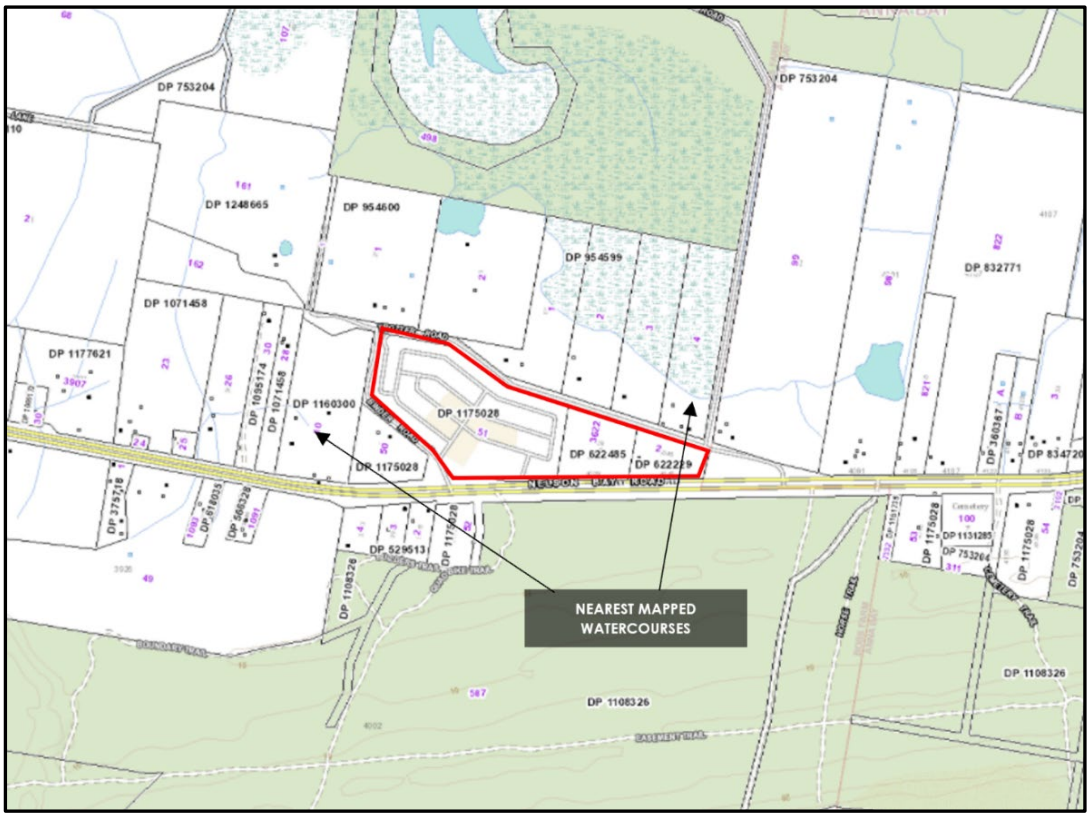


Figure 6: Location of Nearest Watercourses (Source: Six Maps, 3rd November 2021)

A coastal wetland exists to the north of the site, as depicted by the darker blue hatch on **Figure 7** below.

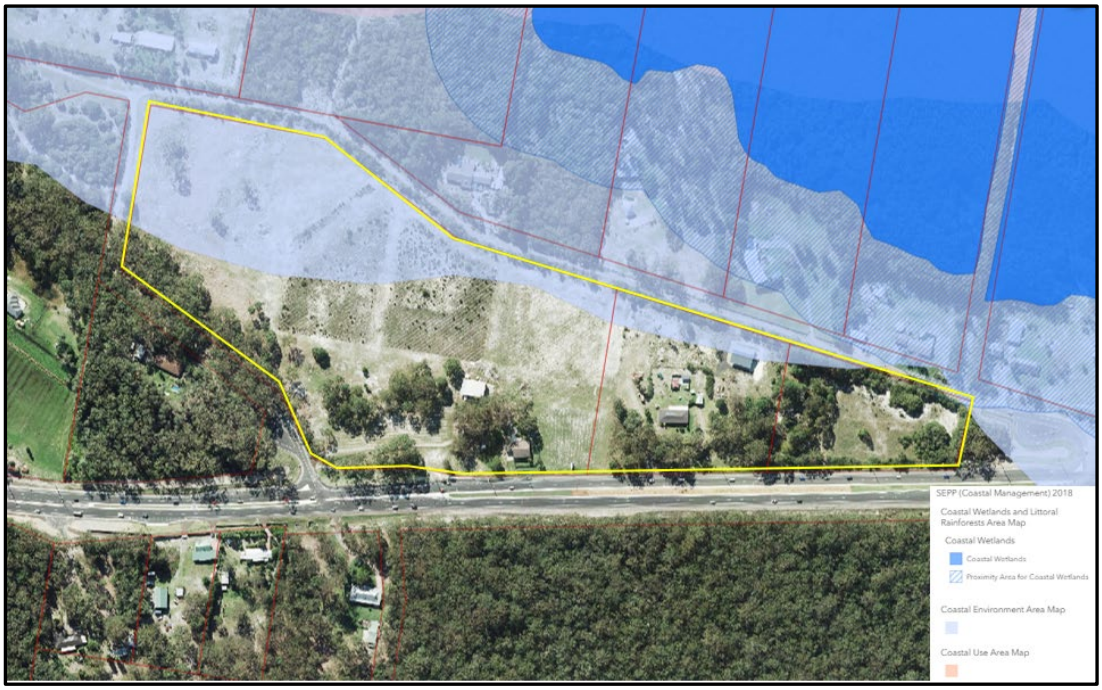


Figure 7: SEPP (Resilience and Hazards) 2021, Coastal Management Mapping (Source: NSW Planning Portal)

A Stormwater Strategy has been prepared by ADW Johnson which confirms that the proposed development will not adversely impact the hydrological integrity of coastal wetlands.

In relation to flooding, reference is made to the *Anna Bay and Tilligerry Flood Study* (Jacobs, 4th December 2017) and PSC Online Mapping Tool. As demonstrated in **Figures 8** and **9** below, the subject site itself is largely unaffected by flooding. Only small portions of land at the periphery of the existing Lifestyle Village are mapped with the Flood Planning Area (FPA) or being affected in the Probable Maximum Flood (PMF) event.

The vacant portion of the site identified for future development is not mapped as being flood affected in either event.

As can be seen on **Figures 8** and **9**, the vast majority of properties along Nelson Bay Road are flood affected. The proposed development would therefore provide additional housing in a non-flood affected location.

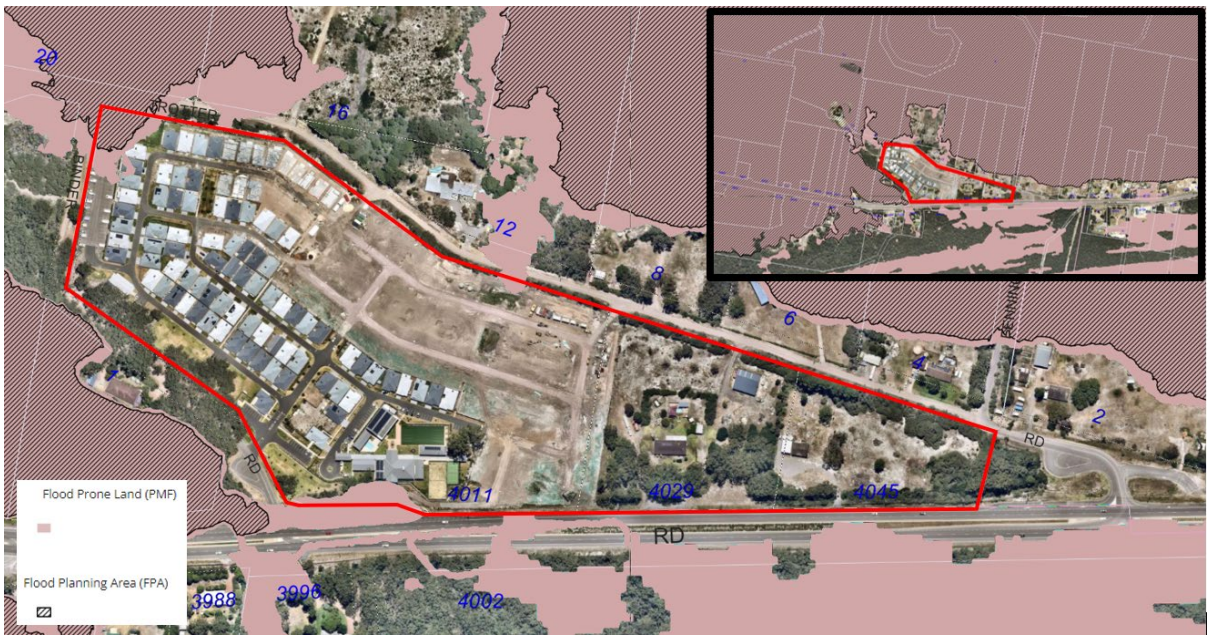


Figure 8: Flood Prone Land and Flood Planning Area (Source: PSC Online Mapping Tool, accessed 11 May 2023)

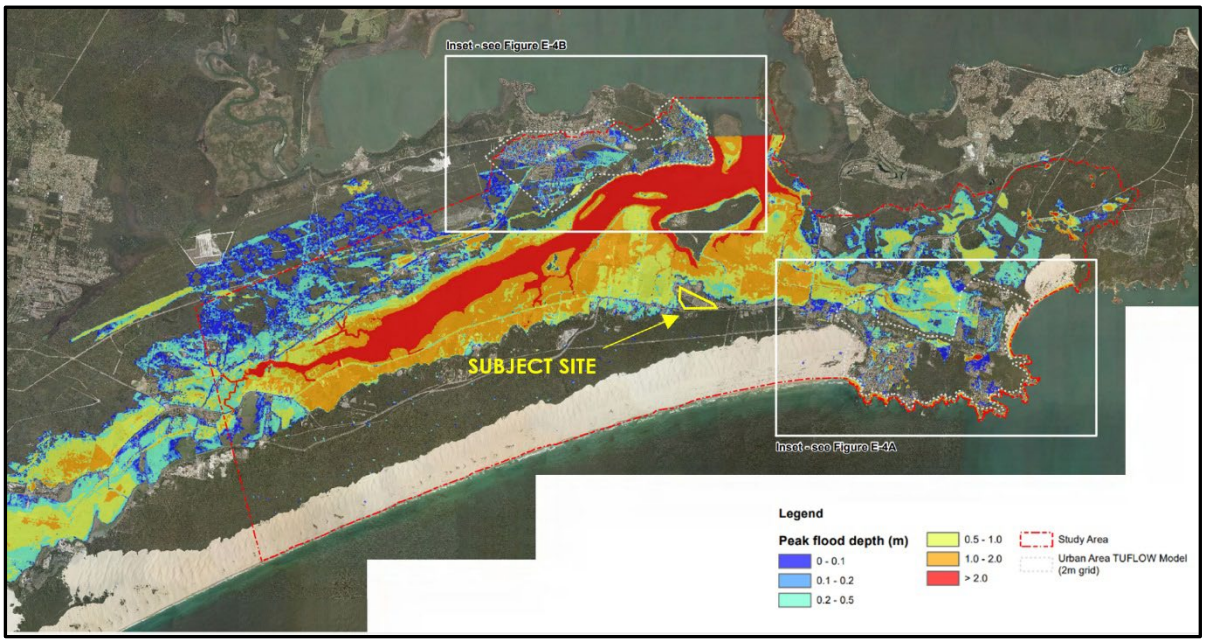


Figure 9: 1% AEP Flood Depth (Source: Anna Bay and Tiligerry Creek Flood Study, Jacobs 2017)

Full details in this regard are provided within the Stormwater Strategy within **Attachment 9.**

- ***Ecology***

The site is predominately cleared, however the Streamlined Biodiversity Development Assessment Report (SBDAR) which accompanies this proposal has identified 1.66ha of poor to moderate Plant Community Type (PCT) 1646 *Smooth-barked Apple – Blackbutt – Old Man Banksia woodland on coastal sands of the Central and Lower North Coast* occurring on site. This does not represent a Threatened Ecological Community (TEC).

Reference to PSC Koala Habitat Mapping identifies the site as 'Mainly Cleared', with a strip of land identified as 'Unknown Quality' which has subsequently been developed as part of the approved caravan park development. The SBDAR confirms that the site does not contain any koala feed trees and is not suitable habitat for koalas.

Additional reporting was undertaken which identified an existing wildlife crossing approximately 10m from the site's eastern boundary. The fauna crossing underpasses Nelson Bay Road, and is understood to have been installed by Transport for NSW.

As part of the "avoid and minimise" assessment, the design of the caravan park has been amended to reduce the developments impact footprint and retain a large portion of the vegetation in the east as well as a 10m strip of vegetation across the northern boundary (see **Figure 10**). This land has been allocated a C2 Zone and will be retained as a corridor connecting vegetation north and south of the site.

A copy of the SBDAR, and associated mapping, is provided as **Attachment 3**.



Figure 10: Vegetation retained through Avoid and Minimise Assessment (See Green Proposed C2 Land)

- ***Acid Sulfate Soils***

The land is mapped as Class 4 Acid Sulfate Soils (ASS) (refer to **Figure 11** below). A Preliminary Acid Sulfate Soils Assessment (PASSA) has been undertaken in this regard which concludes that ASS were unlikely to be present and an ASS Management Plan is not required for excavation up to 2m. A copy of the Preliminary Acid Sulfate Soils Assessment, is provided as **Attachment 11**.

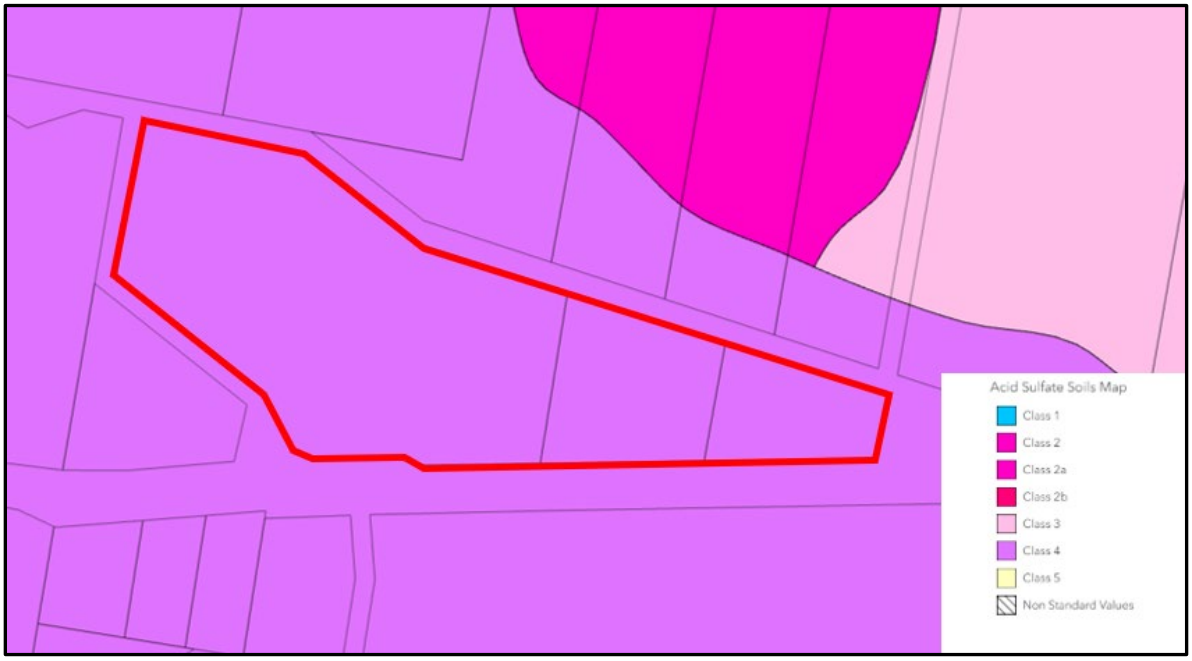


Figure 11: Acid Sulfate Soils (Source: PSLEP 2013)

- ***Traffic and Access***

Vehicular access to the existing caravan park is obtained via the intersection of Binder Road and Nelson Bay Road, being a classified road.

Vehicular access to the residence on Lot 3622 DP 622485 is obtained via Trotter Road. Vehicular access to the residence on Lot 2 DP 622229 is obtained off Nelson Bay Road.

A turning bay exists at the intersection of Trotter Road and Nelson Bay Road.

Land directly north of the site (16 Trotter Road) has approval for a caravan park accommodating 119 long term sites (DA-16-2007-15-1). As part of this development, Trotter Road is required to be upgraded.

There appears to be minimal pedestrian or off-road cyclist facilities in the vicinity of the site; however, multiple bus stops exist within close proximity to the subject land along Nelson Bay Road, with a bus stop located directly south of the caravan park.

Further details regarding existing road infrastructure and access arrangements are provided in the Traffic and Parking Assessment (**Attachment 5**).

- ***Utility Services***

Utility services are available in the area, including sewer, water, electricity and telecommunications.

PART 1 – Objectives or Intended Outcomes

The Planning Proposal seeks to achieve the following outcomes:

- To regularise the existing approved use of Lot 51 DP 1175028 as a caravan park;
- Enable the extension of the existing caravan park use to the adjoining land (Lot 3622 DP 622485 and Lot 2 DP 622229) in order to increase housing diversity; housing resilience; and provide for population growth within the Port Stephens LGA; and
- Rezone part of the site from RU2 Rural Landscape to C2 Environmental Conservation for the purposes of retaining vegetation as a corridor to connect vegetation north and south of the site.

The Planning Proposal will allow the current caravan park (Sunrise Lifestyle Village) to operate as a permissible use under the LEP, rather than rely upon existing use rights. Further, it will allow the remainder of site to be used for a caravan park (subject to development consent) accommodating approximately an additional 62 sites.

A Concept Plan for the extension is provided within **Attachment 6**.

PART 2 – Explanation of Provisions

The objectives of the Planning Proposal will be achieved by the following amendments to the PSCLEP 2013:

- Insert an additional clause under Schedule 1 (subject to drafting by NSW Parliamentary Counsel)

  Schedule 1 – Additional permitted uses

  10 Use of certain land at Bobs Farm

  (1) This clause applies to the following land –
  (a) 4011 Nelson Bay Road, Bobs Farm, being Lot 1, DP 1175028,
  (b) 4029 Nelson Bay Road, Bobs Farm, being Lot 3622 DP 622485,
  (c) 4045 Nelson Bay Road, Bobs Farm, being Lot 2, DP 622229.

  (2) The following development is permitted with development consent—a caravan park on Lot 1 DP 1175028, Lot 3622 DP 622485 and Lot 2 DP 622229.

  The PSLEP contains the following definition for caravan parks:

  ***caravan park** means land (including a camping ground) on which caravans (or caravans and other moveable dwellings) are, or are to be, installed or placed.*

- Amend Land Zoning Map Sheet LZN_004 for part of Lot 2 DP 622229 from RU2 Rural Landscape to C2 Environmental Conservation, to reflect **Figure 12** below.



Figure 12: Proposed Zone Amendment (Source: AEP, Nov 2022)

PART 3 – Justification of Strategic Merit and Site Specific Merit

The Planning Secretary has issued requirements about the specific matters that must be addressed in Planning Proposals. Reference is made to the Department of Planning and Environment (DPE) published *LEP Making Guideline* (December 2021) which outlines the assessment criteria and matters for consideration in justifying the strategic and site-specific merit of a Planning Proposal.

Strategic Merit

Section A – Need for the Planning Proposal

Sections A and B demonstrate how the proposed amendment will give effect to the strategic planning framework, ensuring that the proposal has strategic merit, and demonstrates how and why strategic merit is achieved by addressing the relevant principles, objectives, and actions in the relevant strategic plans.

Q1. Is the Planning Proposal a result of an endorsed LSPS, strategic study or report?

The Planning Proposal is not the result of a specific strategic study or report. However, it relates to an approved development that has been the subject of a series of technical studies and subsequent assessment. The Planning Proposal seeks to expand upon the existing use on the subject land, and as appropriate at this stage in the process, key site constraints have been identified and considered as part of this Planning Proposal.

A number of strategic planning documents are relevant to this Planning Proposal, including the Hunter Regional Plan 2041, Port Stephens Local Planning Statement (LSPS) and Live Port Stephens (LPS). While these documents do not identify the site specifically, the Planning Proposal is consistent with the visions and goals established under these strategies. This is discussed in further detail in Section B below.

Q2. Is the Planning Proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

The purpose of the Planning Proposal is to regularise the existing approved use on Lot 51, and to facilitate the future extension of that use to Lot 3622 and Lot 2.

Amending Schedule 1 of the PSLEP is considered the best means to achieve the intended outcome. This is on the basis that it limits the permitted additional uses to a 'caravan park' only.

As the Planning Proposal does not propose to amend the current minimum lot size, this option eliminates the scope for further uses or subdivisions that undermine the planning for existing centres.

In summary, an amendment to Schedule 1 of PSLEP is therefore considered the most effective means of achieving the intended outcome, on the basis that:

- It provides certainty regarding ongoing land use permissibly and security of tenure for the existing approved caravan park;
- It creates opportunity for an extension of that use to the adjoining lots;
- It prohibits unsuitable land uses and subdivision that could otherwise be made permissible through a direct rezoning of the land and changes to the minimum lot sizes;
- It creates consistency across all the land subject to this Planning Proposal, regarding land use permissibility; and
- A rural landscape character can be met through the use of rural style fencing (post and rail), buffer planting and generous setbacks between the external site boundaries and the building lines;
- The adoption of the C2 Environmental Conservation Zone over part of the site provides upfront assurance that habitat connectivity will be maintained.

The following alternative approaches to achieve the intended outcomes of the Planning Proposal were considered:

- ***Continuation of Existing Use Rights for Approved Caravan Park Development***
  A reliance on existing use rights for the approved caravan park allows the approved land use to continue to be carried out on Lot 51. However, this option does not achieve the proposed outcome to extend the caravan park use to the adjoining land.

- ***Rezoning the Land to RE2 Private Recreation***
  Rezoning all of the subject land to RE2 would make the establishment of a caravan park on the site permissible with consent.

  However, it would also permit with consent the full range of potential land uses that can be permitted in the RE2 zone that may not be consistent with Council's broader land using planning for the area. Such uses may increase the risk of undermining other locations zoned, or planned for future RE2 Private Recreation land uses.

  In addition, although caravan parks are permissible with consent, the zone objectives do not currently align with lifestyle villages.

- ***Rezoning the Land to RE1 Public Recreation***
  Rezoning all of the subject land to RE1 would make the establishment of a caravan park on the site permissible with consent.

  However, it may be difficult to demonstrate consistency with the stated objectives of the zone, noting that the premises of the proposed future development is in private ownership and would not be made available to the wider public.

  In addition, it would also permit, with consent, the full range of potential land uses that can be permitted within the RE1 zone, that may not be consistent with Council's broader land using planning for the area. Such uses may increase the risk of undermining other locations zoned, or planned for future RE1 Public Recreation uses.

  In addition, retaining the current RU2 zoning will keep options open for rural land use should, for any reason, the proposed caravan park use not proceed.

- ***Use of Other Zonings***
  Caravan parks are a prohibited land use in all other zonings under the PSLEP and consequently, no other zoning is considered suitable to achieve the objectives of the Planning Proposal.

- ***Other Mechanisms to retain Habitat Connectivity***
  The Applicant expressed concern regarding the adoption of the C2 zone for the purposes of protecting the habitat corridor. This was on the basis that this approach could have implications for future development applications where <u>further</u> retention of vegetation may be required to demonstrate the principles of 'avoid and minimise' are achieved under the Biodiversity Conservation Act (BC Act), despite biodiversity outcomes being established as part of the LEP amendment.

  The Applicant requested that other mechanisms be considered to ensure the habitat corridor was retained, such as a Development Control Plan (DCP), title restriction or Voluntary Planning Agreement.

Council advised that in future development applications, it would interpret the C2 zone as part of the 'avoid and minimise' component under the BC Act. Council's interpretation is that because the Planning Proposal has been assessed under the BC Act framework, it would consider the area zoned C2 as contributing to the 'avoid criteria' at development application stage. Accordingly, Council recommended the adoption of the C2 zone.

As demonstrated above, alternative options to the Planning Proposal have been considered, however, have been discounted for various reasons, and are therefore not recommended options.

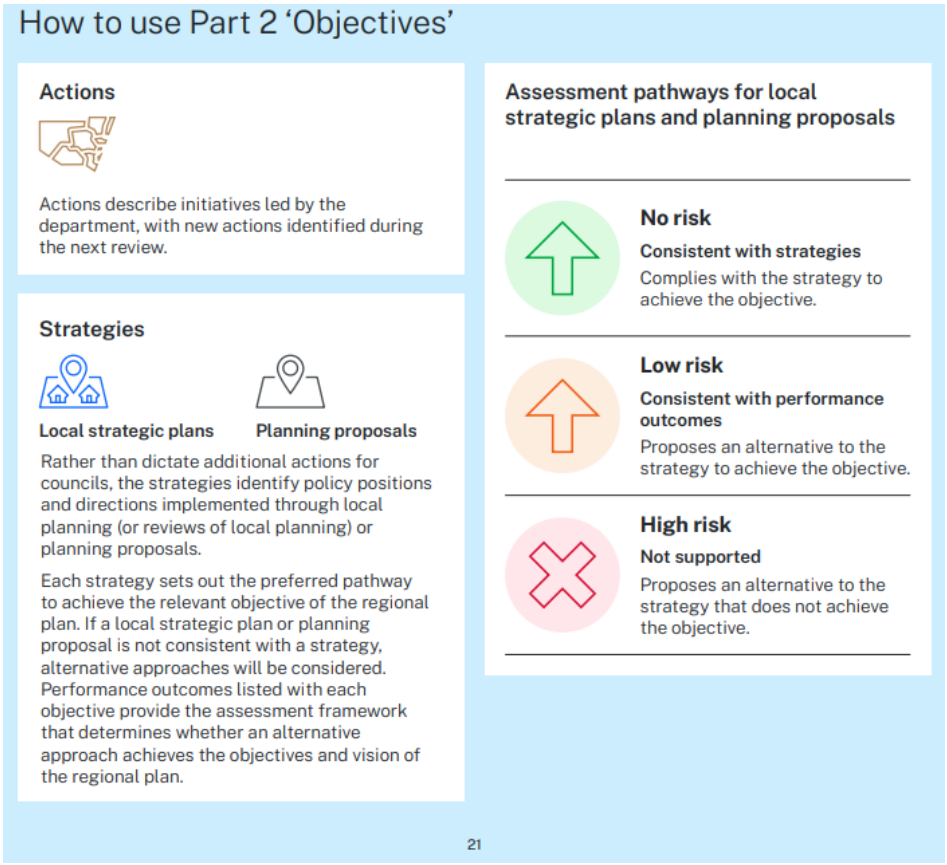
Section B – Relationship to Strategic Planning Framework

Q3. Will the Planning Proposal give effect to the objectives and actions of the Hunter Regional Plan and/or Greater Newcastle Metropolitan Plan (or any exhibited draft plans that have been prepared to replace these)?

Hunter Regional Plan 2041

The Hunter Regional Plan 2041 (HRP) was placed on exhibition last year and on 7 December 2022 was adopted. Given the HRP has now been adopted, it is appropriate to specifically address how the Planning Proposal achieves the Objectives within this plan.

The following section has been structured to address the HRPs key themes as well as directly addressing each Objective and Strategy in accordance with the "How to use Part 2 'Objectives'" through a compliance table which provides a risk assessment against each objective (refer **Attachment 13**). Only those strategies applicable to Planning Proposals have been addressed, noting that those applicable to local strategic plans are to be considered by Council in their future planning.

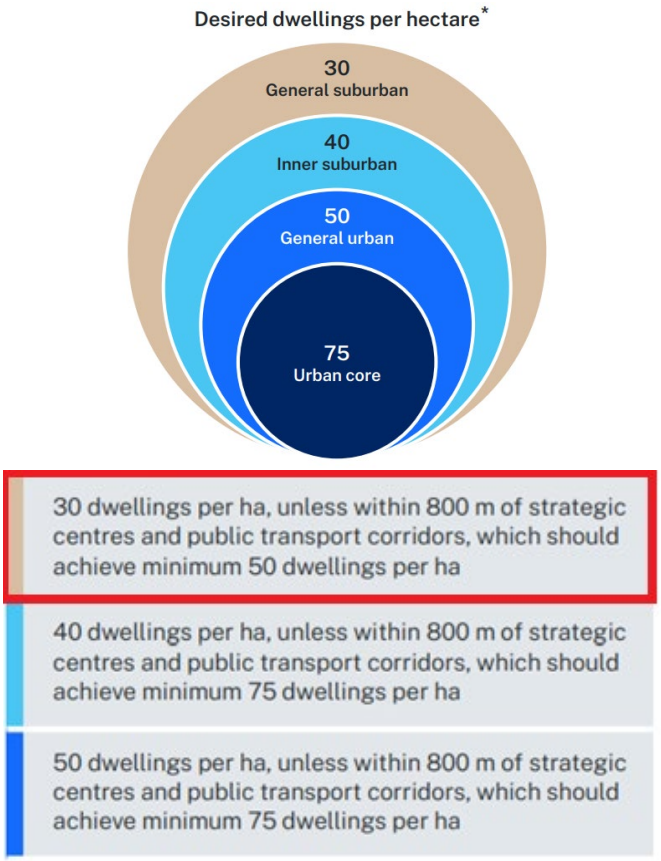


The subject document will give Council and the Department of Planning and Environment (DPE) assurance that the Planning Proposal will assist New South Wales and the Greater Newcastle region in alleviating the current housing shortage crisis whilst continuing to respect the biological sensitivities of the site.

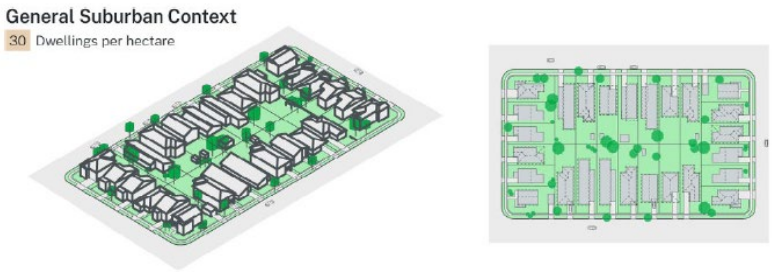
Optimum Density

'Optimum density' is a newly introduced term referring to the ideal number of dwellings per hectare. The intention is to ensure development is delivered efficiently with regards to supporting infrastructure, open space and amenity, housing diversity and affordability, and allows for reduced car dependency.

The HRP identifies these optimum densities as being:



Whilst the HRP tasks Council's with identifying what is considered general suburban, inner suburban, general urban, and urban core, it has been assumed that noting the nature of the site and its surrounding setting, that it falls within the **general suburban** category where the following figure applies:



Excluding roads, the retained proposed C2 zone, stormwater management areas, parking and area for community facilities, the net developable area of the site is approximately 2 hectares. The site is able to accommodate between 60-65 lifestyle living sites or the equivalent of 30-32.5 dwellings per hectare, in accordance with the desired density.

Housing Diversity and Affordability

Diverse housing types are identified as a way to facilitate housing which suits various individuals' needs as well as contributing to housing affordability by providing the right type of housing.

Caravan parks are not generally considered “affordable housing”, pursuant to EP&A Act definitions, owing to the fact that they cannot support a mortgage. They do; however, contribute to housing affordability through providing housing options at a lower price point than other housing that benefits from the same level of access to recreation and community facilities.

Further, the provision of additional housing through increasing supply of smaller sites, encourages people to downsize from their family home which frees up larger homes more suited to families. This increase in housing supply has a direct result in lowering the cost of both the proposed caravan park sites but also existing larger homes.

Finally, caravan parks such as those offered by the proponent, provide a sense of community and increased ability to age in place making them an attractive housing choice for older residents.

Infrastructure Before Growth

The HRP introduces an ‘infrastructure-first and place-based delivery framework’. This framework will help to integrate future land use and infrastructure investment early in the planning process to ensure coordination and collaboration across development fronts and infrastructure sectors.

The subject site is in an ideal position to take advantage of existing infrastructure in this regard, as follows:

- Traffic and Roads: The site is surrounded by roads, requiring only the extension of minor internal accessways. No road upgrades are required to accommodate the development with this being confirmed through consultation with Transport for New South Wales (TfNSW).
- Servicing: Public utility services including telecommunications, electricity, water and sewer will be available to service the future development on the site, requiring only connections to existing infrastructure.

Noting the above it is evident that the planning proposal is well positioned in terms of critical infrastructure.

15-Minute Neighbourhoods

The HRP introduces the concept of ‘15-minute neighbourhoods’ to support mixed, multi-model, inclusive and vibrant communities.

The premise is rather than cities, towns, villages and communities being separate zones for living, working, education, recreation and entertainment, they can be mixed neighbourhoods where people can generally access most everyday needs within a 15-minute walk or cycle from where they live with mixed use, access, and a density of human activity to support neighbourhood uses and services.

Different scenarios for the attainment of a 15-minute neighbourhood are provided below. In the subject case, noting the site's general suburban context, it is necessary to ensure that all dwellings are within a walk or cycle to daily needs; public transport to weekly needs; and public transport to infrequent and specialised needs.

Context		Neighbourhood scale Homes are within a 15-minute:	Strategic centre scale Homes are within a 30-minute:
Urban	Urban core	• walk or bike to most daily and weekly needs	• public transport to infrequent and specialised needs
	General urban	• walk or bike to many daily needs • public transport to daily and weekly needs	• public transport to infrequent and specialised needs
Suburban	Inner suburban	• walk or bike to many daily needs • public transport to daily and weekly needs	• public transport to infrequent and specialised needs
	General suburban	• walk, bike or public transport to some daily and weekly needs	• public transport to infrequent and specialised needs
Rural	Villages	• walk, bike or drive to some daily and weekly needs	• drive to infrequent and specialised needs
	Rural residential	• drive to most daily and weekly needs	• drive to infrequent and specialised needs
	True rural	• 30-minute drive to most daily and weekly needs	• drive to infrequent and specialised needs

The planning proposal will accommodate additional housing opportunities within a site with access to onsite community facilities. The ability to build the additional sites will allow Hometown Australia to not only improve the existing facilities in the west but also provide additional facilities in the east. This will ensure that all sites are within an accessible 400m walk to community facilities.

In addition to the above, multiple bus services, both public and provided by Hometown, allow for 15 minute access to numerous nearby centres. This is discussed in greater detail below.

Prioritising infill development over greenfield development

To minimise biodiversity impacts and take advantage of existing infrastructure, the HRP encourages a higher proportion of planning proposals to be located within infill areas. In the Port Stephens area, this proportion equates to 80%. Noting the subject site currently accommodates two (2) dwellings, its development for the proposed purpose is considered infill and can take advantage of the sites relatively cleared nature and access to all existing services and infrastructure.

Part of accommodating growth under the draft plan is acknowledging that providing for a growing population does not need to come at the expense of the environment. The plan is clear in its intention to increase density, but reduce impact (i.e. reduce footprint).

The subject proposal has taken this into consideration as part of the “avoid and minimise” strategy and as a result retains vegetation in the east and along a portion of the northern boundary to provide for a corridor connection in alignment with the fauna underpass on Nelson Bay Road.

It is considered that the Planning Proposal is consistent with the relevant principles of the HRP 2041.

Q4. Is the Planning Proposal consistent with a council LSPS that has been endorsed by the Planning Secretary or GSC, or another endorsed local strategy or strategic plan?

The Port Stephens Local Strategic Planning Statement (LSPS), Live Port Stephens Local Housing Strategy (LHS) and other local strategies, such as Port Stephens Community Strategic Plan, have been considered in the context of this Planning Proposal.

Port Stephens Local Strategic Planning Statement (LSPS)

The LSPS identifies the 20-year vision for land use in Port Stephens and sets out social, economic and environmental planning priorities for the future.

The Planning Proposal is considered to be consistent with, and will give effect to, the following planning priorities from the LSPS:

Priority 4 Ensure suitable land supply (for housing)

This priority identifies the need to prepare and implement a local housing strategy to ensure suitable land supply and other planning priorities for housing identified in the LSPS.

The Planning Proposal will contribute towards the provision of suitable land for additional housing in the LGA.

Priority 5 Increase diversity of housing choice

This priority identifies that, based on what people value, planning is required for a range of housing types, sizes, tenures and price points to suit different lifestyles.

Housing choices in the Port Stephens LGA cover a wide range of options, including homes in retirement villages and lifestyle communities. Some models of home ownership can offer independent living in close knit communities for seniors.

The Planning Proposal is consistent with the LSPS as it will respond to the need for suitable land supply for housing and increase housing choice that suits the needs and lifestyle of current and future residents, particularly surrounding the aging community.

Port Stephens Local Housing Strategy (LHS)

The LHS is the overarching strategy to guide land use planning decisions for new housing in Port Stephens. It comprises four outcomes and 12 priorities. The outcomes will meet the directions set for Hunter councils in State planning strategies and the priorities identify the broad issues or policy areas that Port Stephens Council will need to focus on.

The Planning Proposal is consistent with the following planning priorities from the LHS:

Priority 1.1 Ensure adequate supply of new housing

The Planning Proposal creates opportunity to contribute to additional housing, on land that is largely unconstrained by environmental constraints and without the need for significant upgrade or extension to infrastructure.

Priority 2.1 Respond to housing stress

The LHS states that single and couple households are the dominant household size in Port Stephens and recent survey data indicates a preference for some existing residents to downsize, either to smaller homes or similar sized homes on smaller blocks, such as older households. The LHS also recognises that there are opportunities to improve housing affordability by aiming to increase the supply of smaller lots as well as lower-cost dwellings, and the positive effect it can have on the supply of larger homes on larger blocks for families.

The Planning Proposal relates to Sunrise Lifestyle Village, being an over 55s lifestyle village. The provision of additional housing in this context is consistent with the principles detailed in Priority 2.1 through increasing supply of smaller sites which frees up larger homes more suited to families. This increase in housing supply has a direct result in lowering the cost of both the proposed lifestyle sites but also existing larger homes.

Priority 3.2 Encourage a range of housing types and sizes

The Planning Proposal creates opportunity for future development of a housing type and setting which is attractive to households seeking to downsize.

Priority 3.3 Enable better planning for diverse lifestyles.

The Planning Proposal relates to an existing lifestyle village, and will enable an extension of the existing use.

The LHS contains locational criteria for assessing rezoning requests for lifestyle villages. Lifestyle villages may be suitable where it meets walkability standards for liveable communities, for example within:

- 5-minute walk (400m) of a town or neighbourhood centre zoned B1 Neighbourhood Centre, B2 Local Centre, B3 Commercial Core or B4 Mixed Use; or

- 5-minute walk (400m) of bus stops with frequent services to local centres; or
- 10-minute walk (800m) of local centres.

The existing lifestyle village is located within a 5-minute walk of an existing bus stop. The bus stop is located on Nelson Bay Road, and approximately 150m from the main entrance of the caravan park.

The site is located on Bus Routes 130, 131 and 135, operated by Port Stephens Coaches, providing access to Anna Bay, Salamander Bay and Nelson Bay to the east, and Newcastle Airport, Raymond Terrace, Fern Bay and Newcastle to the south and west.

In addition to the above, the operators of Sunrise Lifestyle Village offer a weekly bus service from the site to nearby locations, including Salamander Bay and Nelson Bay for the exclusive use of its residents. The Planning Proposal would further support this service.

With the above in mind, the proposal implicitly achieves the walkability standard of being within a 5-minute walk (400m) of a bus stop with frequent services to local centres.

On this basis, and noting that the site contains an existing lifestyle village, it is considered that the Planning Proposal satisfies the locational criteria under the LHS. Further assessment under Appendix 1 of the LHS is not required.

Priority 4.2 Communities are connected.

The Planning Proposal provides future opportunity for additional housing within an established lifestyle village. The existing lifestyle village provides community facilities on site, contributing to community cohesion.

Priority 4.3 Grow connections between people.

The Planning Proposal creates opportunity for future development where people can connect, participate and socialise.

Port Stephens Community Strategic Plan 2018 – 2028 (CSP)

The Port Stephens Community Strategic Plan (CSP) sets out the community's vision for '*a great lifestyle in a treasured environment'*. It outlines the long-term goals agreed with the community of the Port Stephens LGA.

The Planning Proposal is consistent with the relevant objectives and delivery items of the CSP, as outlined in **Table 1** below.

Table 1: Port Stephens CSP Strategic Directions and Objectives

Strategic Directions and Objectives		Commentary:
Focus Area One: Our Community		
C1	**Community Diversity** Our community accesses a range of services that support diverse community needs	The proposed development would provide for the expansion of an approved residential community, which provides housing and associated community and recreational facilities for over 55s, thus supporting the needs of an ageing population (C.1.4).
C2	**Recognised Traditions and Lifestyles** Our community supports the richness of its heritage and culture	An Aboriginal Due Diligence assessment has been prepared by McCardle Heritage which concludes that the site does not contain any sites or potential archaeological deposits (PADs) of Aboriginal heritage significance, and as a result an Aboriginal Heritage Impact Permit (AHIP) would not be required for the future development. This conclusion was made based on the fact that the site had been previously cleared with the historic upper dune characteristics being entirely removed to make the site level. Full details in this regard are provided within **Attachment 2**.
C4	**Community Partnerships** Our community works with Council to foster creative and active communities	The Planning Proposal relates to an existing lifestyle village, which provides community and recreational facilities on site for its residents (C3.4). Such facilities could be expanded, subject to development consent.
Focus Area Two: Our Place		
P1	**Strong Economy, Vibrant Local Businesses, Active Investment** Our community has an adaptable, sustainable and diverse economy	The proposed development will result in economic benefits through the provision of housing with new residents supporting the ongoing growth of the local economy.
P2	**Infrastructure and Facilities** Our community's infrastructure and facilities are safe, convenient, reliable and environmentally sustainable	The proposal will make use of existing infrastructure on an existing disturbed and relatively unconstrained site. Provision of additional housing under these circumstances relieves pressure on Council to support housing on less suited sites requiring extensive lead-in infrastructure and vegetation removal.
P3	**Thriving and Safe Place to Live** Our community supports a healthy, happy and safe place	The proposed development would provide for the expansion of an approved residential community which places the safety of residents as a high priority. Opportunity for casual

Strategic Directions and Objectives		Commentary:
		surveillance through the development is encouraged to contribute toward a feeling of safety for residents. Consideration of natural hazards (i.e. bushfire) will be managed through the development application design process, to ensure appropriate protection measures are established.
Focus Area Three: Our Environment		
E1	**Ecosystem Function** Our community has healthy and dynamic environmental systems that support biodiversity conservation	It likely that future proposed development can be undertaken without resulting in unreasonable adverse environmental impacts. The protection of an important fauna corridor through the site under a C2 zone is likely to have long term benefits to biodiversity conservation.
E2	**Environmental Sustainability** Our community uses resources sustainably, efficiently and equitably	Future development applications for any expansion of the lifestyle village will address sustainability measures such as water and energy consumption, and waste management.
E3	**Environmental Resilience** Our community is resilient to environmental risks, natural hazards and climate change	Future development applications for any expansion of the site will evaluate, and implement protection measures where required, with respect to environmental risks, natural hazards and climate change. In this regard it is worth noting that the vacant part of the site is not flood affected by the 1 in 100 year event or the PMF, and it can accommodate all necessary APZs for fire protection purposes without requiring additional vegetation removal.
Focus Area Four: Our Council		
L1	**Governance** Our Council's leadership is based on trust and values of Respect, Integrity, Teamwork, Excellence and Safety	Not applicable to the Planning Proposal.
L2	**Financial Management** Our Council is financially sustainable to meet community needs	The proposed development will contribute financially to Council through the payment of rates and Section 7.11 contributions.
L3	**Communication and Engagement** Our community understands Council's services and can influence outcomes that affect them.	The Planning Proposal will be subject to community notification and consultation processes.

Anna Bay Strategy and Town Plan (December 2008)

The Anna Bay Strategy and Town Plan guides the management of future population growth and the building of neighbourhoods in Anna Bay. It establishes a context and policy direction for future rezoning requests and development controls in the Anna Bay area. It also integrates the location, timing and funding for community facilities and infrastructure.

The strategy sets out a town plan, which is a strategic response to the constraints and opportunities in Anna Bay and the policy and legal framework. The vision set out in the strategy for Anna Bay is a small and vibrant town offering a mix of dwelling types and business opportunities and a quality natural environment. It will have a pleasant main street with a mix of retail and office space for local and visitor patronage and shop top housing or tourist accommodation.

The subject site is not located within the Anna Bay Town Centre and therefore many of the key strategic directions outlined in the strategy are not directly relevant to the site or proposed development.

Notwithstanding, the proposed development will contribute to the vision established for Anna Bay by providing additional residents within the proximity of the Anna Bay Town Centre, to provide patronage to the expanding commercial uses within the town centre.

Q5. Is the Planning Proposal consistent with any other applicable State and regional studies or strategies?

Consideration was given to other State and regional strategies, including *A 20 Year Economic Vision for Regional NSW* (updated February 2021) and the *Future Transport Strategy 2056* (updated November 2020). Although these documents do not strictly relate to the Planning Proposal, the Planning Proposal is not inconsistent with these high-level State strategies.

Q6. Is the Planning Proposal consistent with applicable SEPPs?

An assessment of the relevant applicable SEPPs against the Planning Proposal is provided in the table overleaf.

Table 2: Relevant State Environmental Planning Policies

SEPP	Consistency and Implications
SEPP (Housing) 2021	
To enable the development of diverse housing types, to encourage housing that will meet the needs of more vulnerable members of the community, to promote the planning and delivery of housing n locations to make use of existing and planned infrastructure, to minimise adverse climate and environmental impacts of new housing development, to support short-term rental accommodation as a home-sharing activity while managing the social and environmental impacts from this use, and to mitigate the loss of existing affordable rental housing.	SEPP Housing was introduced on 26th November 2021. Whilst SEPP Housing repealed SEPP No 21 – Caravan Parks and SEPP No 36 – Manufactured Home Estates, it essentially transferred the provisions of the two (2) repealed SEPPs into the new SEPP. Part 8 of Chapter 3 of SEPP Housing contains provisions for manufactured home estates. These provisions are not applicable because they do not apply to Port Stephens, as it is excluded under Clause 7 of Schedule 6 to the SEPP. Part 9 of Chapter 3 contains provisions relating to caravan parks, and is applicable to this Planning Proposal. Part 9 provides matters for consideration when development consent is granted for a caravan park, including a caravan park that includes manufactured homes. These matters include site suitability, location and character, and whether necessary community facilities and services are available. This Planning Proposal seeks to amend the LEP to regularise the existing approved caravan park use and allow for the use to be extended to adjoining land. The approved use consists of a caravan park on which moveable dwellings are installed or being installed. The approval and following successful construction and occupation is confirmation that site is suitable for this use. The Planning Proposal is considered to be consistent with the aims and objectives of Part 9 relating to the provision of community facilities, the protection of the environment in the vicinity of the land, and the orderly and economic development of the land used for long term residents. Any future development applications on the subject site will need to consider the requirements of that Part.

SEPP	Consistency and Implications
	Further, the Planning Proposal is consistent with the overarching principles of the Housing SEPP, as it will: • Offer housing diversity; • Provide housing to meet the needs of more vulnerable members of the community (such as seniors); • Provides a high level of amenity; • Promotes housing in a location where it will use existing and planned infrastructure and services; and • Minimises environmental impacts through the use of largely disturbed land.
SEPP (Resilience and Hazards) 2021	
Chapter 2 Coastal Management Promotes an integrated and co-ordinated approach to land use planning in the coastal zone consistent with the objects of the *Coastal Management Act 2016*.	This Chapter is relevant as northern parts of the site are mapped as Coastal Environment Area, and a small portion of Lot 2 DP 622229 is identified within the Proximity Area for Coastal Wetlands (north-eastern corner). Refer to **Figure 7** earlier in this report for mapping. Division 3 of Chapter 2 contains provisions for development on land within the Coastal Environment Area, to be considered by the consent authority as part of development applications. These include matters such as the biophysical, hydrological and ecological environment, coastal values and natural processes, public access and Aboriginal heritage. Although Lot 51 is mapped as Coastal Environment Area, development consent has been granted for a caravan park on this lot and construction is underway. The Planning Proposal will not result in any additional impact on the matters listed in Section 2.10 on Lot 51. Future development applications on Lot 3622 and Lot 2 that encroach the Coastal Environment Area will need to address Section 2.10. However, it is noted that this represents a small part of the site and the matters raised in Section 2.10 can be considered and, where required, managed through its design and siting.

SEPP	Consistency and Implications
	Section 2.8 contains provisions relating to development on land mapped as being in proximity to coastal wetlands or littoral rainforests. It outlines that a consent authority must not grant development consent for development on land identified as a proximity area unless the proposed development will not significantly impact on the biophysical, hydrological or ecological integrity of the adjacent coastal wetland, or the quantity or quality of surface and ground water flows to and from the adjacent coastal wetland. A small portion of Lot 2 is mapped within the Proximity Area for Coastal Wetlands. This occurs in the north-eastern corner of the lot, adjoining Trotters Road. The portion of the site will be located within a C2 zoning and as a result will be protected. A Stormwater Strategy has been undertaken by ADW Johnson which concludes that the future development will not significantly impact on the biophysical, hydrological, or ecological integrity of the adjacent coastal wetland, or the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland. Full details in this regard are provided within **Attachment 9**. Based on the above, the Planning Proposal is considered to be consistent with the aims and objectives of Chapter 2, and the provisions of Chapter 2 and will not have any significant implications to future development.
Chapter 4 Remediation of Land This SEPP applies to land across NSW and states that land must not be developed if it is unsuitable for a proposed use because of contamination.	Section 4.6 of Chapter 4 requires that consideration be given to whether the land is contaminated as part of a development application. With respect to Lot 51, this land has been developed for the purposes of a caravan park under an existing development consent. This Planning Proposal seeks to regularise the approved existing use, and in this regard Chapter 4 of the SEPP would not pose limitations on the land. With respect to Lot 3622 and Lot 2, a Preliminary Contamination Assessment (PCA) has been undertaken by Qualtest which concludes that whilst the site contains potential sources of contamination, standard mitigation measures would be able to be adopted to ensure the site is suitable for the purposes of a caravan park. Full details in this regard are provided within **Attachment 10**.

SEPP	Consistency and Implications
SEPP (Transport and Infrastructure) 2021	
Chapter 2 Infrastructure Provides a consistent approach for infrastructure and the provision of services across NSW, and to support greater efficiency in the location of infrastructure and service facilities.	Subdivision 2 of Chapter 2 contains considerations for development in or adjacent to road corridors and road reservations, including provisions relating to classified roads and traffic generating development. The Traffic and Parking Assessment undertaken for the proposal indicates that a maximum of 21 vehicle trips per hour would result from the expansion. With respect to the requirements of the Infrastructure SEPP, it is noted that future development would not constitute traffic-generating development, and therefore referral of the future development application to Transport for New South Wales (TfNSW) for consideration under Section 2.121 would not be required. As the site has frontage to a classified road, Clause 2.118 will need to be considered by the consent authority as part of future development applications, to ensure that the new development does not compromise the effective and ongoing operation and function of classified roads, and to prevent or reduce the potential impact of traffic noise or vehicle emission on the development. Clause 2.118 will be addressed as part of any future development application; however, it is noted that the concept plan provided (**Attachment 6**) identifies access via Trotter Road (a local road) rather than Nelson Bay Road (a Classified Road), consistent with the requirements of Section 2.118. Further, the Traffic and Parking Assessment (**Attachment 5**) confirms that the proposed development will not adversely impact the operation of the road network. Further to the above, it is understood that TfNSW's key concern surrounds the uncertainty of the timing of the new Trotter Road access. In this regard it is noted that Trotter Road requires upgrades as part of an approved caravan park directly north of the site at 16 Trotter Road (DA-16-2007-15-1). This development is significantly further advance than the subject site and as such will be constructed prior to occupation of the future caravan park. If, for unforeseen circumstances, Trotter Road is not upgraded in time, the proposed caravan park extension can use the existing access arrangements off Binder Road.

SEPP	Consistency and Implications
SEPP (Biodiversity and Conservation) 2021	
Chapter 3 Koala Habitat Protection 2020 (Applies to land zoned RU1, RU2, or RU3 only) Encourages the conservation and management of natural vegetation areas that provide habitat for koalas to ensure permanent free-living populations will be maintained over their present range.	Chapter 3 of SEPP (Biodiversity and Conservation) 2021 will be applicable to future development applications as the site is zoned RU2 Rural Landscape and it is located in Port Stephens LGA, and has, together with adjoining land in the same ownership, an area >1ha. In accordance with Section 3.6, before granting consent, council must be satisfied as to whether or not the land is potential koala habitat. The SBDAR confirmed that the site did not contain any koalas or indication of koala habitation during the surveys for this species. Further, the site does not contain any koala feed trees. This aside, the proposal has nonetheless retained vegetation in the east The SBDAR concluded that the proposal would have no impacts in this regard. Based on the above, the Planning Proposal is considered to be consistent with the aims and objectives of the Chapter 3 of the SEPP, and would not prevent Council from granting consent to future development.
SEPP (Planning Systems) 2021	
Chapter 2 State and Regional Development Chapter 2 of SEPP (Planning Systems) identifies development that is State Significant development, State Significant infrastructure, critical State Significant infrastructure and development that is regionally significant.	The proposed development is not identified as State Significant development. Nor is it likely to be regionally significant development, based on the development types and thresholds contained in Schedule 6 of the SEPP. As such, the provisions of the SEPP do not present any limitation to this Planning Proposal.

Q7. Is the Planning Proposal consistent with applicable Ministerial Directions (Section 9.1 Directions)?

An assessment of relevant Ministerial Directions against the Planning Proposal is provided in the table below. The Ministerial Directions were obtained from DPE website on 4th May 2022; however, the document is undated.

Table 3: Relevant Ministerial Directions

Ministerial Direction	Consistency and Implications
1. PLANNING SYSTEMS	
1.1 Implementation of Regional Plans The objective of this direction is to give legal effect to the vision, land use strategy, goals, directions and actions contained in Regional Plans.	The Hunter Regional Plan 2041 applies to the Planning Proposal and is addressed in detail elsewhere in this proposal (Refer Part 3 - Section B - Q3). Whilst the subject site is not located in an identified or emerging growth area identified in the Hunter Regional Plan 2041 (HRP), the proposed development is consistent with the vision and goals outlined in the HRP as it will provide additional housing choice within an existing, well designed community that is accessible to a range of facilities and services. The construction phase will contribute towards economic growth and in the longer term, the provision of additional housing will provide broader economic benefits via increased demand for goods and services and patronage of local business as well as providing housing for a growing workforce. The Planning Proposal is considered to be consistent with this direction as it achieves the overall intent of the Regional Plan and does not undermine the achievement of its vision, land use strategy, goals, directions or actions.

Ministerial Direction	Consistency and Implications
1.3 Approval and Referral Requirements The objective of this direction is to ensure that LEP provisions encourage the efficient and appropriate assessment of development.	The Planning Proposal is consistent with the terms of this direction as: • It does not include provisions that require concurrence, consultation or referral of a development application to a Minister or public authority; • It does not contain provisions requiring concurrence, consultation or referral of a Minister or public authority prior to undertaking community consultation in satisfaction of Schedule 1 of the EP& Act; and • It does not identify development as designated development.
1.4 Site Specific Provisions The objective of this direction is to discourage unnecessarily restrictive site specific planning controls.	The Planning Proposal is consistent with the terms of the direction as the proposed amendments to the LEP allow the proposed caravan park land use on the land without imposing any development standards or requirements in addition to those already contained in the LEP. This report contains a potential concept layout for the vacant land for contextual purposes only.
3. BIODIVERSITY AND CONSERVATION	
3.1 Conservation Zones The objective of this direction is the protection and conservation of environmentally sensitive areas, by ensuring that Planning Proposals do not reduce the environmental protection standards applying to such land unless it is suitably justified by a relevant strategy or study or is of minor significance.	The Planning Proposal is consistent with this Direction as it includes provisions that facilitate the protection of the fauna movement corridor along the eastern boundary of the site.
3.2 Heritage Conservation The objective of this direction is to conserve items, areas, objects and places of environmental heritage significance and indigenous heritage significance.	The site does not contain any State or locally listed historic heritage items, nor is it located within a Heritage Conservation Area. Lot 51 is highly disturbed as a result of construction of the approved caravan park. An Aboriginal Due Diligence assessment has been prepared by McCardle Heritage for Lot 3622 and Lot 2 which concludes that the remainder of the site does not contain any sites or PADs of Aboriginal heritage significance, and as a result an AHIP would not be required for the future development (refer to **Attachment 2**).

Ministerial Direction	Consistency and Implications
	As the existing provisions of the LEP will continue to apply with respect to heritage conservation, it is considered that additional provisions are not required.
4. RESILIENCE AND HAZARDS	
4.1 Flooding The objectives of this direction are to ensure that development of flood prone land is consistent with the NSW Government's Flood Prone Land Policy and the principles of the Floodplain Development Manual 2005, and ensure that the provisions of an LEP that apply to flood prone land are commensurate with flood behaviour and includes consideration of the potential flood impacts both on and off the subject land.	The land identified for future development is not located within Council's FPA and is not liable to the PMF. Minor encroachments at the periphery of the existing Lifestyle Village have been mapped within the FPA and PMF extents (as shown in **Figure 8** of this report). Off-site evacuation to the Anna Bay Township is made possible via Trotter Road then Nelson Bay Road. Whilst Nelson Bay Road is inundated by the Probable Maximum Flood, shelter-in-place is an appropriate response strategy until safe vehicular access is restored
4.2 Coastal Management The objective of this direction is to protect and manage coastal areas of NSW. This direction applies to land within the coastal zone.	This direction applies as the site is mapped as a proximity area for a coastal wetland and coastal environment area. With respect to Direction 4.2(1), the Planning Proposal does not include provisions giving effect the matters identified in (a) – (d); however, future development will be required to address requirements of Chapter 2 of SEPP (Hazards and Resilience) 2021 in relation to Proximity Areas to Coastal Wetlands. Consideration of the SEPP is provided in the SBDAR attached to this report. The site is not located within mapped coastal vulnerability areas or littoral rainforests, identified in the SEPP. Nor is the site affected by a current or future hazard mapped in the LEP or Development Control Plan (DCP). As such, Direction 4.2(2) does not apply. With respect to Direction 4.2(3), strictly speaking the Planning Proposal does not propose to rezone land. However, it will enable increased development or more intensive land-use on land within a Proximity Area for a Coastal Wetland. The site is not mapped as containing Coastal Wetlands. The Proximity Area affects a small portion of Lot 2 DP 622229, occurring in its north-eastern corner; however, this will be retained in the fauna corridor and therefore not subject to development.

Ministerial Direction	Consistency and Implications
	The site is separated from the Coastal Wetland itself by road infrastructure and land cleared and developed for rural residential properties. Further, no waterways pass through the site. Direction 4.3(4) is not relevant as the Planning Proposal does not seek to amend SEPP (Resilience and Hazards) 2021 mapping.
4.3 Planning for Bushfire Protection The objectives of this direction are to protect life, property and the environment from bush fire hazards, by discouraging the establishment of incompatible land uses in bush fire prone areas, to encourage sound management of bush fire prone areas.	The site is identified as bushfire prone land. Lot 51 is the subject of an existing approval, and was required to incorporate appropriate bushfire protection measures. A SBS and BAR for the proposed development on Lot 3622 and Lot 2 has been undertaken by Bushfire Planning Australia (BPA) which confirms that the site will be able to accommodate all requirements of Planning for Bushfire Protection 2019 (refer **Attachment 4**). Further, a potential secondary access onto Trotters Road will improve access / egress arrangements for residents and emergency services in the event of a bushfire.
4.4 Remediation of Contaminated Land The objective of this direction is to reduce the risk of harm to human health and the environment by ensuring that contamination and remediation are considered by Planning Proposal authorities.	Lot 51 is the subject of an existing approval which has previously addressed matters of potential contamination. A PCA has been undertaken by Qualtest with respect to Lot 3622 and Lot 2 which concludes that the site can be made suitable whilst the site contains numerous potential sources of contamination, these were all typical of a rural residential site. Qualtest have advised that provided standard mitigation measures are adopted, the site is considered suitable for the purposes of a caravan park (refer to **Attachment 10**).
4.5 Acid Sulfate Soils The objective of this direction is to avoid significant adverse environmental impacts from the use of land that has a probability of containing acid sulphate soils.	The site is mapped as Class 4 Acid Sulfate Soils under the PSLEP. Acid sulfate soils were considered and deemed appropriate across Lot 51 as part of the approval for the caravan park, which is currently under construction and operational. Further assessment of acid sulfate soils on Lot 3622 and Lot 2 has been undertaken within the PASSA which concludes no ASS was discovered within 2m below ground level (refer to **Attachment 11**).

Ministerial Direction	Consistency and Implications
5. TRANSPORT AND INFRASTRUCTURE	
5.1 Integrating Land Use and Transport The objective of this direction is to ensure that urban structures, building forms, land use locations, development designs subdivision and street layouts achieve the sustainable transport objectives.	The Planning Proposal seeks to support the existing and future development of a medium density nature, with a range of community facilities and services provided on site. Consideration has been given to *Improving Transport Choice – Guidelines for planning and development* (DUAP 2001). *The Right Place for Business and Services – Planning Policy* (DUAP 2001) was reviewed; however, it is was not applicable given it relates to commercial / business development as opposed to residential. The Planning Proposal is considered to be generally consistent with the aims, objectives and principles of *Improving Transport Choice – Guidelines for planning and development* as outlined below. The site is located within 400m of an existing bus route, with a bus stop located on Nelson Bay Road, approximately 150m from the entrance to the caravan park. While it is not a major public transport node, the bus service provides linkages to nearby centres including Anna Bay and Nelson Bay, as well as more significant locations such as Newcastle Airport and Newcastle CBD. In addition, Sunrise Lifestyle Village offers a community bus service for its residents, providing connections to local centres and services, as discussed above. The site also provides a range of onsite community facilities (as listed in response to Question 3), which would typically be found in centres. The facilities are within walking distance to existing and future residents. The caravan park provides connectivity via a network of (low speed) internal roadways and pathway connections within the current and future proposed development, encouraging pedestrian movements and reduce reliance on cars. Noting the accessibility to public and private bus services, and provision of onsite services and facilities, it is expected that the Planning Proposal will reduce travel demand including the number of trips generated by development and the distances travelled, especially by car.

Ministerial Direction	Consistency and Implications
	With respect to vehicular access, the existing caravan park is accessed from Nelson Bay Road. The Planning Proposal is supported by a traffic assessment that investigates the opportunity for a secondary access onto Trotters Road, improving circulation and accessibility. Further to the above, it is understood that TfNSW's key concern surrounds the uncertainty of the timing of the new Trotter Road access. In this regard it is noted that Trotter Road requires upgrades as part of an approved caravan park directly north of the site at 16 Trotter Road (DA-16-2007-15-1). This development is significantly further advance than the subject site and as such will be constructed prior to occupation of the future caravan park. If, for unforeseen circumstances, Trotter Road is not upgraded in time, the proposed caravan park extension can use the existing access arrangements off Binder Road. With the above in mind, it is considered that the proposal is generally consistent with the relevant aims, objectives and principles of *Improving Transport Choice – Guidelines for planning and development* (DUAP 2001).
6. HOUSING	
6.2 Caravan Parks The objectives of this direction are to provide for a variety of housing types and provide opportunities for caravan parks and manufactured home estates.	This Planning Proposal reinforces the permissibility of the existing caravan park and provides for its extension over Lot 3622 DP 622485 and Lot 2 DP 622229. The Planning Proposal is consistent with this direction.
8: RESOURCES AND ENERGY	
8.1 Mining, Petroleum Production and Extractive Industries The objective of this direction is to ensure that the future extraction of State or regionally significant reserves coal, other minerals, petroleum and extractive materials are not compromised by inappropriate development.	The Proponent is not aware of the site being identified for future extraction of State or regionally significant reserves of coal, other minerals, petroleum and extractive materials, and notes that the majority of the site is already developed for the purposes of a caravan park under an existing development consent. It noted that Council referred the Planning Proposal to the Department of Primary Industries (DPI) as part of the Scoping phase, and no objections were raised in this regard.

Ministerial Direction	Consistency and Implications
9. PRIMARY PRODUCTION	
9.1 Rural Zones The objectives of the direction are to protect the agricultural production value of rural lands. Applies to land that seeks to rezone rural zoned land to a residential, business, industrial, village or tourist zone or increase the permissible density of rural zoned land.	This direction is not applicable to the Planning Proposal as it does not rezone land. This aside, it will increase residential density in a rural zone and so has nonetheless been addressed. Lot 51 has no agricultural production value as the land is being developed as a caravan park. Lots 3622 and Lot 2 are considered to have little value as productive rural land, primarily based on the lot areas (being 2.042ha and 1.493ha respectively) and being landlocked by road infrastructure and the caravan park on Lot 51. Further, DPI have advised that the subject land is Land and Soil Capability (LSC) class 6 and is highly constrained in terms of agricultural opportunities.
9.2 Rural Lands The objective of this direction is to protect the agricultural production value of rural land and facilitate the orderly and economic development of rural lands for rural and related purposes. Applies to Planning Proposals that will affect an existing or proposed rural or environmental protection zone or changes the existing minimum lot size within a rural or environment protection zone.	This direction applies as the Planning Proposal will affect land within an existing rural zone. The Planning Proposal gives due consideration to the objectives of this direction, and the natural and physical constraints of the land. The site is considered to have minimal agricultural value. The Planning Proposal will not result in the fragmentation of rural zoned lands. Further, the site does not contain any significant environmental values. Compliance with Direction 9.2(1) is demonstrated below. Direction 9.2(2) does not apply as no changes are proposed to the existing minimum lot size. Accordingly, the provisions of this Direction are considered to be satisfied.
	Direction 9.2(1) ***A Planning Proposal must:***
	(a) Be consistent with any applicable strategic plan, including regional and district plans endorsed by the Secretary of the Department of Planning and Environment, and any applicable local strategic planning statement. The Planning Proposal will enable a range of outcomes from the HRP 2041, as well as the Port Stephens CSP, Live Port Stephens LHS and Port Stephens LSPS, as outlined under Question 3 of this report.

Ministerial Direction	Consistency and Implications
	The response to Question 3 also outlines the strategic merits of this Planning Proposal in accordance with the DPE Guide ***(b) Consider the significance of agriculture and primary production to the State and rural communities***. The site is not presently utilised for rural purposes, nor is it likely to be suitable for agriculture and primary production. Lot 51, which makes up approximately 74% of the site, has no agricultural production value as the land has been developed as a caravan park. The remainder of the site, being Lot 3622 and Lot 2, are considered to have little to no value as productive rural land. This is based on their size, positioning of existing residential development on the sites and limited capacity to amalgamate with adjoining lands to create larger parcels suitable for commercial or intensive agricultural production. ***(c) Identify and protect environmental values, including, but not limited to, maintaining biodiversity, the protection of native vegetation, cultural heritage, and the importance of water resources.*** Consideration has been given to the environmental values of the site in the preparation of this Planning Proposal. It is noted that the site has been the subject of development to varying degrees, and displays minimal biodiversity and cultural heritage value. However, the Planning Proposal will protect a vegetated corridor on its eastern boundary which connects to an existing fauna underpass, which will be zoned C2 Environmental Conservation to ensure its protection. ***(d) consider the natural and physical constraints of the land, including but not limited to, topography, size, location, water availability and ground and soil conditions*** Consideration has been given to the natural and physical constraints of the land throughout this Planning Proposal. There are no natural or physical constraints on the land that would prevent the Planning Proposal.

Ministerial Direction	Consistency and Implications
	(e) Promote opportunities for investment in productive, diversified, innovative and sustainable rural economic activities. As per the response to (a) above, the site is not presently utilised nor considered suitable for rural purposes. ***(f) Support farmers in exercising their right to farm.*** The site is presently not utilised nor considered suitable for rural purposes. ***(g) Prioritise efforts and consider measures to minimise the fragmentation of rural land and reduce the risk of land use conflict, particularly between residential land uses and other rural land uses.*** The site is considered to be fragmented in its current form, by virtue of the approved caravan park development and the residual land being landlocked by surrounding roads. ***(h) Consider State significant agricultural land identified in Chapter 2 of the SEPP (Primary Production) 2021 for the purpose of ensuring the ongoing viability of this land.*** Land that is deemed to be State significant agricultural land (SSAL) is identified in Schedule 1 of the SEPP. At the time of writing this report, there were no areas listed in Schedule 1 of the SEPP. It is noted that early draft mapping was released in November 2021. The site was not identified as SSAL on the draft map, nor was any land in the vicinity of the site (refer to **Figure 14** overleaf).

Ministerial Direction	Consistency and Implications
	 **Figure 14: Draft SSAL Exhibition Mapping (Source: NSW DPI, 10th November 2021)** ***(i) Consider the social, economic and environmental interests of the community.*** The Planning Proposal provides opportunity to increase housing diversity within the Port Stephens LGA and to provide greater housing choice, on land that is largely unconstrained with respect to enviromental values.

Site-Specific Merit

Sections C, D and E identify the potential environmental, social and economic impacts of the proposal and outline proposed mitigation measures and justification. The Planning Proposal demonstrates that the proposal is suitable for the site and the site is (or can be made) suitable for the resultant development.

Section C – Environmental, Social and Economic Impact

Q8. Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?

The subject site does not contain land declared as critical habitat.

The Streamlined BDAR have been prepared for the Planning Proposal, with the outcomes summarised below.

The SBDAR included assessment of all relevant flora and fauna, including surveys within appropriate timeframes. The SBDAR concluded that the proposed development would not have a significant impact in terms of species listed under the BC Act or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999;*

An existing wildlife crossing exists approximately 10m east of the site. Avoid and minimise considerations within the Planning Proposal have been recommended to mitigate impacts and functionality of the underpass, with a variable width vegetation buffer being retained and zoned C2. The proposed buffer would result in the retention of approximately 0.32ha of PCT 1646 (*Smooth Barked Apple – Blackbutt – Old Man Banksia Woodland on Coastal Sands of the Central and Lower North Coast)*. The widened buffer ensures approximately 95m of retained vegetation at the fauna crossing point.

In order to develop the land as intended under the Planning Proposal, removal of up to 1.3ha of native vegetation commensurate with PCT 1646 may be required. The quality of this vegetation varies between poor to moderate.

To offset residual impacts from the development, retirement of ecosystem credits is likely to be required, with this to be detailed as part of the future Development Application.

Noting the above, it is considered that no further flora and fauna assessment is required following gateway determination.

The SBDAR is provided within **Attachment 3**.

Q9. Are there any other likely environmental effects as a result of the Planning Proposal and how are they proposed to be managed?

Technical studies have been undertaken to assess the likely environmental effects resulting from the Planning Proposal, and how these effects are proposed to be managed in relation to the following matters:

Traffic

The Planning Proposal is likely to result in additional traffic to the road network, as a result of additional housing on the site. Further, a secondary access is proposed on Trotters Road which requires consideration given its proximity to Nelson Bay Road, being a Classified Road.

A traffic and parking impact assessment has been prepared to inform this Planning Proposal.

The findings of the traffic impact assessment indicate the following:

- The proposed development would result in an additional 13 vtph AM and 21 vtph PM in the peak periods on the local road network;
- The proposed development, including the remaining sites to be developed over the existing village and the 119 sites yet to be constructed at 16 Trotters Road, Bobs Farm would generate, and additional 51 vtph AM and 83 vtph PM in the peak periods on the local road network; and
- Cumulative assessments for the above have concluded that the existing roads have ample mid-block and intersection capacity to accommodate the additional developments.

Further to the above Trotter Road will be upgraded as part of an approved caravan park directly north of the site at 16 Trotter Road (DA-16-2007-15-1). This development is significantly further advance than the subject site and as such will be constructed prior to occupation of the future caravan park.

Further discussion is included within **Attachment 5**.

Bushfire Risk

The subject land is identified as bushfire prone land, specifically Category 1 and 2 Vegetation (as shown in **Figure 4** previously).

Bushfire risk for the existing approved caravan park on Lot 51 was assessed as part of its respective development application, with appropriate bushfire protection measures being incorporated into its design.

Future proposed development on the remainder of the land will be integrated development and require referral to the NSW Rural Fire Service for consideration.

A SBS and BAR has been carried out by BPA with regards to the Lot 3622 and Lot 2 which confirms that the site has suitable access arrangements in place and can accommodate appropriate APZs as detailed within **Figure 5** to ensure the future development will comply with the requirements of Planning for Bushfire Protection 2019. In this regard, it is highlighted that some sites are located within the nominated APZ; however, the layout proposed is only a concept at this stage and can be adjusted following a more detailed assessment as part of the DA. BPA have; however, advised that the site is suitable for the intended use and proposed rezoning to allow for the extension of the Sunrise caravan park

Full details in this regard are provided within **Attachment 4**.

Aboriginal Cultural Heritage

Aboriginal cultural heritage has been considered and addressed within Lot 51 as part of the approved development on the site.

An Aboriginal Due Diligence Assessment has been prepared by McCardle Heritage with regards to Lot 3622 and Lot 2 which concludes that the site does not contain any sites or potential archaeological deposits (PADs) of Aboriginal heritage significance, and as a result an AHIP would not be required for the future development. This conclusion was made based on the fact that the site had been previously cleared with the historic upper dune characteristics being entirely removed to make the site level.

Full details in this regard are provided within **Attachment 2**.

Acid Sulphate Soils and Contamination

Matters surrounding acid sulphate soils and contamination conditions have been considered and addressed within Lot 51 as part of the approved development on the site.

The PCA prepared by Qualtest for Lot 3622 and Lot 2 found that there were potential sources of contamination across the site including:

- Current and former buildings;
- Filling and stockpiling;
- Storage of equipment/waste materials;
- Septic tank located in centre of the site;
- Former sand mining carried out in the north and eastern portion of the site.

Qualtest concluded that for the purpose of the rezoning it is likely that the site could be made suitable for the proposed use, noting any remediation required for the above would adopt conventional techniques.

Full details in this regard are provided within **Attachment 10**.

The PASSA undertaken by Qualtest concluded that no ASS was discovered within 2m below ground level and as such no acid sulfate soils management plan is recquired.

Full details in this regard are provided within **Attachment 11**.

Stormwater and Flooding

Matters surrounding stormwater management have been considered and addressed within Lot 51 as part of the approved development on the site.

A Stormwater Strategy has been prepared by ADW Johnson for Lot 3622 and Lot 2 which addresses both stormwater quantity and quality requirements.

Based on review of the existing site topography and geotechnical conditions, an infiltration-centric stormwater strategy has been recommended. End-of-line infiltration basins are proposed to both attenuate peak flows and improve runoff quality.

DRAINS modelling was undertaken to demonstrate that the proposed stormwater management system can be sized to meet Council's requirements in relation to stormwater detention and peak site discharges.

MUSIC modelling has demonstrated that a proposed treatment train of gross pollutant traps and infiltration basins can satisfy Council's water quality stripping targets within the development footprint.

The site is situated above the regional Probable Maximum Flood. The proposed development provides favourable conditions for refuge-in-place subject to extreme flood events. It is noted that the likely long warning times for the flood type would allow residents to 'stock up' or seek medical treatment prior to the peak of an event.

The proposed development will not adversely impact the hydrological integrity of coastal wetlands or the quality of drinking water catchments.

This strategy report has concluded that appropriate stormwater controls can be readily implemented within the proposed site footprint. The stormwater strategy presented herein is considered to be well-suited to existing site conditions and is fully compliant with Council's Development Control Plan.

Full details in this regard are provided within **Attachment 9**.

Services

Public utility services including telecommunications, electricity, water and sewer will be available to service the future development on the site. Refer to **Part 3 – Section D – Q11** for details on the advice provided by Ausgrid and Hunter Water.

Q10. Has the Planning Proposal adequately addressed any social and economic effects?

Anticipated social and economic effects are detailed below, and can be considered in further detail post gateway if required.

Social Effects

A range of social benefits associated with the development of the site are anticipated, including:

- Additional housing choices in the vicinity of Anna Bay and the Port Stephens LGA which caters for future population growth and responds to an ageing population in Port Stephens;
- The freeing up of larger family homes from downsizers moving into the caravan park;
- Efficient use of community facilities and services provided at an existing approved development; and
- Provide a critical mass which will enhance the viability of new services, facilities, and public transport in the Anna Bay area.

Economic Effects

A range of economic benefits associated with the development of the site are anticipated, including:

- Stimulation of local economic activity through increased local spending;
- Provision of smaller dwellings, which can improve housing affordability;
- Employment through construction and future maintenance of the development, and direct employment of employees servicing the development;
- Contribution toward investment in social infrastructure in the surrounding locality via additional funding through the Section 7.11 Contribution Plan; and
- Provision of additional dwellings with easy access to major employment precincts such as Newcastle Airport and Tomago.

Section D – Infrastructure (Local, State and Commonwealth)

Q11. Is there adequate public infrastructure for the Planning Proposal?

Public infrastructure works, including access to Nelson Bay Road and utility services, have been carried out as part of the approved caravan park development.

The caravan park is accessed off Binder Road, which intersects Nelson Bay Road. The intersection was constructed specifically to cater for the caravan park development.

The existing access arrangements are capable of accommodating demand associated with the proposed development; however, it is intended to provide a secondary access via Trotter Road as part of future development on the land.

The Traffic Impact Assessment prepared to support this Planning Proposal indicates that the surrounding road network, including intersections can accommodate the proposed development without upgrades.

Further to the above, TfNSW was consulted as part of the Scoping phase of the proposal. As part of this consultation, TfNSW advised that their key concern surrounds the uncertainty of the timing of the new Trotter Road access. In this regard, it is noted that Trotter Road requires upgrades as part of an approved caravan park directly north of the site at 16 Trotter Road (DA-16-2007-15-1). This development is significantly further advance than the subject site and as such will be constructed prior to occupation of the future caravan park. If, for unforeseen circumstances, Trotter Road is not upgraded in time, the proposed caravan park extension can use the existing access arrangements off Binder Road.

Preliminary servicing enquiries have been made with Ausgrid and Hunter Water, regarding network capacity for the proposed development. Ausgrid confirms that there is capacity in the existing network to support the proposed development. Hunter Water confirms that:

- There is currently sufficient capacity in the local water network to cater for the proposed development;
- There is currently sufficient capacity in the local wastewater network to cater for up to 5L/s from the proposed development; and
- There is sufficient capacity in the Boulder Bay Waste Water Treatment Works (WWTW), which is the most feasible option for wastewater discharge.

A copy of the advice provided by Ausgrid and Hunter Water is provided as **Attachments 7** and **8**.

With respect to demand for local infrastructure, Port Stephens Local Infrastructure Contribution Plan applies to the site. The site is located within the Tomaree Catchment Area, and the s7.11 Plan collects funding from development for a range of infrastructure required to support future development in the catchment. Given that the Planning Proposal is unlikely to generate a significant population increase (i.e. approximately 62 dwellings), it is considered that it would not warrant an update to the Plan and it is anticipated that future development will be levied in accordance with the Plan to ensure a proportionate contribution towards local infrastructure is provided for items such as local roads, open space, recreation facilities and community facilities.

Noting the above, it is considered that there is adequate public infrastructure to support the Planning Proposal.

Section E – State and Commonwealth Interests

Q12. What are the views of state and federal public authorities and government agencies consulted in order to inform the Gateway determination?

Consultation will be undertaken throughout the Planning Proposal process with the relevant agencies.

The Planning Proposal was sent to the following agencies as part of Scoping assessment:

- Department of Planning and Environment;
- Transport for NSW;
- Rural Fire Service NSW;
- Department of Primary Industries – Agriculture; and
- Biodiversity Conservation Division.

None of the agencies objected to the proposal. They did; however, request additional information which has been provided and address throughout the Planning Proposal. An itemised response to each matter raised is also provided within **Attachment 12**.

Following the issue of the Gateway determination, the Planning Proposal was sent to the following agencies:

- Transport for NSW;
- Rural Fire Service NSW;
- NSW State Emergency Service; and
- Biodiversity Conservation Division.

Transport for NSW and Rural Fire Service NSW raised no objection to the proposal. NSW State Emergency Service and Biodiversity Conservation Division requested additional information with regards to undertaking a risk assessment surrounding the probable maximum flood (PMF) and addressing the evacuation and/or shelter-in-place arrangements. Hometown is currently reviewing this requirement and notes that the response will not materially impact the proposed LEP amendment.

PART 4 – Mapping

It is anticipated that the proposed map layer amendments will be prepared by Council to accompany the Planning Proposal, consistent with the mapping provided earlier in this report, to satisfy LEP technical mapping and GIS data requirements.

PART 5 – Community Consultation

This section of the Planning Proposal describes consultation and outcomes undertaken with Council, State agencies and authorities during the pre-

lodgement stage, and any community consultation undertaken, or consultation with other key stakeholders.

Community Consultation

Community consultation will be undertaken in accordance with the Gateway determination.

Notice of the public exhibition period will be placed on Council's website, The Examiner. The exhibition material will be on display at locations nominated by Council during normal business hours, including Council's Administration Building, 116 Adelaide Street, Raymond Terrace.
The Planning Proposal will also be available on Council's website.

In addition to the above, the Proponent has voluntarily undertaken early consultation with the existing residents of Sunrise Lifestyle Village as part of the preparation of this Planning Proposal. This is on the basis that the Planning Proposal, and expansion of the caravan park will have a direct impact on these residents.

It is noted that 100% of the existing caravan park has been sold. Approximately 70% of the caravan park is occupied, and these sites are located at the western end of the site. That is, furthest away from the proposed extension. The Proponent has consulted with these residents directly.

With respect to the remaining sites which have been sold and deposits have been taken, the Proponent has sent letters informing future residents of its intention to expand the caravan park. The Proponent has provided the opportunity for these residents to withdraw from their respective sale, with a full deposit refund.

This correspondence was sent in October 2021, and at the time of writing this report, no future resident has taken up this offer and requested a refund. In this regard, it could be considered the future residents of the caravan park do not object to the proposal.

In terms of consultation with the existing residents, the Proponent has undertaken on large format community consultation session. Following that, the Proponent visited the village and was approached by a number of existing residents and undertook informal discussions in a smaller forum. Each forum allowed residents to raise concerns and ask questions.

The Proponent intends to host an Open Day in future, with displays and staff available to answer questions.

Pre-Lodgement Consultation with Council and State Agencies/Authorities

Pre-lodgement consultation has occurred with PSC, Hunter Water, Ausgrid and DPE, and is summarised below.

- **Port Stephens Council**

An initial meeting was held between Council and the Proponent on 27th September 2021. A Strategic Planning Assessment was provided by PSC on 30th September 2021 which, in summary, indicated the proposal has strategic merit and should proceed. Council advised it would require the Planning Proposal to be supported by a Traffic Impact Assessment (TIA), Stage 1 BAM Assessment and evidence of serviceability.

An additional meeting was held 24th May 2022 to discuss ecology matters specifically. Consultation with PSC has been ongoing since the initial meeting.

The Planning Proposal was submitted to PSC for review on 3rd December 2021. Noting the change in legislation and introduction of the LEP Making Guidelines in March 2022, the original Planning Proposal submitted in December 2021 was amended so as to be considered the scoping document.

Key issues discussed with Council to date include:

- **Pedestrian Connectivity:** PSC confirmed that its Traffic Engineer had no objections to the TIA, with the exception of improving pedestrian connectivity to adjacent bus stops on Nelson Bay Road. The proponent confirmed the pathway had been constructed in accordance with Condition 20.2b of the associated development consent, however, it had washed away as a result of its location within a stormwater channel, and notwithstanding, the Applicant is willing to accept a condition of any future DA to this effect. This approach was agreed by PSC (refer to email 15th February 2022).

- **Site Specific DCP:** PSC considered whether a DCP was required for the site to ensure the zone objectives of the RU2 zone could be met. Upon further internal review, PSC advised that no site specific DCP would be required; however, the Planning Proposal would need to include some detail about how future development could meet the rural zone objectives and fit in with the existing character of the land.

- **Ecology:** PSC raised concern about habitat connectivity across Nelson Bay Road, and the need to maintain north-south habitat connectivity in the eastern portion of the site. It was suggested the corridor be protected using the C2 Environmental Conservation Zone.

  Additional information was provided by the Proponent on 4th May 2022, and concerns were flagged regarding the use of the C2 Zone in the context of the principles of ‘avoid and minimise’ under the BC Act. PSC advised its ecologist’s interpretation is that no further avoidance or minimisation would be required as part of future DAs, if dealt with at the rezoning stage.

  The Proponent submitted additional ecological information proposing increase retention of vegetation on the eastern part of the site, and PSC confirmed it supported the revised boundaries.

- **Planning Proposal Update:** PSC requested the Planning Proposal be updated in accordance with DPEs new LEP Making Guideline, and PSC updated template (refer to email 25th February 2022).

- **Scoping Phase:** The Scoping document was reviewed by DPE; TfNSW; Rural Fire Service; Department of Primary Industries – Agriculture; and Biodiversity Conservation Division in August 2022.

  On 16th September 2022, Council issued correspondence requesting additional studies as required by these agencies. These studies have since been prepared and discussion throughout the above Planning Proposal report. A table highlighting how the Planning Proposal has addressed these issues is provided within **Attachment 12**.

Hunter Water / Ausgrid

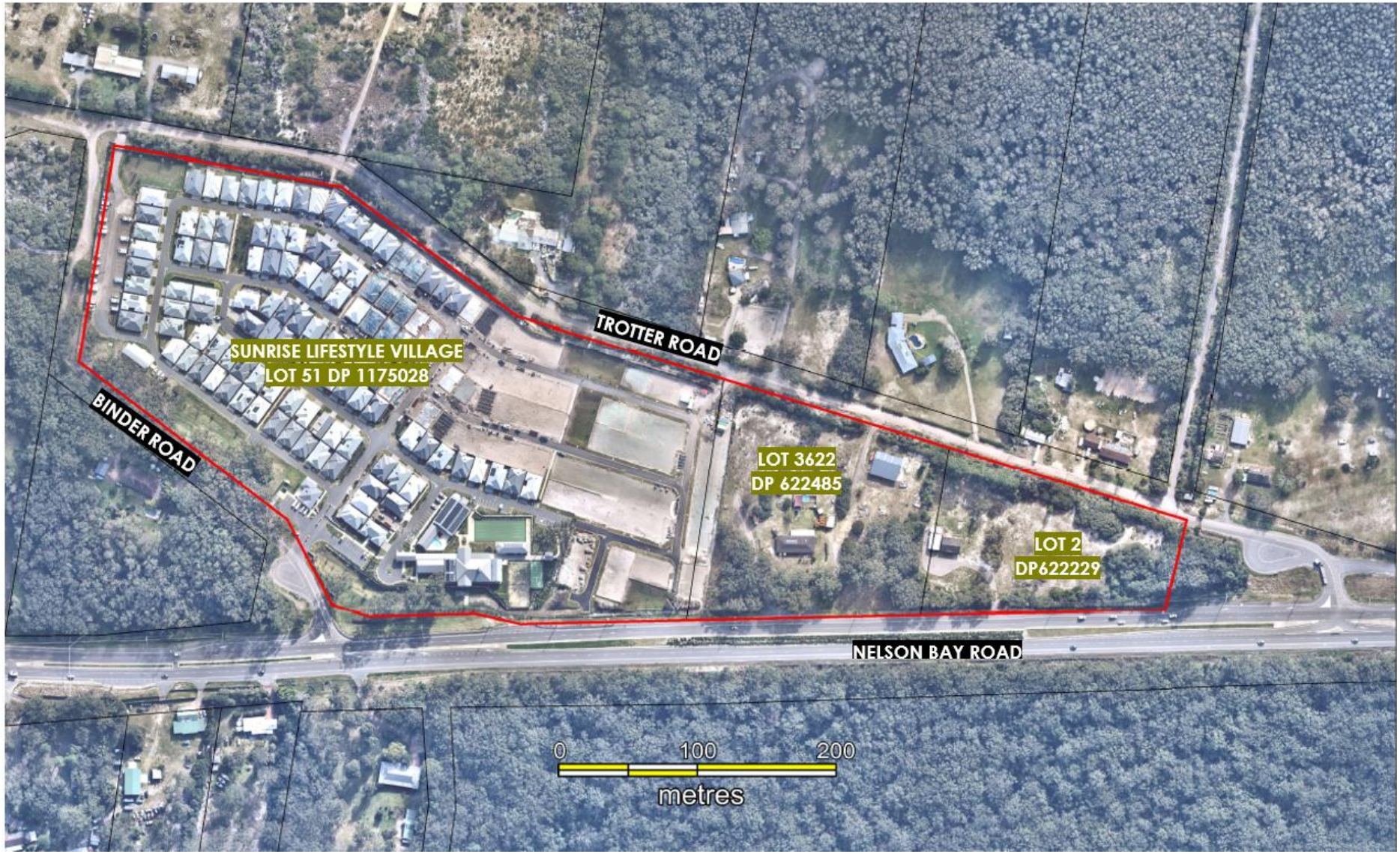
Consultation has occurred with Hunter Water and Ausgrid to confirm serviceability. Please refer to the response provided to Question 11 under Part 3, Section D of this report.

PART 6 – Project Timeline

The project timeline will be established following Gateway determination using the template below.

DPE stage and timeline	Working days		SEP 2022	OCT 2022	NOV 2022	DEC 2022	JAN 2023	FEB 2023	MAR 2023	APR 2023	MAY 2023	JUN 2023	JUL 2023	AUG 2023	SEP 2023
Stage 2: Planning proposal	95 days	**Additional Studies**													
		Council review and Report													
Stage 3: Gateway determination	25 days	**Gateway Determination**													
Stage 4: Post Gateway	50 days	**Agency Consultation**													
Stage 5: Public Exhibition and Assessment	95 days	**Public Exhibition**													
		Consider submissions													
		Council Report													
Stage 6: Finalisation	55 days	**Plan making**													

Attachment 1 – Locality Plan


SUNRISE LIFESTYLE VILLAGE
LOT 51 DP 1175028
TROTTER ROAD
BINDER ROAD
LOT 3622
DP 622485
LOT 2
DP622229
NELSON BAY ROAD
0
100
200
metres

Attachment 2 – Aboriginal Due Diligence Assessment

Hometown Australia

4029 and 4045 Nelson Bay Road, Bobs Farm

LGA: Port Stephens

Archaeological Due Diligence Assessment

31 October 2022

McCARDLE CULTURAL HERITAGE PTY LTD

ACN 104 590 141 • ABN 89 104 590 141

PO Box 166, Adamstown, NSW 2289
Mobile: 0412 702 396 • Email: penny@mcheritage.com.au

McCARDLE
CULTURAL HERITAGE

Report No: J202299 DD	
Approved by:	Penny McCardle
Position:	Director
Signed:	
Date:	31 October 2022

This report has been prepared in accordance with the scope of services described in the contract or agreement between McCardle Cultural Heritage Pty Ltd (MCH), ACN: 104 590 141, ABN: 89 104 590 141, and the proponent. The report relies upon data, surveys, measurements and specific times and conditions specified herein. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the proponent. Furthermore, the report has been prepared solely for use by the proponent and MCH accepts no responsibility for its use by other parties.

CONTENTS

EXECUTIVE SUMMARY 1
GLOSSARY 3
ACRONYMS 4
AHIMS SITE ACRONYMS 4

1 INTRODUCTION 5
1.1 INTRODUCTION 5
1.2 THE PROJECT AREA 5
1.3 DESCRIPTION OF THE PROPOSED DEVELOPMENT 6
1.4 OBJECTIVES OF THE DUE DILIIGENCE ASSESSMENT 6
1.5 LEGISLATIVE CONTEXT 7
1.5.1 NATIONAL PARKS AND WILDLIFE ACT (1974, AS AMENDED) 7
1.5.2 NATIONAL PARKS AND WILDLIFE REGULATION (2019) 8
1.5.3 ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979 (EP&A ACT) 8
1.6 ABORIGINAL COMMUNITY CONSULTATION 8
1.7 QUALIFICATIONS OF THE INVESTIGATOR 9
1.8 REPORT STRUCTURE 9
2 ENVIRONMENTAL AND ARCHAEOLOGICAL CONTEXT 10
2.1 LOCAL ENVIRONMENT 10
2.2 ARCHAEOLOGICAL CONTEXT 12
2.2.1 ABORIGINAL HERITAGE INFORMATION MANAGEMENT SYSTEM (AHIMS) 12
2.2.2 HERITAGE REGISTER LISTINGS 13
2.2.3 SUMMARY OF THE REGIONAL ARCHAEOLOGICAL CONTEXT 13
2.3 SUMMARY OF THE LOCAL ARCHAEOLOGICAL CONTEXT 14
2.4 SYNTHESIS OF ENVIRONMENTAL AND ARCHAEOLOGICAL CONTEXTS 15
2.5 MODELS OF PAST ABORIGINAL LAND USE 15
2.6 MODEL OF OCCUPATION FOR THE REGION 16
2.7 PREDICTIVE MODEL FOR THE LOCAL AREA 18
2.8 PREDICTIVE MODEL FOR THE PROJECT AREA 18
3 RESULTS AND DISCUSSION 22
3.1 SURVEY UNITS 22
3.2 ARCHAEOLOGICAL SITES AND ARCHAEOLOGICAL SENSITIVITY 25
3.3 CONCLUSION 25
4 ASSESSMENT OF IMPACTS 26
4.1 IMPACTS 26

5 MITIGATION AND MANAGEMENT STRATEGIES 27
5.1 CONSERVATION/PROTECTION 27
5.2 FURTHER INVESTIGATION 27
5.3 AHIP 27
6 RECOMMENDATIONS 28
6.1 GENERAL 28

APPENDICES

APPENDIX A AHIMS SEARCH RESULTS

LIST OF TABLES

TABLE 2.1 LAND USE SCALE (CSIRO 2010) 11
TABLE 2.2 SITE DESCRIPTIONS (KUSKIE & KAMMINGA 2000). 17
TABLE 3.1 EFFECTIVE COVERAGE FOR THE INVESTIGATION AREA 24
TABLE 3.2 LAND USE SCALE (CSIRO 2010) AND LAND USES IN THE PROJECT AREA 24

LIST OF FIGURES

FIGURE 1.1 LOCATION OF THE PROJECT AREA 5
FIGURE 1.2 AERIAL PHOTOGRAPH OF THE PROJECT AREA (NEARMAP 2022) 6
FIGURE 2.1 APPROXIMATE LOCATION OF AHIMS SITES 13
FIGURE 2.2 FOLEY'S MODEL (L) AND ITS MANIFESTATION IN THE ARCHAEOLOGICAL RECORD (R), (FOLEY 1981) 16
FIGURE 3.1 4029 – SOUTHERN END FACING NORTH WEST 22
FIGURE 3.2 NORTH EASTERN END FACING WEST 22
FIGURE 3.3 BACK OF THE PROPERTY FACING WEST 23
FIGURE 3.4 SOUTH WESTERN CORNER FACING NORTH EAST 23
FIGURE 3.5 NORTH EASTERN CORNER FACING SOUTH WEST 23

EXECUTIVE SUMMARY

McCardle Cultural Heritage Pty Ltd (MCH) has been engaged by Hometown Australia to undertake an Archaeological Due Diligence Assessment for the proposed rezoning to extend the existing Sunrise Lifestyle Village located at 4029 and 4045 Nelson Bat Road, Bobs Farm.

Located on Holocene dunes approximately 220 metres south of the interbarrier depression, the project area is situated on Quandary gravel, sand, silt, clay, Waterloo Rock, marine and freshwater deposits. Consisting of a disturbed landscape, the project area is located approximately 775 metres south of Bobs Farm Creek, approximately 220 metres south of the interbarrier depression and 1.8 kilometres from the ocean. In terms of past Aboriginal land uses and survival (water is necessary for survival), the project area may be considered somewhat-resourced in terms of water and resource availability being located 220 metres from the interbarrier depression. It has been established that locations on dunes overlooking the interbarrier depression, specifically within 50 metres, were favoured for camping whilst locations over 50 metres have shown a significant decrease in site numbers and densities.

The western side of the project area has been subject to clearing and construction works associated with the house, sheds and pool in the centre, a large shed at the north eastern side, as well as driveways and utilities. The eastern side of the project area, also previously cleared, has undergone construction works along the western border for a house and sheds, driveways and utilities. Discussions with the land owner whose family had previously owned both properties for over 80 years, indicate that the northern half of both properties were mined and in filled using the remainder of the upper dune portion of the properties

A search of the AHIMS register (Appendix A) has identified 55 known Aboriginal sites currently recorded within two kilometres of the project area. Considering the AHIMS results, local and regional archaeological investigations as well as the environmental context, the project area is located within 220 metres of the interbarrier depression. The dunes that overlook the interbarrier depression are known to have been favoured for past Aboriginal land uses and camping due to the rich resource of the swamp area and evidence of past Aboriginal land uses and resource exploitation is located throughout this dunal system and typically within 50 metres of the swamp with sites reducing in density away from the swamp but increasing again in close proximity to other fresh water sources. As the project area is located approximately 220 metres from this resource, it is likely the project area would have been utilised for hunting and gathering opportunities rather than camping and evidence of such past Aboriginal land uses manifests in the archaeological record as low-density shell middens, low-density artefact scatters and, or, isolated artefacts.

The project area, consisting of two separate properties were surveyed as two units. 4029 had been previously cleared, all trees and vegetation had been planted by the owners. The property was flat, indicating that the property had indeed been scrapped with none of the original upper dune remaining. Additionally, construction had occurred for the house, pool, sheds, garages, driveways as well as utilities. 4045 had also been previously cleared with the upper dune also removed with the project area being flat. Additionally, construction works had occurred in the western side for a house, garages and driveways. Vegetation was primarily grass with trees around the border.

No sites or areas of potential archaeological sensitivity were identified in the project areas during the survey and this is due to the significantly high impacts from previous land uses across the project area (clearing, mining, upper dune removal). Additionally, being located at a distance from reliable fresh water and resources, indicates the project area may have been utilised for more transitory activities rather than camping. Evidence of such past Aboriginal land uses manifests in the

archaeological record as a background scatter of discarded artefacts, which would have been disturbed/destroyed through past land uses.

As no sites or PADs were identified in the project area, there are no impacts to the archaeological record and the following recommendations are provided:

1) The persons responsible for the management of onsite works will ensure that all staff, contractors and others involved in construction and maintenance related activities are made aware of the statutory legislation protecting sites and places of significance. Of particular importance is the National Parks and Wildlife Regulation 2019, under the National Parks and Wildlife Act 1974;

2) Should any Aboriginal objects be uncovered during works, all work will cease in that location immediately and the Environmental Line contacted.

GLOSSARY

Aboriginal Place: are locations that have been recognised by the Minister (and gazetted under the *National Parks and Wildlife Act 1974*) as having special cultural significance to the Aboriginal community. An Aboriginal Place may or may not include archaeological materials.

Aboriginal Site: an Aboriginal site is the location of one or more Aboriginal archaeological objects, including flaked stone artefacts, midden shell, grinding grooves, archaeological deposits, scarred trees etc.

Artefact: any object that is physically modified by humans.

Artefact scatter: a collection of artefacts scattered across the surface of the ground (also referred to as open camp sites).

Assemblage: a collection of artefacts associated by a particular place or time, assumed generated by a single group of people, and can comprise different artefact types.

Backed artefact: a stone tool where the margin of a flake is retouched at a steep angle and that margin is opposite a sharp edge.

Background scatter: a term used to describe low density scatter of isolated finds that are distributed across the landscape without any obvious focal point.

Core: a chunk of stone from which flakes are removed and will have one or more negative flake scars but no positive flake scars. The core itself can be shaped into a tool or used as a source of flakes to be formed into tools.

Debitage: small pieces of stone debris that break off during the manufacturing of stone tools. These are usually considered waste and are the by-product of production (also referred to as flake piece).

Flake: any piece of stone struck off a core and has a number of characteristics including ring cracks showing where the hammer hit the core and a bulb of percussion. May be used as a tool with no further working, may be retouched or serve as a platform for further reduction.

Flaked piece/waste flake: an unmodified and unused flake, usually the by-product of tool manufacture or core preparation (also referred to as debitage).

Harm: is defined as an act that may destroy, deface or damage an Aboriginal object or place. In relation to an object, this means the movement or removal of an object from the land in which it has been situated

In situ: archaeological items are said to be "in situ" when they are found in the location where they were last deposited.

Retouched flake: a flake that has been flaked again in a manner that modified the edge for the purpose of resharpening that edge.

Typology: the systematic organization of artefacts into types on the basis of shared attributes.

ACRONYMS

ACHA	Aboriginal Cultural Heritage Assessment
ACHMP	Aboriginal Cultural Heritage Management Plan
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit

AHIMS SITE ACRONYMS

ACD	Aboriginal ceremonial and dreaming
AFT	Artefact (stone, bone, shell, glass, ceramic and metal)
ARG	Aboriginal resource and gathering
ART	Art (pigment or engraving)
BOM	Non-human bone and organic material
BUR	Burial
CFT	Conflict site
CMR	Ceremonial ring (stone or earth)
ETM	Earth mound
FSH	Fish trap
GDG	Grinding groove
HAB	Habitation structure
HTH	Hearth
OCQ	Ochre quarry
PAD	Potential archaeological deposit.
SHL	Shell
STA	Stone arrangement
STQ	Stone quarry
TRE	Modified tree (carved or scarred)
WTR	Water hole

1 INTRODUCTION

1.1 INTRODUCTION

McCardle Cultural Heritage Pty Ltd (MCH) has been engaged by Hometown Australia to undertake an Archaeological Due Diligence Assessment for the proposed rezoning to extend the existing Sunrise Lifestyle Village located at 4029 and 4045 Nelson Bat Road, Bobs Farm.

The assessment has been undertaken to meet the Heritage NSW, Department of Premier & Cabinet Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW and the brief. The purpose of a due diligence assessment is to assist proponents to exercise due diligence when carrying out activities that may harm Aboriginal objects or Aboriginal places and to determine whether they should apply for a consent to harm Aboriginal objects or Places through an Aboriginal Heritage Impact Assessment (AHIP). The purpose of this due diligence report is to demonstrate that all reasonable and practicable measures have been undertaken to prevent harm to any Aboriginal objects and/or place within the project area. This report has met the Heritage NSW Due Diligence requirements and considered the relevant environmental and archaeological information, the project land condition, the nature of the proposed development activity and impacts, as well as preparing appropriate recommendations.

1.2 THE PROJECT AREA

The project area is located at 4029 and 4045 Nelson Bat Road, Bobs Farm. Including Lot 3622 DP622485 and Lot 2 DP 622229, the location of the project area is shown in Figures 1.1 and 1.2.

Figure 1.1 Location of the project area

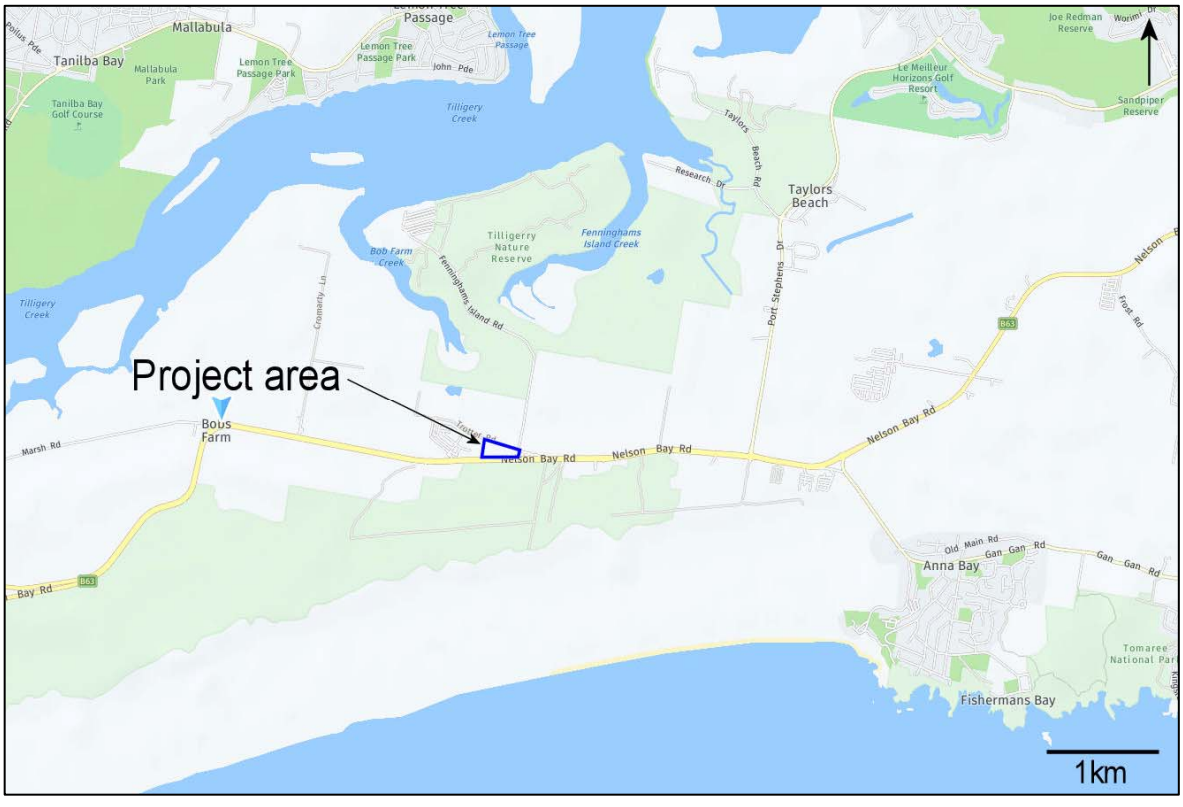


Figure 1.2 Aerial photograph of the project area (Nearmap 2022)



1.3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The proposal is for a rezoning to extend the existing Sunrise Lifestyle Village. Works typically associated with such a development include clearing and demolition of existing structures, site remediation, bulk earthworks including construction of dwellings and roads, services reticulation: WW, PW, NBN, electrical and gas and landscaping.

1.4 OBJECTIVES OF THE DUE DILIIGENCE ASSESSMENT

The objectives and primary tasks of this due diligence assessment were to:

- undertake a search of the Aboriginal Heritage Management System (AHIMS) and other relative registers;
- undertake research into the environmental and archaeological contexts of the project area;
- develop a predictive model of site location for the project area;
- undertake a field survey of the project area;
- assess the potential impacts of the proposed development on any identified Aboriginal sites or potential archaeological deposits (PADs) identified within the project area;
- assess the significance of any identified Aboriginal objects or sites identified within the project area;
- complete and submit site cards to AHIMS for any Aboriginal sites identified; and
- provide appropriate recommendations.

1.5 LEGISLATIVE CONTEXT

The following overview of the legislative framework, is provided solely for information purposes for the client, and should not be interpreted as legal advice. MCH will not be liable for any actions taken by any person, body or group as a result of this general overview and MCH recommends that specific legal advice be obtained from a qualified legal practitioner prior to any action being taken as a result of the general summary below.

Land managers are required to consider the effects of their activities or proposed development on the environment under several pieces of legislation. Although there are a number of Acts and regulations protecting Aboriginal heritage, including places, sites and objects, within NSW, the three main ones include:

- National Parks and Wildlife Act (1974, as amended)
- National Parks and Wildlife Regulation (2019)
- Environmental Planning and Assessment Act (1979)

1.5.1 NATIONAL PARKS AND WILDLIFE ACT (1974, AS AMENDED)

The National Parks and Wildlife Act (1974), Amended 2010, is the primary legislation for the protection of Aboriginal cultural heritage in New South Wales. The NPW Act protects Aboriginal heritage (places, sites and objects) within NSW and the protection of Aboriginal heritage is outlined in s86 of the Act, as follows:

- "A person must not harm or desecrate an object that the person knows is an Aboriginal object" s86(1)
- "A person must not harm an Aboriginal object" s86(2)
- "A person must not harm or desecrate an Aboriginal place" s86(4)

Penalties apply for harming an Aboriginal object, site or place. The penalty for knowingly harming an Aboriginal object (s86[1]) and/or an Aboriginal place (s86[4]) is up to $550,000 for an individual and/or imprisonment for 2 years; and in the case of a corporation the penalty is up to $1.1 million. The penalty for a strict liability offence (s86[2]) is up to $110,000 for an individual and $220,000 for a corporation.

Harm under the National Parks and Wildlife Act (1974, as amended) is defined as any act that destroys defaces or damages the object, moves the object from the land on which it has been situated, causes or permits the object to be harmed. However, it is a defence from prosecution if the proponent can demonstrate that;

1) harm was authorised under an Aboriginal Heritage Impact Permit (AHIP) (and the permit was properly followed), or
2) the proponent exercised due diligence in respect to Aboriginal heritage.

The 'due diligence' defence (s87[2]), states that if a person or company has applied due diligence to determine that no Aboriginal object, site or place was likely to be harmed as a result of the activities proposed for the Project Area, then liability from prosecution under the NPW Act 1974 will be removed or mitigated if it later transpires that an Aboriginal object, site or place was harmed. If any Aboriginal objects are identified during the activity, then works should cease in that area and Heritage NSW, Department of Premier & Cabinet notified (DECCW 2010:13). The due diligence defence does not allow for continuing harm or as defence to s.86(1) or (4).

The archaeological due diligence assessment and report has been carried out in compliance with the Heritage NSW (DECCW 2010) Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW.

1.5.2 NATIONAL PARKS AND WILDLIFE REGULATION (2019)

The National Parks and Wildlife Regulation 2019 provides a framework for undertaking activities and exercising due diligence in respect to Aboriginal heritage. The Regulation (201909) recognises various due diligence codes of practice, including the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW, but it also outlines procedures for Aboriginal Heritage Impact Permit (AHIP) applications and Aboriginal Cultural Heritage Consultation Requirements (ACHCRs); amongst other regulatory processes.

1.5.3 ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979 (EP&A ACT)

EP&A Act establishes the statutory framework for planning and environmental assessment in NSW and the implementation of the EP&A Act is the responsibility of the Minister for Planning, statutory authorities and local councils. The EP&A Act contains three parts which impose requirements for planning approval:

- Part 3 of the EP&A Act relates to the preparation and making of Environmental Planning Instruments (EPIs), State Environmental Planning Policies (SEPPs) and Local Environmental Plans (LEPs).
- Part 4 of the EP&A Act establishes the framework for assessing development under an EPI. The consent authority for Part 4 development is generally the local council, however the consent authority may by the Minister, the Planning Assessment Commission or a joint regional planning panel depending upon the nature of the development.
- Part 4, Division 4.1 of the EP&A Act establishes the assessment pathway for State Significant Development (SSD) declared by the State Environmental Planning Policy (State and Regional Development) 2011 (NSW). Once a development is declared as SSD, the Secretary's Environmental Assessment Requirements (SEARs) will be issued outlining what issues must be considered in the EIS.
- Part 5 of the EP&A Act provides for the control of 'activities' that do not require development consent and are undertaken or approved by a determining authority. Development under Part 5 that are likely to significantly affect the environment is required to have an EIS prepared for the proposed activity.
- Part 5.1 of the EP&A Act establishes the assessment pathways for State Significant Infrastructure (SSI). Development applications made for SSI can only be approved by the Minister. Once a development is declared as SSI, the SEARs will be issued outlining what issues must be addressed in the EIS.

The applicable approval process is determined by reference to the relevant environmental planning instruments and other controls, LEPs and State Environmental Planning Policies (SEPPs). This project falls under Part 4.

1.6 ABORIGINAL COMMUNITY CONSULTATION

A due diligence assessment relates to the physical identification of Aboriginal objects, sites and places. Community consultation is only required once Aboriginal objects, sites or places have been identified and an Aboriginal Heritage Impact Permit (AHIP) is deemed necessary. Section 5.2 of the

Heritage NSW (DECCW 2010) Due Diligence Code of Practice for the protection of Aboriginal Objects in NSW specifically states that;

> *'consultation with the Aboriginal community is not a formal requirement of the due diligence process' (2010:8).*

1.7 QUALIFICATIONS OF THE INVESTIGATOR

Dr. Penny McCardle: Principal Archaeologist & Forensic Anthropologist has 22 years experience in Indigenous archaeological assessments, excavation, research, reporting, analysis and consultation and 19 years in skeletal identification, biological profiling and skeletal trauma identification for NPWS, NSW Police and the NSW Department of Forensic Medicine.

- BA (Archaeology and Palaeoanthropology): Indigenous archaeology, University of New England 1999
- Hons (Archaeology and Palaeoanthropology): Physical Anthropology, University of New England 2001
- Forensic Anthropology Course, University of New England 2003
- Armed Forces Institute of Pathology Forensic Anthropology Course, Ashburn, VA 2008
- Analysis of Bone trauma and Pseudo-Trauma in Suspected Violent Death Course, Erie College, Pennsylvania, 2009
- Documenting Scenes of War and Human Rights Violations. Institute for International Criminal Investigations, 2018
- PhD, University of Newcastle, 2019

1.8 REPORT STRUCTURE

The report includes Section 1 which outlines the project, Section 2 presents the environmental and archaeological context, Section 3 provides the results and discussion and Section 4 presents the Impact Assessment, Section 5 discusses the mitigation measures and Section 6 provides the management recommendations.

2 ENVIRONMENTAL AND ARCHAEOLOGICAL CONTEXT

The archaeological due diligence process and assessment requires that the available knowledge and information in relation to the environmental and archaeological contexts are considered. The purpose of this is to assist in identifying whether Aboriginal objects, sites or places are likely to be present within the project area based on archaeological predictive modelling and in what condition they may be found in given the environmental impacts, both natural and anthropogenic.

2.1 LOCAL ENVIRONMENT

Past site location and land use are closely linked to the environment including the landform, geology, geomorphology, soils, waterways and associated resources. The environmental context is important to identify potential factors relating to past Aboriginal land use patterns.

The project area is located in east of the Newcastle Bight sand barrier system, which is bounded in the east and south by the Hunter River and to the north by the bedrock hill slopes at Raymond Terrace (Thom *et al*., 1992, Matthei 1995). The system incorporates both inner (Pleistocene: c. 1.8 million to 10 000 years ago) and outer (Holocene: 10 000 years ago, to today) coastal barriers as well as the inter barrier system. Sediments include marine, estuarine aeolian and paludal deposits. Between the inner and the outer barrier is a large inter-barrier depression that is followed by Tilligerry Creek and was originally an extensive lagoon that is now filled with either estuarine or fresh water swamp deposits, mud and clay and natural shell beds (Robson *et al.,* 1993). Periods of active dune movement may either re-work and effectively destroy archaeological sites or bury older land surfaces and potentially preserve sites. Located on Holocene dunes approximately 220 metres south of the interbarrier depression, the project area is situated on Quandary gravel, sand, silt, clay, Waterloo Rock, marine and freshwater deposits (Newcastle 1:250,000 Geological Sheet Series, 1966). Materials most dominant in stone tool manufacture in the area are indurated mudstone/tuff from local sources (such as Nobbys Head) and silcrete (traded from further up the Hunter Valley).

Consisting of a disturbed landscape, the project area includes the Shoal Bay soil landscape that includes the A_1 Horizon of brownish grey loose sand that ranges from brownish black to brownish grey in colour with a speckled appearance, includes few grave sized charcoal fragments, is 10-40 centimetres in depth and pH ranges from 4.0 to 6.0. The A_2 Horizon includes bleached light grey loose sand that is 60-260 centimetres in depth and pH that ranges from 5.5 to 7.5. The B Horizon includes coherent organic and iron-stained sand that is a combination of black to brownish black to a dull yellow orange colour and soil pH ranges from 5.5 to 7.5 (Murphy 1995: 119-122).

Examination of the Morna Point 1:25,000 topographic map and Nearmap indicates that the project area is located approximately 775 metres south of Bobs Farm Creek, approximately 220 metres south of the interbarrier depression and 1.8 kilometres from the ocean. In terms of past Aboriginal land uses and survival (water is necessary for survival), the project area may be considered somewhat-resourced in terms of water and resource availability being located 220 metres from the interbarrier depression. It has been established that locations on dunes overlooking the interbarrier depression, specifically within 50 metres, were favoured for camping whilst locations over 50 metres have shown a significant decrease in site numbers and densities.

The regional environment provided resources, including raw materials, fauna, flora and water, that would have allowed for sustainable occupation of the area both along the interbarrier depression and the beaches. Within the project area, the landforms of the dunes overlooking the interbarrier

depression have proven to be favoured for past Aboriginal land use with an abundance of sites and a variety of site types throughout these landforms, both on the surface and subsurface. However, being located approximately 220 metres from the interbarrier depression indicates the project area may have been utilised for more transitory activities such as hunting and gathering.

In relation to land uses and associated impacts, Heritage NSW (DECCW 2010) defines disturbed lands as land that has been the subject of human activity that has changed the lands' surface and, or subsurface, these changes being changes that remain clear and observable. This definition is based on the types of disturbances classified in The Australian Soil and Land Survey Field Handbook (CSIRO 2010) and Table 2.1 provides a scale formulated by the CSIRO of the levels of disturbances and their classification, which will assist in determining the level of disturbance across the project area and its impact on potential cultural material that may be present.

Table 2.1 Land use scale (CSIRO 2010)

Minor disturbance		Moderate disturbance		Major disturbance	
Cleared and/or grazed at some time, but apparently never ploughed		Cleared and/or grazed at some time, with ploughing also attested		Severe disturbance to natural soil profiles; complete-to-near complete topsoil loss/disturbance	
0	No effective disturbance; natural	3	Extensive clearing (e.g., poisoning and ringbarking	6	Cultivation: grain fed
1	No effective disturbance other than grazed by hoofed animals	4	Complete clearing: pasture native or improved, but never cultivated	7	Cultivation: irrigated, past and present
2	Limited clearing (e.g., selected logging)	5	Complete clearing: pasture native or improved, cultivated at some stage	8	Highly disturbed: e.g., quarry, road works, mining, landfill, urban

Regionally, following European settlement of the area in the 1820s, the regional landscape has been subjected to a range of different modifactory activities including extensive logging and clearing, agricultural cultivation (ploughing), pastoral grazing, residential developments and other construction works. The associated high degree of landscape disturbance has resulted in the alteration of large tracts of land and the cultural materials contained within these areas.

Based on aerial photography (Nearmap 2018 – 2022), the western side of the project area has been subject to clearing and construction works associated with the house, sheds and pool in the centre, a large shed at the north eastern side, as well as driveways and utilities. The eastern side of the project area, also previously cleared, has undergone construction works along the western border for a house and sheds, driveways and utilities. Discussions with the land owner whose family had previously owned both properties for over 80 years, indicate that the northern half of both properties were mined and in filled using the remainder of the upper dune portion of the properties. These landuses and how they impact on the landscape and deposits are discussed below.

Early vegetation clearing included the uprooting of trees by chaining which disturbed or destroyed that may be present near, or underneath trees and vegetation (Wood 1982). Farming and agricultural activities also disturbed the landscape. Pastoralism activities result in disturbances due to vegetation clearance and the trampling and compaction of grazed areas which accelerate the natural processes

of sheet and gully erosion, which in turn can cause the horizontal and lateral displacement of artefacts. Furthermore, grazing by hoofed animals can affect the archaeological record due to the displacement and breakage of artefacts resulting from trampling (Yorston et al 1990). Pastoral land uses are also closely linked to alterations in the landscape due to the construction of dams, fence lines and associated structures.

Excavation works required for developments, including but not limited to business, residential, industrial, works depots and associated infrastructure and utilities, require excavation, cut and fill methods. These direct impacts to the land and associated cultural materials that may be present are easy to see and understand. Any form of construction or resource exploitation that involves the removal of, relocation of or compaction or soils sediments or minerals, requires the modification of the topography, thus displacing and/or destroying any cultural materials that may have been present (Wood 1982). Theses significant disturbances have results in none of the original topsoils remining in situ.

Additional disturbances would have derived from natural processes. The patterns of deposition and erosion within a locality can influence the formation and/or destruction of archaeological sites. Within an environment where the rate of erosion is generally high, artefacts deposited in such an environment will be eroded downslope after being abandoned (Waters 2000; Waters and Kuehn 1996). If erosion occurs after cultural material is deposited, it will disturb or destroy sections, or all of, archaeological sites even if they were initially in a good state of preservation. The more frequent and severe the episodes of erosional events the more likely it is that the archaeological record in that area will be disturbed or destroyed. Additionally, bioturbation processes such as the redistribution and mixing of cultural deposits occurs as a result of burrowing and mounding by earthworms, ants and other species of burrowing animals. Artefacts can move downwards through root holes as well as through sorting and settling due to gravity, and translocation can also occur as a result of tree falls (Balek 2002; Peacock and Fant 2002; Canti 2003; Stein 2003:).

The project area is located within an environment that provided resources along the interbarrier depression. Without a fresh water supply to enable camping, or closer proximity to the interbarrier depression and associated resources, the project area may have been utilised for more transitory activities such as travel and hunting and gathering on the way to such resources. Such past Aboriginal land uses are manifest in the archaeological record as a background scatter of discarded artefacts (such as isolated artefacts and/or very low-density artefact scatters) and low-density shell middens. In relation to modern alterations to the landscape, the previous large-scale clearing, and construction works associated with the structures, infrastructure and utilities can be expected to have had moderate to high impacts upon the archaeological record at those locations.

2.2 ARCHAEOLOGICAL CONTEXT

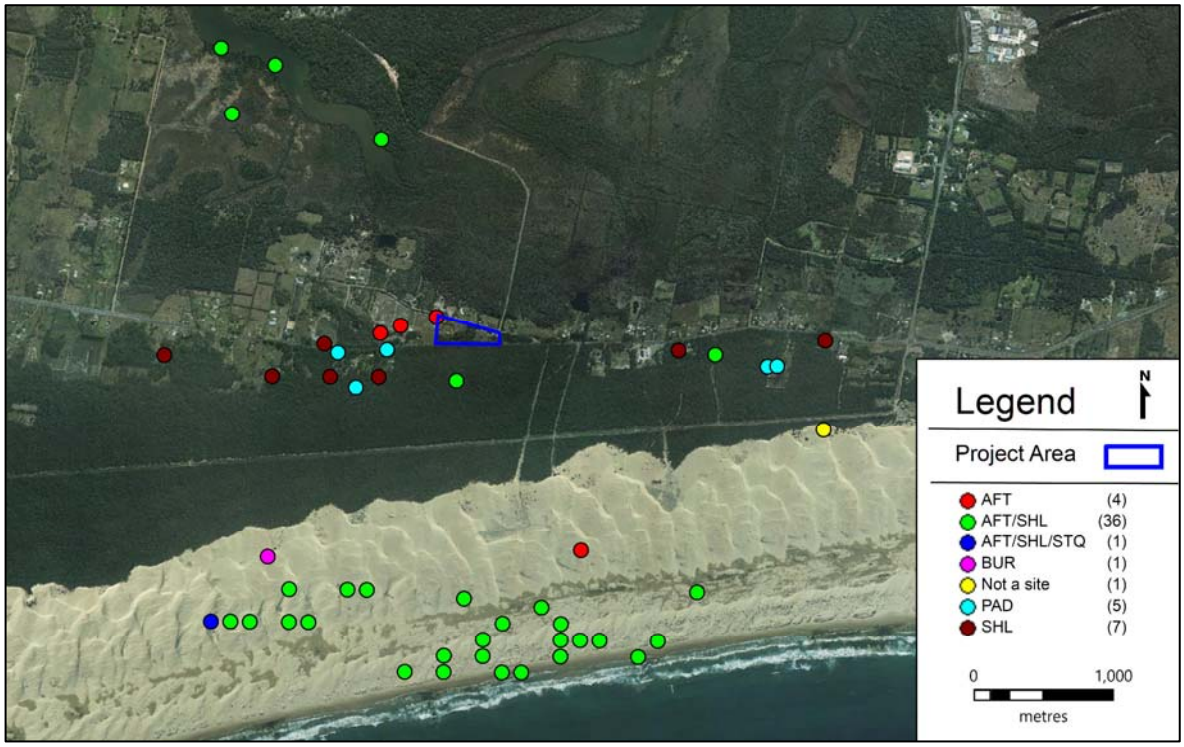
A review of the archaeological literature of the region, and more specifically the local area and the results of an AHIMS search provide essential contextual information for the current assessment.

2.2.1 ABORIGINAL HERITAGE INFORMATION MANAGEMENT SYSTEM (AHIMS)

It must be noted that there are many limitations with an AHIMS search including incorrect site coordinates due to errors and changing of computer systems at AHIMS over the years that failed to correctly translate old coordinate systems to new systems. Secondly, AHIMS will only provide up to 110 sites per search, thus limiting the search area surrounding the project area and limiting a more comprehensive analysis and finally, few sites have been updated on the AHIMS register to notify if they have been subject to a s87 or s90 and as such what sites remain in the local area and what sites have been destroyed, to assist in determining the cumulative impacts, is unknown.

A search of the AHIMS register (Appendix A) has identified 55 known Aboriginal sites currently recorded within two kilometres of the project area and include 36 shell and artefact sites, 4 artefact sites, 7 shell m middens, 5 PADs, 1 burial and 1 artefact/Shell and stone quarry site (Figure 2.1). One site (AHIMS 38-5-0326) appears to be located in the project area and examination of the site card shows this low-density artefact scatter (2 artefacts over 70m) is located along a disturbed track west in the adjoining property of the western boundary of the current project area. Whilst there are no registered sites or Aboriginal Places within the project area, site 38-5-0326 may extent into the project area.

Figure 2.1 Approximate location of AHIMS sites



2.2.2 HERITAGE REGISTER LISTINGS

The National Heritage List, the Commonwealth Heritage List, the Australian Heritage Database, Australia's National Heritage List, The National Trust Heritage Register State Heritage Inventory the and the relevant Local Environmental Plan have no Aboriginal objects, sites or places listed.

2.2.3 SUMMARY OF THE REGIONAL ARCHAEOLOGICAL CONTEXT

The most relevant large-scale investigation across the area was undertaken by Dean-Jones (1980) and further supplemented by numerous assessments throughout the region (e.g., Robson *et al.*, 1993; ERM 2003; MCH 2018, 2019, 2020, 2022 in prep; Mitchel et al in prep) that indicate differing results and observations based on surface visibility and exposure, alterations to the landscape (including mining, industrial and residential development), proximity to water sources and geomorphology. The following summary, is derived from a review of these investiagtions and provides a regional archaeological context in terms of site location and distribution. The Newcastle Bight regional archaeology of the area can be summarised as follows:

- The majority of sites within the region consist of shell middens (containing beach and/or estuarine species) and stone artefact scatters, with sites varying from single artefacts to dense concentrations of material in both a surface and sub-surface context.
- Other site types occur including a significant number of burials (usually exposed through erosion), scar trees and ceremonial sites.
- Within the stabilised dune fields, there are greater concentrations of archaeological material (in terms of site numbers and artefact densities) are located on low ridgelines, spurs and low dunes associated with wetland resources overlooking the interbarrier depression.
- Areas at the interface of the swamps (inter-barrier depression) and dunes overlooking the swamp have high archaeological potential due to the fact that the swamp (inter-barrier depression) was a very important food and fibre resource.
- Archaeological material within the active transgressive dune field and current deflation basin primarily consists of exposed and/or deflated deposits that were once associated with former stabilised surfaces and periods of stabilisation. Although some archaeological material may have been deposited during periods of instability (i.e., not in association with a stabile soil surface), this material is likely to have been limited in both extent and distribution.
- Access area between the ocean and swamp area were not suitable for more than transitory activities such as hunting and gathering and travel between resource rich environments with possible overnight camping due to the distance from the aquatic and estuarine resources.
- Due to vegetation coverage and the nature of sand deposits, the detection of sites is directly related to levels of exposure and visibility. Sub-surface deposits may be at a considerable depth below the current dune surface and therefore are unlikely to be detectable unless significant disturbance has occurred.

2.3 SUMMARY OF THE LOCAL ARCHAEOLOGICAL CONTEXT

All archaeological surveys throughout the local area have been undertaken in relation to environmental assessments for developments and mining activities. The most relevant investigations indicate differing results and observations based on surface visibility and exposure, alterations to the landscape, proximity to water sources and geomorphology.

MCH has reviewed key local assessments to obtain a local archaeological context. Previous assessments of the wider area (Ahoy 1994, Comber 1990, Cubis 1981, Dean-Jones 1990, MCH 2015, 2021, Umwelt 2010, 2011) and has identified that the majority of sites are located on both the Holocene and Pleistocene dunes overlooking the inter barrier depression and at the interface of the dunes and the interbarrier depression, although very rarely within the inter barrier depression.

Locations along the beach were also favoured due to the significantly high resources available and the majority of sites within the region consist of shell middens (containing beach and/or estuarine species) and stone artefact scatters, with sites varying from single artefacts to dense concentrations of material in both a surface and sub-surface context. Artefacts typically date to the Holocene although Pleistocene deposits have been identified at Williamtown (Baker 1993).

Raw materials are predominantly tuff (also called indurated mudstone by some) obtained locally and silcrete, chert or quartz that have been traded/transported from other areas and artefacts are typically flakes, flake pieces, broken flakes, cores and tools. Burials are often identified in eroding sand and are often associated with shell middens (being buried underneath).

The majority of surface sites were noted to have been disturbed through past landuses including clearing and erosion with subsurface deposits impacted and disturbed through mining, agricultural and pastoral activities, residential developments, utilities and infrastructure.

2.4 SYNTHESIS OF ENVIRONMENTAL AND ARCHAEOLOGICAL CONTEXTS

When assessing sites in terms of distance to fresh water, in the region there is a clear pattern of past Aboriginal land uses whereby the majority of high-density sites are situated within 50 metres of reliable fresh water (high order), the interbarrier depression and beaches, and reduce in both numbers and densities with an increase in distance from these resources. Other unsuitable locations for camping, such as the area between the beach and previous lagoon (interbarrier depression) would not have been suitable but used for travel as well as hunting and gathering. Based on information gained from previous studies, both regionally and locally, within a two-kilometre radius of the project area, it can be expected that:

- the likelihood of locating sites increases with proximity to the interbarrier depression and the beach;
- the likelihood of finding large sites increases markedly with proximity to the interbarrier depression and the beach;
- sites are located on both the Holocene and Pleistocene dunes overlooking the interbarrier depression;
- sites may be present at the interface of the interbarrier depression and the dunes;
- sites are not usually found in the interbarrier depression;
- there is a decrease in site numbers and site densities between the Inner Holocene dunes and the beach front;
- site types are typically shell middens with various shell species, stone tools and may also contain charcoal, fish and animal bone;
- artefact scatters, isolated finds, scarred trees, burials and ceremonial sites may also be found along the dunes;
- artefacts typically date to the Holocene but Pleistocene sites may be present in the Pleistocene dues;
- raw materials are tuff obtained locally and/or silcrete, chert or quartz that have been traded/transported from other areas; and
- stone artefacts are typically flakes, flake pieces, broken flakes, cores and tools with fish hooks manufactured form local shell.

2.5 MODELS OF PAST ABORIGINAL LAND USE

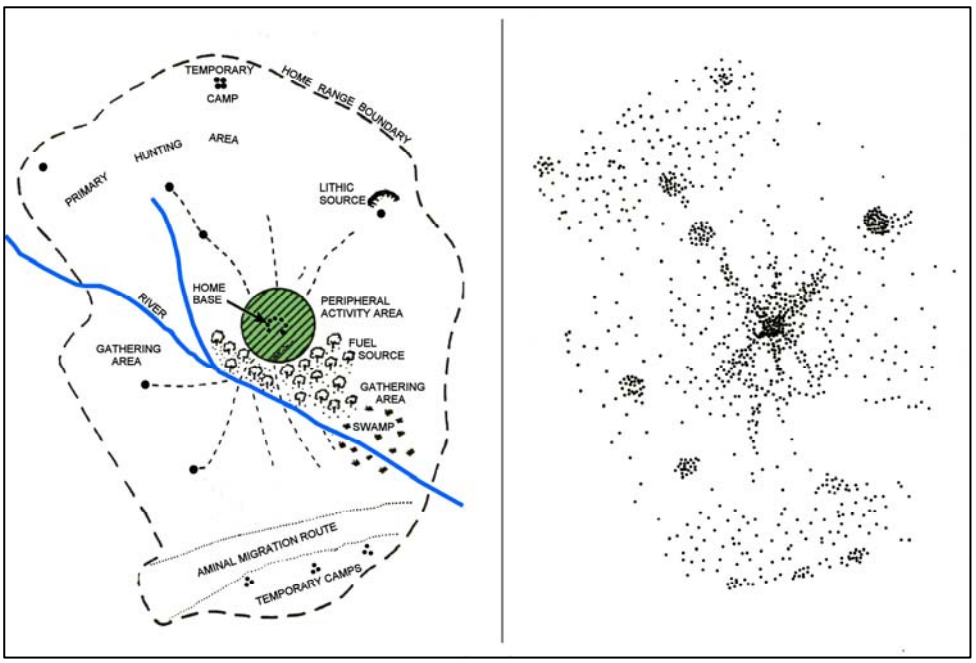
The main aim of this project is to attempt to define both the nature and extent of occupation across the area. As a result, the nature of the analysis will focus on both the landform units and sites. The purpose of this strategy is to highlight any variations between sites and associated assemblages, landforms and resources across the area treating assemblages as a continuous scatter of cultural material across the landscape. In doing this, it is possible to identify variation across the landscape, landforms and assemblages that correspond with variation in the general patterns of landscape use and occupation. Thus, the nature of activities and occupation can be identified through the analysis of stone artefact distributions across a landscape. A general model of forager settlement patterning

in the archaeological record has been established by Foley (1981). This model distinguishes the residential 'home base' site with peripheral "activity locations".

Basically, the home base is the focus of attention and many activities and the activity locations are situated away from the home base and are the focus of specific activities (such as tool manufacturing). This pattern is illustrated in Figure 2.2. Home base sites generally occur in areas with good access to a wide range of resources (reliable water, raw materials etc). The degree of environmental reliability, such as reliable water and subsistence resources, may influence the rate of return to sites and hence the complexity of evidence. Home base sites generally show a greater diversity of artefacts and raw material types (which represent a greater array of activities performed at the site and immediate area). Activity locations occur within the foraging radius of a home base camp (approximately 10 km); (Renfrew and Bahn 1991).

Based on the premise that these sites served as a focus of a specific activity, they will show a low diversity in artefacts and are not likely to contain features reflecting a base camp (such as hearths). However, it is also possible that the location of certain activities cannot be predicted or identified, adding to the increased dispersal of cultural material across the landscape. If people were opting to carry stone tools during hunting and gathering journeys throughout the area rather than manufacturing tools at task locations, an increased number of used tools should be recovered from low density and dispersed assemblages.

Figure 2.2 Foley's model (L) and its manifestation in the archaeological record (R), (Foley 1981).



2.6 MODEL OF OCCUPATION FOR THE REGION

Work throughout NSW has aimed to understand the nature of Aboriginal occupation and to identify the nature of past Aboriginal land uses. This theme often aims to identify and explain archaeological patterning in site type, content and distribution. General theories have been developed outlining the relationship between land use patterns and the resulting archaeological evidence. A number of models developed for the region have been reviewed (McBryde 1976; Koettig 1994; Dean-Jones and Mitchell 1993; Rich 1995; Kuskie and Kamminga 2000). All models state that the primary requirements for repeated, concentrated or permanent occupation is access to reliable fresh water.

Brief and possible repeated occupation may be represented in areas that have unreliable access to ephemeral water sources, however, these areas will not contain high archaeological evidence or potential (Goodwin 1999).

Kuskie and Kamminga (2000) established a general model of occupation strategies based primarily upon ethnographic research. Used as a starting point, it makes a general set of factors that are consistent with other studies (e.g., McDonald and White 2010, Nelson 1991). The model distinguishes between short-term or extended long-term occupation and makes some predictions about the likely location of different foraging and settlement activities. Combining this information with a review of assemblage contents from a sample of excavated sites within the region, a baseline of settlement activities may be determined (Barton 2001).

The model provides a number of archaeological expectations that may be tested. For example, the presence of features requiring a considerable labour investment (e.g., stone-lined ovens or heat-treatment pits) are likely to occur at places where occupation occurred for extended periods of time. The presence of grindstones is also a reliable indicator of low mobility and extended occupation as seed grinding requires a large investment of time and effort (Cane 1989). In most ethnographic examples, seed grinding is an activity that takes place over an entire day to provide adequate energetic returns (Cane 1989; Edwards and O'Connell 1995).

Where group mobility was high and campsites frequently shifted throughout the landscape, artefact assemblages are not expected to contain elements such as grindstones, heat-treatment pits, ovens and the diversity of implements frequently discarded at places of extended residential occupation. It may also have been the case that the location of particular activities could not be predicted by tool users, adding to the increased low-density scattering of artefacts over the landscape. Also, if individuals were opting to carry a number of stone tools during hunting and gathering activities and maintaining these tools rather than manufacturing new tools at each task location, the ratio of used tools to unworn flakes in these assemblages should be high. Table 2.2 has been adapted from Kuskie and Kamminga (2000).

Table 2.2 Site descriptions (Kuskie & Kamminga 2000).

Occupation Pattern	Activity Location	Proximity to water	Proximity to food	Archaeological expectations
Transitory movement	all landscape zones	not important	not important	• assemblages of low density & diversity • evidence of tool maintenance & repair • evidence for stone knapping
Hunting &/or gathering without camping	all landscape zones	not important	near food resources	• assemblages of low density & diversity • evidence of tool maintenance & repair • evidence for stone knapping • high frequency of used tools
Camping by small groups	associated with permanent & temporary water	near (within 100m)	near food resources	• assemblages of moderate density & diversity • evidence of tool maintenance & repair • evidence for stone knapping & hearths
Nuclear family base camp	level or gently undulating ground	near reliable source (within 50m)	near food resources	• assemblages of high density &diversity • evidence of tool maintenance, repair, casual knapping • evidence for stone knapping • heat treatment pits, stone lined ovens • grindstones

Community base camp	level or gently undulating ground	near reliable source (within 50m)	near food resources	• assemblages of high density & diversity • evidence of tool maintenance, repair, casual knapping • evidence for stone knapping • heat treatment pits, stone lined ovens • grindstones & ochre • large area >100sqm with isolated camp sites

2.7 PREDICTIVE MODEL FOR THE LOCAL AREA

Previous archaeological studies undertaken throughout the area provide a good indication of site types and site patterning in the area. The research has shown that middens with stone implements, and middens with only shell are the most predominate site types. The most common site locations are the seaward margin of active transgressive dunes/active blowouts, Holocene and Pleistocene dunes overlooking the interbarrier depression and at their interface, and areas near water sources. Predictions about site patterning for the three landforms are discussed.

Outer Pleistocene dunes:

There is a high potential for sites on this landform. Sites are predominantly middens (composed of either or both estuarine and marine shell species) and open camps, with a sparse scattering of cultural material along the ridgelines of the dunes and high-density sites situated on low flat ridgelines immediately adjacent to wetlands. It is predicted that ridges on the margins with the interbarrier depression have high archaeological potential.

Interbarrier depression:

The interbarrier depression was an important area for foraging as indicated by the prevalence of sites on the margins of both the Pleistocene and Holocene dune systems overlooking the depression and at their interface. Although these sites are close to the depression, they are not located within it. Evidence of occupation within the depression is very limited and consists of a scattering of the remnants of midden between Boyces Track and Uralla (Dean-Jones 1990). The interbarrier depression, once the coastal margin and estuarine swamp, is now covered with Holocene estuarine sand, mud and clay ranging in depth from one to ten metres as well a natural shell bed (Robson et al 1992: 13-19). This area has also been extensively disturbed through ploughing, grazing, road construction and development. It is therefore predicted that there is a very low potential for archaeological sites in this landform.

Inner Holocene dunes:

There is a high potential for both middens (including estuarine shell species, especially rock oysters and mud whelk) and open camp sites on the inner landward margin of the Holocene dunes. These dunes are stable and have the potential to contain stratified deposits dating back to 4,500 PB (Dean-Jones 1992). Such occupational sequences are often high density and up to one metre in depth. There is a space scattering of cultural material along the ridges of this landform and high-density sites are present along the low flat ridgelines overlooking the wetland (interbarrier depression) area.

2.8 PREDICTIVE MODEL FOR THE PROJECT AREA

An archaeological predictive model is established to identify areas of archaeological sensitivity so it can be used as a basis for the planning and management of Aboriginal heritage. It involves reviewing existing literature to identify basic site distribution patters. These patterns are then modified according to the specific environment of the project area to form a predictive model for site location

within the current project area. A sampling strategy is then used to test the model and the results of the survey used to confirm, refute or modify the model.

Land-systems and environmental factors are commonly used factors in predictive modelling based on the assumption that they provide distinctive sets of constraints and opportunities that influenced past Aboriginal land use patterns. As land use patterns may differ between zones (due to different environmental conditions), this may result in the physical manifestation of different spatial distributions and forms of archaeological evidence. The predictive model presented here is based on landform units, previous archaeological assessments conducted within the region, distribution of known sites and site densities and traditional Aboriginal land use patterns. Also taken into consideration are land use impacts (both natural and anthropomorphic) that may have resulted in a disturbed landscape and associated archaeological record.

Considering the AHIMS results, local and regional archaeological investigations as well as the environmental context, the project area is located within 220 metres of the interbarrier depression. Dunes that overlook the interbarrier depression are known to have been favoured for past Aboriginal land uses and camping due to the rich resource of the swamp area and evidence of past Aboriginal land uses and resource exploitation is located throughout this dunal system and typically within 50 metres of the swamp with sites reducing in density away from the swamp but increasing again in close proximity to other fresh water sources. As the project area is located approximately 220 metres from this resource, it is likely the project area would have been utilised for hunting and gathering opportunities rather than camping and evidence of such past Aboriginal land uses manifests in the archaeological record as low-density shell middens, low-density artefact scatters and, or, isolated artefacts.

The site types that may be present within the project area, include low-density shell middens, low-density artefact scatters and, or isolated artefacts, both of which are described below.

- **Artefact scatters**

Also described as open campsites, artefact scatters and open sites, these deposits have been defined at two or more stone artefacts within 50 metres of each other and will include archaeological remains such as stone artefacts and may be found in association with camping where other evidence may be present such as shell, hearths, stone lined fire places and/or heat treatment pits. These sites are usually identified as surface scatters of artefacts in areas where ground surface visibility is increased due to lack of vegetation. Erosion, agricultural activities (such as ploughing, grazing) and access ways can also expose surface campsites. Artefact scatters may represent evidence of;

- Large camp sites, where everyday activities such as habitation, maintenance of stone or wooden tools, manufacturing of such tools, management of raw materials, preparation and consumption of food and storage of tools has occurred;
- Medium/small camp sites, where activities such as minimal tool manufacturing occurred;
- Hunting and/or gathering events;
- Other events spatially separated from a camp site, or
- Transitory movement through the landscape.

Artefact scatters are a common site type in the locality and the broader region. There is potential for low-density artefact scatters to occur within the project area and be representative of hunting and gathering activities. There is also the potential for such sites to be impacted on through past land uses.

- **Isolated finds**

Isolated artefacts are usually identified in areas where ground surface visibility is increased due to lack of vegetation. Erosion, agricultural activities (such as ploughing) and access ways can also expose surface artefacts. Isolated finds may represent evidence of;

- Hunting and/or gathering events; or
- Transitory movement through the landscape.

Isolated finds are a common site type in the locality and the broarder region. There is potential for isolated artefacts to occur across the project area and across all landforms. There is also the potential for such sites to be impacted on through past land uses.

- **Shell middens**

Shell middens are places where debris from eating shell fish has accumulated. Middens preserve a range of past dietary remains which have the potential to inform about past dietary consumption and availability of food resources. Most shell middens analysed to date pertain to coastal environments with few pertaining to inland middens. In NSW, middens are located on headlands, beaches and dunes, around estuaries, swamps, the tidal stretches of creeks and rivers and along the banks of inland rivers, creeks and lakes. Shell middens may be found in the open or in rock shelters and often those in the open are disturbed through erosion and land use impacts and those in shelters are usually well preserved. The location of middens is influenced by a variety of factors including, but not limited to, the availability of shell fish, aspect, accessibility and the nature of the immediate area and are typically located within a reasonable distance from water on level, sheltered surfaces.

Ranging in size from small scatters to deep layered deposits that have built up over time, the size of the midden may relate to its location (e.g., riverbank middens tend to be smaller than estuarine and coastal middens). Small middens may represent short term occupation or the debris from a single meal. Major estuarine species include bivalves such as cockle, whelk, mud and rock oyster and both edible and hairy mussels. Rock platform species of gastropods include limpets, turban shell, periwinkles, nerits, tritans and cartrut shell fish and the most prevalent beach species is the pipi.

Shell middens may also include fish, sea birds, sea mammals and land mammals. Stone artefact are also typically found within middens and indicate trade and/or transportation of raw materials. Bone and shell artefacts, such as fish hooks and barbs, as well as evidence of cooking may be present in the form of charcoal, ash, fire stones, hearths, burnt clay and/or burnt earth. The midden usually occurs within a soil or sand layer that is darker than the surrounding sediment. Middens may also contain burials and if present are usually located under the midden.

Preservation varies with food stuffs such as berries and fruits leaving no archaeological traces, sea foods such as cartilaginous fish, stingrays, octopus and fish eggs are likely to be equally invisible in the archaeological record. However, tissue such as shell and crustations and bone may be preserved and preservation is dependent on land use impacts and associated soil pH.

An important contribution to the study of coastal shell middens was made by Meehan (1975, 1977a, b) through ethnographic studies of coastal hunter and gatherers in northern Arnhem Land. Through a yearlong quantitative record of the total diet, Meehan provides unique insights into all aspects of shell fish gathering and the creation of shell middens with pertinent data to the interpretation of midden data. Shell middens may be distinguished from natural shell beds as follows (Attenbrow 1992; Bailey 1975, 1994; Gill 1951; Coutts 1966; Hughes and Sullivan 1974);

1) Middens contain charcoal, burnt wood, clay and/or earth, blackened shells, some artefacts, hearth stones. These are absent from natural shell beds.
2) Middens are either unstratified or roughly stratified whereas natural shell deposits are well stratified and exhibit sedimentary features of water laid deposits.

3) Middens contain edible species and sizes whereas shell beds contain shells of varied species and sizes as well as both edible and non-edible species.
4) Middens do not contain worn shell resulting from transportation from the off shore or beach zone, whereas shell beds do.
5) Middens contain mammal bones used in food consumption, shell beds do not.
6) Middens do not contain certain forms of marine life not used by Aboriginal people (e.g., corals, tube worms) but shell beds do.

Interpretation of shell middens usually falls into three main categories;

1) Taphonomy: differential survival value of different species may be considered.
2) Environmental/ecological: changes in habitat may bring about changes in the availability of species (Coutts 1970).
3) Economic/behavioural: changes in gathering habits brought about by some purely cultural factor may be considered (Bowdler 1970, 1976).

The interpretation of shell middens is only as good as one's analysis, which is only as good as one's sample, all of which are typically limited during surface survey only. Shell middens may represent evidence of;

- Large camp sites, where everyday activities such as habitation, maintenance of stone or wooden tools, manufacturing of such tools, management of raw materials, preparation and consumption of food and shell fish and storage of tools has occurred;
- Medium/small camp sites, where activities such as a small meal was cooked and/or consumed;
- Hunting and/or gathering events;
- Other events spatially separated from a camp site, or
- Transitory movement through the landscape.

Shell middens are a common site type in the locality and the broader region. There is potential for low-density shell middens to occur in the project area. There is also the potential for such sites to be impacted on through past land uses.

3 RESULTS AND DISCUSSION

To comply with the due diligence requirement that a visual inspection of the project area be undertaken, an archaeological survey across the project area was undertaken by MCH archaeologist Dr. Penny McCardle on 28th October 2022. The survey focused on areas of high ground surface visibility and exposures (erosional features, tracks, cleared areas).

3.1 SURVEY UNITS

The project area, consisting of two separate properties were surveyed as two units. Discussions with the land owner, whose family had owned both properties for over 80 years stated that the northern half of the project areas had been previously mined and the remainder of the properties were scrapped forward to fill in the old mined area, resulting in none of the original upper dune (landform) remaining.

4029 had been previously cleared, all trees and vegetation had been planted by the owners. The property was flat, indicating that the property had indeed been scrapped with none of the original upper dune remaining. Additionally, construction had occurred for the house, pool, sheds, garages, driveways as well as utilities. Examples of this SU are provided in Figures 3.1 to 3.3.

Figure 3.1 4029 – Southern end facing north west



Figure 3.2 North eastern end facing west



Figure 3.3 Back of the property facing west



4045 had also been previously cleared with the upper dune also removed with the project area being flat. Additionally, construction works had occurred in the western side for a house, garages and driveways. Vegetation was primarily grass with trees around the border. Examples of this SU are provided in Figures 3.4 and 3.5.

Figure 3.4 South western corner facing north east



Figure 3.5 North eastern corner facing south west



As shown if Table 3.1 the total effective coverage for the project area was 23,340m², or 55.97% reflecting the good visibility.

Table 3.1 Effective coverage for the investigation area

SU	Landform	Area (m2)	Vis. %	Exp. %	Exposure type	Previous disturbances	Present disturbances	Limiting visibility factors	Effective coverage (m2)
1	4029	25,100	50%	100%	erosion, tracks, original landform removed	clearing, mining, scraping of top soils, residential construction	residence, erosion	grass, leaf litter	12,550
2	4045	16,600	65%	100%	erosion, tracks, original landform removed	clearing, mining, scraping of top soils, residential construction	erosion	grass, leaf litter	10,790
Totals		**41,700**							**23,340**
								Effective coverage %	**55.97%**

The level and nature of the effective survey coverage is considered satisfactory to provide an effective assessment of the project area. The coverage was comprehensive for obtrusive site types (e.g., grinding grooves and scarred trees) as well as for the less obtrusive surface stone artefact sites by surface visibility constraints that included vegetation cover and minimal exposures.

In relation to land uses and the associated impacts on the landscape and any cultural materials that may have been present, the project area has been subject to large scale clearing, partially mined with the remainder of the dune scrapped to fill the mined area resulting in none of the original landscape remaining and as indicated in Table 3.2, these disturbances range are high.

Table 3.2 Land use scale (CSIRO 2010) and land uses in the project area

Minor disturbance		Project area	Moderate disturbance		Project area	Major disturbance		Project area
0	No effective disturbance; natural		3	Extensive clearing (e.g., poisoning and ringbarking		6	Cultivation: grain fed	
1	No effective disturbance other than grazed by hoofed animals		4	Complete clearing: pasture native or improved, but never cultivated		7	Cultivation: irrigated, past and present	
2	Limited clearing (e.g., selected logging)		5	Complete clearing: pasture native or improved, cultivated at some stage		8	Highly disturbed: e.g., quarry, road works, mining, landfill, urban	yes

3.2 ARCHAEOLOGICAL SITES AND ARCHAEOLOGICAL SENSITIVITY

No sites or areas of potential archaeological sensitivity were identified in the project areas during the survey and this is due to the significantly high impacts from previous land uses across the project area (clearing, mining, upper dune removal). Additionally, being located at a distance from reliable fresh water and resources, indicates the project area may have been utilised for more transitory activities rather than camping. Evidence of such past Aboriginal land uses manifests in the archaeological record as a background scatter of discarded artefacts, which would have been disturbed/destroyed through past land uses.

In view of the predictive modelling and the results obtained from the effective coverage and disturbance rating, it is concluded that the survey provides a valid basis for determining the probable impacts of the proposal and formulating recommendations for the project. The survey results demonstrate the absence of Aboriginal objects within the project area. The results are consistent with those obtained from other studies in the local area. The results indicate a number of possible past Aboriginal land use within the project area;

- No Aboriginal occupation
- Ground disturbances having disturbed or removed evidence

Considering general models of occupation for the locality, the results of this and local investigations, the locality may have been utilised by Aboriginal people. As the project area itself is located over 220 metres from the interbarrier depression and associated resources, the project area is unlikely to have been utilised more than a low intensity usage such as transitory movement or hunting/gathering activities.

3.3 CONCLUSION

It is well established that proximity to water was an important factor in past occupation of the area, with sites reducing in number significantly away from water with most sites located within 50 metres of the tributaries. The project area is located approximately 220 metres from the interbarrier depression, 775 metres form Bobs Farm Creek and 1.8 kilometres from the ocean and associated resources. The project area was unsuitable for camping but may have been utilised for transitory movement or hunting/gathering activities.

In relation to modern alterations to the landscape, previous large-scale clearing, partial mining and upper dune removal to fill the mined area, along with additional construction works for the structures, infrastructure and utilities, can be expected to have had high impacts upon the archaeological record. Natural factors such as erosion would also have impacted on the archaeological record, all of which would have displaced cultural materials and the likelihood of in situ cultural materials is very low to nil.

4 ASSESSMENT OF IMPACTS

The archaeological record is a non-renewable resource that is affected by many processes and activities. As outlined in Section 2 and Section 3, the various natural processes and human activities have impacted on archaeological deposits through both site formation and taphonomic processes.

4.1 IMPACTS

The Heritage NSW Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales (2010:21) describes impacts to be rated as follows:

1) Type of harm: is either direct, indirect or none
2) Degree of harm is defined as either total, partial or none
3) Consequence of harm is defined as either total loss, partial loss, or no loss of value

As no sites or PADs were identified, there are no impacts on the archaeological record.

5 MITIGATION AND MANAGEMENT STRATEGIES

Specific strategies, as outlined through the Heritage NSW Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010b), the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011), and the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DECCW 2010c), are considered below for the management of the identified site(s) within the project area.

5.1 CONSERVATION/PROTECTION

Conservation is the first avenue and is suitable for all sites, especially those considered high archaeological significance and/or cultural significance. Conservation includes the processes of looking after an indigenous site or place so as to retain its significance and managed in a way that is consistent with the nature of peoples' attachment to them.

As no sites or PADs were identified conservation/protection is not required.

5.2 FURTHER INVESTIGATION

An Aboriginal Heritage Impact Permit (AHIP) is no longer required to undertake test excavations (providing the excavations are in accordance with the Code of Practice for Archaeological Investigations in NSW). Subsurface testing is appropriate when a PAD has been identified, and it can be demonstrated that sub-surface Aboriginal objects with potential conservation value have a high probability of being present, and that the area cannot be substantially avoided by the proposed activity.

As no sites or PADs were identified further investigations are not justified.

5.3 AHIP

If harm will occur to an Aboriginal object or Place, then an AHIP should be sought from Heritage NSW, Department of Premier & Cabinet as a defence to that harm. If a systematic excavation of the known site could provide benefits and information for the Aboriginal community and/or archaeological study of past Aboriginal occupation, a salvage program, and, or community collection, may be an appropriate strategy to enable the salvage of cultural objects.

As no sites or PADs were identified an AHIP is not required.

6 RECOMMENDATIONS

6.1 GENERAL

1) The persons responsible for the management of onsite works will ensure that all staff, contractors and others involved in construction and maintenance related activities are made aware of the statutory legislation protecting sites and places of significance. Of particular importance is the National Parks and Wildlife Regulation 2019, under the National Parks and Wildlife Act 1974;

2) Should any Aboriginal objects be uncovered during works, all work will cease in that location immediately and the Environmental Line contacted.

REFERENCES

Ahoy, Cl. 1994. A Report of the Archaeological Survey of Portion 215, property owned by Mr. Peter Choice. Report to Mr. Peter Choice.

Attenbrow, V. 1981, Mangrove Creek Dam Salvage Excavation Project; Two Volumes, Unpublished Report to the National Parks and Wildlife Service on behalf of the NSW Department of Public Works.

Attenbrow, V. 1987. Upper Mangrove Creek. In: J.C.R. Camm & J. McQuilton (eds). *Australians – A Historical Atlas*, pp.34–35. Fairfax, Syme & Weldon Associates, Sydney.

Attenbrow, V. 1992. Shell bed or shell middens. *Australian Archaeology*, 34 (1992):3-21.

Arnour-Chelu, M. and Andrews, P. 1994. Some Effects of Bioturbation by Earthworms (Oligochaeta) on Archaeological Sites. *Journal of Archaeological Science* 21:433-443.

Bailey, G. N. 1975. The role of molluscs in coastal economies: the results of midden analysis in Australia, *Journal of Archaeological Science*, 2, 45-62.

Bailey, G., Chappell, J., and Cribb, R. 1994. The origin of Anadara shell mounds at Weipa, North Queensland, Australia. *Archaeology in Oceania*, 19 (1994):69-80.

Balek, C. 2002. Buried Artefacts in stable upland sites and the role of bioturbation: a review. Geoarchaeology: *An International Journal,* 17(1):41-51.

Baker, N. 1993. Archaeological Testing of the RZM Pty Ltd Plant 9 planned sand mine run adjacent to Moffats Swamp, Richardson Rd, Medowie. M.L.1067. Report prepared for RZM Pty Ltd.

Barton, H. 2001. Howick Coal Mine Archaeological Salvage Excavations, Hunter Valley, NSW. AMBS Consulting. Report Prepared for Coal & Allied.

Bowdler, S. 1970. Bass Point: the excavation of south east Australian shell middens showing cultural and economic change, Unpublished B.A. (Honours) thesis, University of Sydney.

Bowdler, S. 1976. Hook line and dillybag: an interpretation of an Australian coastal shell midden, *Mankind*, 10, 248-258.

Branagan, David F., and Gordon H. Packham, *Field Geology of New South Wales,* Third Edition, Department of Mineral Resources New South Wales, Sydney.

Cahen, D. and J. Moeyersons. 1977. Subsurface movements of stone artefacts and their implications for the prehistory of Central Africa. *Nature*, 266:812-815.

Cane, S. 1989. Australian Aboriginal seed grinding and its archaeological record: a case study from the Western Desert. In *Foraging and Farming*, D. R. Harris and G. C. Hillman (eds.), 99-119. London: Unwin Hyman.

Canti, M. 2003. Earthworm activity and archaeological stratigraphy: A review of products and processes. *Journal of Archaeological Science* 30:135-148.

Comber, J. 1990. Archaeological Survey of Proposed Sand Extraction Site at Anna Bay, NSW. Report to Outline Planning Consultants Pty Ltd

Coutts, P. J. F. 1966. Features of prehistoric campsites in Australia. *Mankind*, 6, 338-346.

Coutts, P. J. F. 1967, The archaeology of Wilson's Promontory.Unpublished MS thesis, ANU.

Cubis, L. 1981. A Report of Archaeological Surveying at Lemon Tree Passage, NSW. Report to Land Board Office, East Maitland, NSW.

Dean-Jones, P. 1990. Newcastle Bight Aboriginal Sites Study. Report to NPWS.

Dean-Jones. P. 1992. Archaeological survey at Fern Bay. Report to Port Stephens Council.

Dean-Jones, P. and P. B. Mitchell. 1993. Hunter Valley Aboriginal sites assessment project. Environmental modelling for archaeological site potential in the Central Lowlands of the Hunter Valley. Report to NSW National Parks and Wildlife Service.

Department of Environment, Climate Change and Water (DECCW). 2010b. *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. Department of Environment, Climate Change and Water NSW, Sydney.

Department of Environment, Climate Change and Water (DECCW). 2010c. *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW*. Department of Environment, Climate Change and Water NSW, Sydney.

Edwards, D. and J. F. O'Connell 1995. Broad Spectrum Diets in Arid Australia. *Antiquity*, 69: 769-783.

ERM. 2003a. Electricity Supply Upgrade from Tomago to Tomaree. Indigenous Cultural Heritage Assessment. Report to EnergyAustralia.

ERM. 2003b. Electricity Supply Access Road – Tomago to Salt Ash. Indigenous Cultural Heritage Assessment. Report to EnergyAustralia.

Foley, R. 1981. A Model of regional archaeological structure. *Proceedings of the Prehistoric Society*. 47: 1-17.

Gill, E. D. 1951. Aboriginal kitchen middens and marine shell beds. *Mankind*, 4, 249-254.

Godwin. L. 1999. Two steps forward, one back. Some thoughts on settlement models for the North Coast of New South Wales. In *Australian Coastal Archaeology*, eds, Hall, J., and McNiven, J. ANH Publications, Canberra.

Hansen. D. W. 2005. Impact of vineyard soil management on soil physical properties and vine response. Masters of Agricultural Science Thesis. Discipline of Soil and Land Systems, School of Earth and Environmental Sciences, University of Adelaide.

Hughes, P. J., and Sullivan, M. E. 1974. The re-deposition of midden material by storm waves. *Journal of Proceedings, Royal Society of New South Wales*, 107, 6-10.

Koettig. M. 1984. Archaeological investigation in the Merriwa Plateau and Northeastern Mountain Subregions. Volume 3 NSW National Parks and Wildlife Service Hunter Valley Region Archaeology Project Stage 1.

Koettig, M. and J. McDonald, 1983. Report on a Survey for Archaeological Sites in the Mt Penang Area, Somersby. Report for to Lester Firth Associates Pty Ltd.
Koettig, M. 1986. Test Excavations at Six Locations along the Proposed Pipeline Route between Glennies Creek Dam, Hunter Valley Region, NSW. A report to the Public Works Department, NSW.

Koettig, M. 1994. Bulga Lease Authorisation 219 salvage excavations. Volumes 1-5. d Report to Saxonvale Coal Pty Ltd.

Kuskie, P.J., and J. Kamminga. 2000. Salvage of Aboriginal archaeological sites in relation to the F3 Freeway near Lenaghans Drive, Black Hill, New South Wales. Report to Roads and traffic Authority New South Wales.

Lewarch, D. E. and O'Brien, M. J. 1981. The expanding role of surface assemblages in archaeological research. In Schiffer, M. B. (ed) *Advances in Archaeological Method and Theory*, Volume 4. Academic Press, New York.

Matthei. L. E. 1995. *Soil Landscapes of the Newcastle 1:250 000 sheet*. Sydney, Soil Conservation Service of NSW.

McBryde, I. 1976. Subsistence patterns in New England prehistory. *University of Queensland Occasional Papers in Anthropology*, 6:48-68.

McCardle Cultural heritage Pty Ltd. 2015. MR 108 Nelson Bay Rd, Bobs Farm to Anna Bay Stage 3 - Cromarty Lane to Port Stephens Drive. Archaeological Salvage AHIP 1132063. Report to RMS. Volumes 1, 2 and 3.

McCardle Cultural Heritage (MCH). 2018. 145 Lot Industrial Estate, Heatherbrae. Archaeological Salvage. Aboriginal Heritage Impact Assessment (AHIP # 1132063). Report to CABP Group Pty Ltd.

McCardle Cultural Heritage (MCH). 2019. 145 Lot Industrial Estate, Heatherbrae: Additional area. Aboriginal Heritage Impact Assessment. Report to CABP Group Pty Ltd.

McCardle Cultural Heritage (MCH). 2020. 145 Lot Industrial Estate, Heatherbrae. Archaeological Salvage. Aboriginal Heritage Impact Assessment (AHIP # C0005569 AHIMS Permit ID 4566). Report to CABP Group Pty Ltd.

McCardle Cultural heritage Pty Ltd. 2021. 16 Trotter Road, Bobs Farm. Archaeological Due Diligence Assessment. Report to Ingenia.

McCardle Cultural Heritage (MCH). 2022 (in prep). Williamtown SAP Structure Plan Indigenous heritage. Report to ERM.

McDonald, R.C., Isbell, R.F., Speight, J.G., Walker, J. and Hopkins, M.S. 1998. *Australian Soil and Land Survey Field Handbook, Second Edition*. Inkata Press, Australia.

Meehan, B. 1975. Shell bed to shell midden. Unpublished PhD Thesis, Australian National University, Canberra.

Meehan, B. 1977a. Man does not live by calories alone: The role of shellfish in a coastal cuisine. In *Sunda and Sahul*, edited by J. Golson, et al. New York: Academic Press. pp. 493-531.

Meehan, B. 1977b. Hunters by the seashore, *Journal of Human Evolution*, Vol. 6, pp. 363-370.

Mitchell, P., Lillis, E., and Virtus Heritage Pty Ltd. In prep. Archaeological sensitive mapping and geomorphic assessment.

Mulvaney, J., and J. Kamminga. 1999. *Prehistory of Australia*. Allen and Unwin, Australia.

Myburgh. P. A., and Moolman. J. J. 1993. Effects of ridging on the temperature regime of a waterlogged vineyard soil. *South African Journal of Plant and Soil*, 10, 17-21.

Myburgh. P. A. 1994. Effects of ridging on the performance of young grapevines on a waterlogged soil. *South African Journal of Enology & Viticulture*, 15, 3-8.

Nelson, M. 1991. The study of technological organisation. In Schiffer, M. (ed.) *Archaeological Method and Theory*. Tuscon: University of Arizona Press. pp. 57-100.

Odell, G. and F. Cowan. 1987. Estimating tillage effects on artifact distributions. *American Antiquity*, 52(3):456-484.

Office of Environment and Heritage (OEH), 2011. *Guide to Investigating, Assessing and reporting on Aboriginal Cultural Heritage in NSW*. Department of Environment, Climate Change and Water NSW, Sydney.

Peacock, E. and D. Fant. 2002. Biomantle Formation and Artifact Translocation in Upland Sandy Soils: An Example from the Holly Springs National Forest, North-Central Mississippi, U.S.A. *Geoarchaeology* 17(1):91-114.

Renfrew, C., and Bahn, P. 1991. *Archaeology: theories, methods and practice*. Thames & Hudson.

Rich, E. 1995. Site W4 (NPWS#37-6-155), Warkworth, Hunter Valley: Artefacts Analysis. In Hugland, L. and Rich, E. Warkworth Open Cut Coal Mines: Report on Salvage Investigation of Site 37-6-155 (=Mt. Thorley E/W4), Carried out in Compliance with NPWS Consent #732. Volumes 1-111. Report to Warkworth Mining Pty.

Robson, R. O., J. R. Cox., M. C. Killerby, and J. G. Bailey. 1993. Newcastle Bight Sand Drift Study (1985). Report to the Department of Conservation and Land Management.

Roper, D. 1976. Lateral displacement of artifacts due to plowing. *American Antiquity* 41(3):372-375.

Rowland, M. 1995, 'Aboriginal prehistoric sites: identifying and assessing significance', In Sharon Sullivan (ed) *Cultural Conservation – towards a national approach,* Australian Government Publishing Service, Canberra, pp. 357-367).

Stein, J. 1983. Earthworm activity: A source of potential disturbance of archaeological sediments. *American Antiquity* 48(2):277-289.

Thom, B., Shepherd, M., Ly, C.K., Roy, P.S., Bowman, G. and Hesp, P.A. 1992. *Coastal Geomorphology and Quaternary Geology of the Port Stephens – Myall Lakes Area.* Department of Biogeography and Geomorphology, Australian National University, Monograph No. 6.

Umwelt. 2010. Research Design and Methodology to accompany an Aboriginal Heritage Impact Permit Application for Sub-Surface Investigations, Tomago, NSW. Report prepared for EnergyAustralia.

Umwelt. 2011. Research Design and Methodology to accompany an Aboriginal Heritage Impact Permit Application for Sub-Surface Investigations, Tomago, NSW. Report prepared for EnergyAustralia.

Waters, M. 2000. Alluvial Stratigraphy and Geoarchaeology in the American Southwest. *Geoarchaeology: An International Journal* 15(6):537-557.

Waters, M. and D. Kuehn. 1996. The Geoarchaeology of Place: The Effect of Geological Processes on the Preservation and Interpretation of the Archaeological Record. *American Antiquity* 61(3):483-496.

Wood, S. 1982. Mechanical treatment impacts to cultural resources in Central Arizona: The marden brush cutter. *Presented at the Symposium on Dynamics and Management of Mediterranean-Type Ecosystems,* June 22-26, 1981, San Diego, California.

Yorston, R.M., Gaffney, V.L. and Reynolds, P.J. 1990. Simulation of artefact movement due to cultivation. *Journal of Archaeological Science,* 17:67-83.

APPENDIX A

AHIMS Search Results

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Bobs Farm

Client Service ID : 726323

Penny Mccardle

Po Box 166

Adamstown New South Wales 2289

Attention: Penny Mccardle

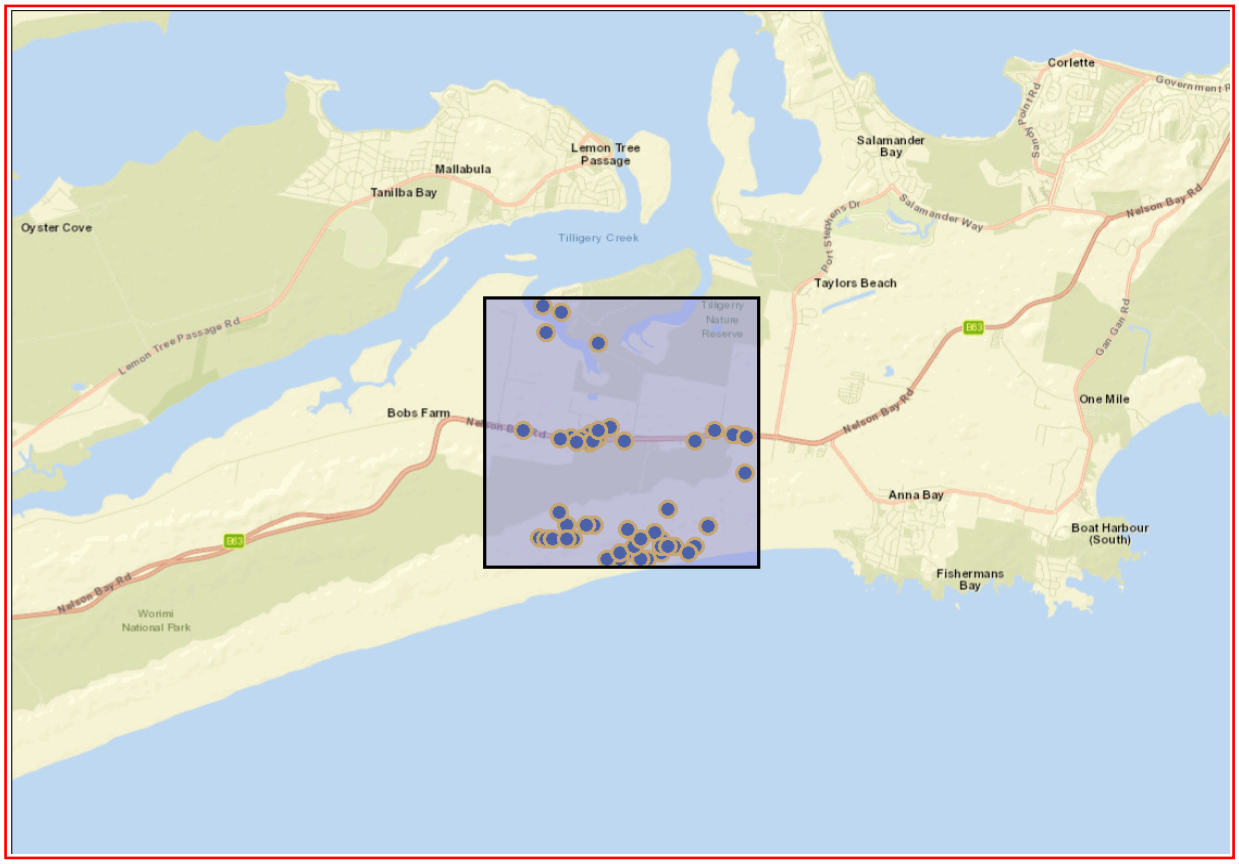
Email: penny@mcheritage.com.au

Date: 25 October 2022

Dear Sir or Madam:

AHIMS Web Service search for the following area at Datum :GDA, Zone : 56, Eastings : 408200.0 - 412200.0, Northings : 6372000.0 - 6376000.0 with a Buffer of 0 meters, conducted by Penny Mccardle on 25 October 2022.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

55	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Bobs Farm

Client Service ID : 726323

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
38-5-0074	Lemon Tree Passage;	AGD	56	409750	6375150	Open site	Valid	Shell : -, Artefact : -	Midden	233,102218
	Contact	**Recorders**	Sue Effenberger					**Permits**		
38-5-0090	B F 2;	AGD	56	410400	6372200	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Pam Dean-Jones,Bonhomme Craib & Associates					**Permits**		
38-5-0091	B F 3;	AGD	56	410400	6372200	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Pam Dean-Jones,Bonhomme Craib & Associates					**Permits**		
38-5-0092	B F 4;	AGD	56	410300	6372100	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Pam Dean-Jones,Bonhomme Craib & Associates					**Permits**		
38-5-0093	B F 5;	AGD	56	410100	6372000	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Pam Dean-Jones,Bonhomme Craib & Associates					**Permits**		
38-5-0094	B F 7;	AGD	56	409900	6371900	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Pam Dean-Jones,Bonhomme Craib & Associates					**Permits**		
38-5-0095	B F 6;	AGD	56	410100	6371900	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Pam Dean-Jones,Bonhomme Craib & Associates					**Permits**		
38-5-0099	B F 11;	AGD	56	409300	6372400	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Mr.Luke Godwin					**Permits**		
38-5-0100	B F 12;	AGD	56	409300	6372200	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Mr.Luke Godwin					**Permits**		
38-5-0101	B F 13;	AGD	56	409400	6372200	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Mr.Luke Godwin					**Permits**		
38-5-0102	B F 14;	AGD	56	409600	6372400	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Mr.Luke Godwin					**Permits**		
38-5-0103	B F 15;	AGD	56	409600	6372400	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Mr.Luke Godwin					**Permits**		
38-5-0104	B F 16;	AGD	56	409700	6372400	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Mr.Luke Godwin					**Permits**		
38-5-0105	B F 17;	AGD	56	409700	6372400	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Mr.Luke Godwin					**Permits**		
38-5-0106	B F 18;	AGD	56	409100	6372200	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Mr.Luke Godwin					**Permits**		
38-5-0107	B F 19;	AGD	56	409000	6372200	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Mr.Luke Godwin					**Permits**		
38-5-0122	Anna Bay 2;	AGD	56	411200	6372100	Open site	Valid	Shell : -, Artefact : -	Midden	1845,102128
	Contact	**Recorders**	Pam Dean-Jones,Mr.Luke Godwin					**Permits**		
38-5-0123	Anna Bay 3;	AGD	56	411100	6372000	Open site	Valid	Shell : -, Artefact : -	Midden	1845,102128
	Contact	**Recorders**	Pam Dean-Jones,Mr.Luke Godwin					**Permits**		

Report generated by AHIMS Web Service on 25/10/2022 for Penny Mccardle for the following area at Datum :GDA, Zone : 56, Eastings : 408200.0 - 412200.0, Northings : 6372000.0 - 6376000.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 55

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Bobs Farm

Client Service ID : 726323

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
38-5-0124	Anna Bay 4;	AGD	56	410900	6372100	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Pam Dean-Jones,Mr.Luke Godwin					**Permits**		
38-5-0125	Anna Bay 5;	AGD	56	410800	6372100	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Pam Dean-Jones,Mr.Luke Godwin					**Permits**		
38-5-0126	Anna Bay 6;	AGD	56	410700	6372200	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Pam Dean-Jones,Mr.Luke Godwin					**Permits**		
38-5-0127	Anna Bay 7;	AGD	56	410700	6372000	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Pam Dean-Jones,Mr.Luke Godwin					**Permits**		
38-5-0128	Anna Bay 8;	AGD	56	410700	6372100	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Pam Dean-Jones,Mr.Luke Godwin					**Permits**		
38-5-0129	Anna Bay 9;	AGD	56	410500	6371900	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Pam Dean-Jones,Mr.Luke Godwin					**Permits**		
38-5-0130	Anna Bay 10;	AGD	56	410400	6371900	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Pam Dean-Jones					**Permits**		
38-5-0131	Anna Bay 11;	AGD	56	410300	6372000	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Pam Dean-Jones					**Permits**		
38-5-0108	B F 20;	AGD	56	408900	6372200	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Mr.Luke Godwin					**Permits**		
38-5-0109	B F 21;	AGD	56	408900	6372200	Open site	Valid	Shell : -, Artefact : -, Stone Quarry : -	Midden,Quarry	1845
	Contact	**Recorders**	Mr.Luke Godwin					**Permits**		
38-5-0114	NB1	AGD	56	410800	6372650	Open site	Valid	Artefact : -	Open Camp Site	2078,4645
	Contact	**Recorders**	Doctor.Jillian Comber					**Permits**		
38-5-0115	NB2;	AGD	56	410200	6372350	Open site	Valid	Shell : -, Artefact : -	Midden	2078,2978
	Contact	**Recorders**	Doctor.Jillian Comber					**Permits**		
38-5-0117	Fenninghams Island 2;	AGD	56	409200	6375600	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Pam Dean-Jones					**Permits**		
38-5-0118	Fenninghams Island 3;	AGD	56	408920	6375700	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Pam Dean-Jones					**Permits**		
38-5-0119	Fenninghams Island 4;	AGD	56	408920	6375700	Open site	Valid	Shell : -, Artefact : -	Midden	1845,102218
	Contact	**Recorders**	Pam Dean-Jones					**Permits**		
38-5-0120	Fenninghams Island 5;	AGD	56	408980	6375300	Open site	Valid	Shell : -, Artefact : -	Midden	1845,102218
	Contact	**Recorders**	Pam Dean-Jones					**Permits**		
38-5-0121	Anna Bay 1;	AGD	56	411400	6372400	Open site	Valid	Shell : -, Artefact : -	Midden	1845,102128
	Contact	**Recorders**	Pam Dean-Jones,Mr.Luke Godwin					**Permits**		
38-5-0219	Tomaree 3	AGD	56	409200	6373700	Open site	Valid	Shell : 1		102218
	Contact	**Recorders**	Mrs.Angela Besant					**Permits**		

Report generated by AHIMS Web Service on 25/10/2022 for Penny Mccardle for the following area at Datum :GDA, Zone : 56, Eastings : 408200.0 - 412200.0, Northings : 6372000.0 - 6376000.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 55

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Bobs Farm

Client Service ID : 726323

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
38-5-0220	Tomaree 4	AGD	56	409500	6373700	Open site	Valid	Shell : 1		
	Contact	**Recorders**	Mrs.Angela Besant					**Permits**		
38-5-0221	Tomaree 5	AGD	56	409750	6373700	Open site	Valid	Shell : 1		102218
	Contact	**Recorders**	Mrs.Angela Besant,Doctor.Tim Owen					**Permits**		
38-5-0222	Tomaree 6	AGD	56	410150	6373680	Open site	Valid	Artefact : 2, Shell : 2		
	Contact	**Recorders**	Mrs.Angela Besant					**Permits**		
38-5-0245	Upton Midden	AGD	56	408644	6373823	Open site	Valid	Shell : 16		
	Contact	**Recorders**	Doctor.Tim Owen,Mr.Andy Collis					**Permits**		
38-5-0250	Anna Bay 1, NBR	AGD	56	411480	6373850	Open site	Valid	Artefact : 2, Shell : 1		102128
	Contact	**Recorders**	Mr.Peter Kuskie					**Permits**		
38-5-0261	Worimi Ancesral Remains Repatriation Site. Worimi Conservation Lands	AGD	56	409188	6372597	Open site	Valid	Burial : -		
	Contact Worimi Local Aboriginal Land	**Recorders**	Mr.Steve Brereton					**Permits**		
38-5-0089	B F 1;	AGD	56	410600	6372300	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Pam Dean-Jones,Bonhomme Craib & Associates					**Permits**		
38-5-0303	NBR PAD 02	GDA	56	409790	6373866	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact	**Recorders**	Doctor.Tim Owen					**Permits**		
38-5-0304	NBR PAD 01	GDA	56	409538	6373846	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact	**Recorders**	Doctor.Tim Owen					**Permits**		
38-5-0320	NBRd 4	GDA	56	412046	6373942	Open site	Valid	Shell : 1		103447
	Contact	**Recorders**	Ms.Penny Mccardle					**Permits**		
38-5-0321	NBRd 5	GDA	56	411292	6373875	Open site	Valid	Shell : 1		103447
	Contact	**Recorders**	MCH - McCardle Cultural Heritage Pty Ltd,Ms.Penny Mccardle,Ms.Penny Mccardle					**Permits**	4843	
38-5-0322	NBRd 6	GDA	56	409468	6373900	Open site	Valid	Shell : 1		103447
	Contact	**Recorders**	Ms.Penny Mccardle					**Permits**		
38-5-0326	RPS NBR AS1	GDA	56	410044	6374068	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Mr.Jeremy Hill					**Permits**	4226	
38-5-0323	NBR3/PAD2	AGD	56	409632	6373635	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact	**Recorders**	Ms.Penny Mccardle					**Permits**		
38-5-0324	NRB3/PAD3	AGD	56	411750	6373780	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact	**Recorders**	Ms.Penny Mccardle					**Permits**		

Report generated by AHIMS Web Service on 25/10/2022 for Penny Mccardle for the following area at Datum :GDA, Zone : 56, Eastings : 408200.0 - 412200.0, Northings : 6372000.0 - 6376000.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 55

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Bobs Farm

Client Service ID : 726323

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
38-5-0325	NBR3/PAD4	AGD	56	411800	6373784	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact	**Recorders**	Ms.Penny Mccardle						**Permits**	
38-5-0347	Anna Bay PAD 1	GDA	56	412042	6373398	Open site	Not a Site	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Niche Environment and Heritage,Niche Environment and Heritage,Doctor.Morgan						**Permits**	4466
38-5-0338	4011 Nelson bay Road A1	GDA	56	409756	6373969	Open site	Destroyed	Artefact : -		
	Contact	**Recorders**	RPS Australia East Pty Ltd - Hamilton,RPS Australia East Pty Ltd - Hamilton,Mr.Ben						**Permits**	
38-5-0339	4011 Nelson Bay Road A2	GDA	56	409859	6374015	Open site	Destroyed	Artefact : -		
	Contact	**Recorders**	RPS Australia East Pty Ltd - Hamilton,Mrs.Tessa Boer-Mah						**Permits**	

**** Site Status**

Valid - The site has been recorded and accepted onto the system as valid

Destroyed - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.

Partially Destroyed - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground

Not a site - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

Report generated by AHIMS Web Service on 25/10/2022 for Penny Mccardle for the following area at Datum :GDA, Zone : 56, Eastings : 408200.0 - 412200.0, Northings : 6372000.0 - 6376000.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 55

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Attachment 3 – Streamline Biodiversity Development Assessment Report

Streamlined Biodiversity Development Assessment Report

Planning Proposal for a Caravan Park Extension.
Lot 2 DP 622229 & Lot 3622 DP 622485, 4029 & 4045 Nelson Bay Road, Bobs Farm, NSW



Prepared for: Hometown Australia Communities Pty Ltd

C/- ADW Johnson Pty Ltd

03 November 2022

BOAMS: 00028922/BAAS18147/21/00028923

AEP Ref: 2467.01

Revision: 01

P 0420 624 707 E INFO@ANDERSONEP.COM.AU
10 DARVALL ST CARRINGTON NSW 2294 ABN 57 659 651 537

Document Control

Document Name	Planning Proposal for a Caravan Park Extension. Lot 2 DP 622229 & Lot 3622 DP 622485, 4029 & 4045 Nelson Bay Road, Bobs Farm, NSW
Project Number	2467.01
Client Name	Hometown Australia Communities Pty Ltd
Accredited Assessor	Ian Benson (BAAS 18147)
AEP Project Team	Natalie Black Ian Benson Bonni Yare Angela Metcalfe Simon Purcell Andrew Harker

Revision

Revision	Date	Author	Reviewed	Approved
00	25/11/2021	Andrew Harker	Natalie Black	Natalie Black
01	03/11/2022	Angela Metcalfe	Ian Benson	Ian Benson

Distribution

Revision	Date	Name	Organisation
00	25/11/2021	Stephanie Van Dissel	ADW Johnson Pty Ltd
01	03/11/2022	Stephanie Van Dissel	ADW Johnson Pty Ltd

EXECUTIVE SUMMARY

Anderson Environment & Planning (AEP) was commissioned by Hometown Australia Communities Pty Ltd to undertake a Streamlined Biodiversity Development Assessment Report (SBDAR) for the Planning Proposal, seeking to amend Port Stephens Local Environmental Plan 2013 (PSCLEP, 2013) to permit caravan parks at Lot 3622 DP622485 and Lot 2 DP622229, 4029 and 4045 Nelson Bay Road, Bobs Farm, NSW.

This report has been prepared to meet the requirements of the Biodiversity Assessment Method 2020 (BAM) established under Section 6.7 of the NSW Biodiversity Conservation Act 2016. This assessment utilises methods detailed within the BAM 2020 to identify biodiversity values inherent within the site, including known and potentially occurring threatened species and ecological communities, and quantifies impacts of the proposal upon these values under a streamlined assessment (small area).

The Study Area is located within a semi-rural landscape within the suburb of Bobs Farm which is located between Nelson Bay Road and Trotters Road within the Port Stephens Council LGA. Approximately 430m to the north lies Tilligerry Nature Reserve with Worimi National Park approximately 50m to the South.

The Subject site (~3.13ha) is situated within the NSW North Coast Bioregion and Karuah Manning IBRA sub-region and is zoned as RU2 Rural Landscape. The vegetation community identified for the Study Area is PCT 1646 – *Smooth-barked Apple – Blackbutt – Old Man Banksia woodland on coastal sands of the Central and Lower North Coast*. The Study Area also contains non-remnant / cleared areas that covers approximately 2.23ha and is dominated by grasses, comprising mostly exotic species due to grazing and land use.

The proposed development referred to in this document as the Subject Site, would remove or modify approximately 0.99ha of native vegetation commensurate with PCT 1646, while retaining 0.32ha of PCT 1646, as well as restoring 0.09ha of cleared land within the proposed C2 lands through a biodiversity management plan. As this development application is being assessed as a Streamlined Biodiversity Assessment (SBAR), PCT 1646 has been determined to be the likely PCT within the Subject Site and is the PCT that was assessed in the BAM calculator.

Fauna species recorded were typical of those expected in this locality, particularly due to the limited nature of the habitat with existing connection to larger patches of habitat offsite. No threatened species were recorded on site during surveys.

To offset residual impacts of the proposal upon identified biodiversity values, the proposal would require retirement of a total of 25 x PCT 1646 Ecosystem Credits (or equivalent).

An assessment of potential Serious and Irreversible Impact (SAII) candidates was carried out against SAII criteria. As a result, it was considered that no SAII are likely to occur as a result of the proposal due to the small size of the area, degraded condition, and current level of vegetation community fragmentation in the locality.

Impacts to biodiversity from the planning proposal to rezone the Study Area have been considered in this report. Avoid and minimise considerations within the planning proposal have been recommended to mitigate any potential impacts and maintain functionality of the existing fauna crossing. A buffer across the length of the eastern boundary and 130m across the northern boundary is suggested (0.40ha). Following assessment by Council's ecologist, the proposed retained buffer has been accepted as fit for purpose. Council ecologist supports the planning proposal proceeding on the basis of the retained native vegetation buffer (0.40ha) being rezoned C2 Environmental Conservation. The purpose of the buffer along the northern boundary is to provide an interface with the remnant vegetation to the north

of Trotter Road. The widened buffer ensures approximately 95m of retained vegetation at the Fauna Crossing Point.

Assessment of the proposal under other relevant environmental policy instruments including the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 and the Port Stephens Council Comprehensive Koala Plan of Management (CKPoM) are also included.

Contents

1.0 Stage 1 – Biodiversity Assessment 10
1.1 Introduction 10
1.1.1 Assessment Scope 10
1.1.2 The Proposal 10
2.0 Site Description 12
2.1.1 Information Sources 12
2.2 Landscape Features 15
2.2.1 Regional Landscapes 15
2.2.2 Identified Landscape Features 15
2.2.3 Site Context Components 15
2.3 Native Vegetation 17
2.3.1 Regional Mapping 17
2.3.2 Plot Based Floristic Surveys 19
2.3.3 Plant Community Types (PCTs) and Vegetation Zones 19
2.3.4 Vegetation Integrity Assessment 30
2.3.5 Vegetation Integrity Score 30
2.4 Threatened Species 31
2.4.1 Ecosystem Credit Species 31
2.4.2 Species Credit Species 33
2.4.3 Field Survey Methods 35
2.4.4 Survey Effort Results 37
2.4.5 Species Credit Species Survey Results 37
3.0 Stage 2 – Impact Assessment (Biodiversity Values) 41
3.1 Avoid and Minimise Summary 41
3.2 Avoid and Minimise Impacts 41
4.0 Conclusion 43
5.0 References 44

Tables

Table 1 – Site Particulars 12
Table 2 – Species Data for Potential PCT Determination 19
Table 3 – PCT Determination Plot 1 and 3 20
Table 4 – Summary of Vegetation Zones Areas 28
Table 5 - Vegetation Integrity Score Table 30
Table 6 - Predicted Ecosystem Credit Species 31
Table 7 – Species Credit Species & Survey Effort 34
Table 8 - Habitat Tree Detail 37
Table 9 – Species Credit Species & Survey Results 38

Figures

Figure 1 – Site Map 14
Figure 2 – Site Location 16
Figure 3 – Regional Vegetation Mapping 18
Figure 4 – Ground-truthed Vegetation Mapping 29
Figure 5 – Total Survey Effort 39
Figure 6 – Retained Vegetation and Proposed C2 Zoning 40

Appendices

Appendix A – Development Plan
Appendix B – Flora Species List
Appendix C – Fauna Species List
Appendix D – BAM Field Sheets
Appendix E – Site Photographs
Appendix F – Other Legislation
Appendix G – CVs
Appendix H - SBDAR Checklist

Study Certification and Licensing

The fieldwork was undertaken by Staff identified in the table below. This report was written by Andrew Harker BEnvSc&Mgt and Angela Metcalfe BEnvSc&Mgt. This report was reviewed by Simon Purcell and certified by Ian Benson BEng(Civil); GradDipSc(Ecology), BAAS: 18147 of Anderson Environment & Planning.

Staff	Title/Qualification	Tasks
Ian Benson	Director / Principal Ecologist BEng(Civil); GradDipSc(Ecology) BAAS: 18147	Report review and certification
Simon Purcell	Senior Ecologist B AppSci (Wildlife Science) Cert III Anima Care & Management	Report review, vegetation mapping.
Bonni Yare	Ecologist BSci (NRM), Cert III Cons & LandMgt	BAM plots, threatened flora survey, Bird survey.
Angela Metcalfe	Ecologist BEnvSc&Mgt - Honours (Ecosystems & Biodiversity)	Bam plots, nocturnal survey, threatened flora survey, bird survey.
Andrew Harker	Ecologist BEnvSc&Mgt (Earth Systems)	Report preparation, BAM plots, Bird survey, Koala SAT, HBT survey.

Research was conducted under the following licences:

- NSW National Parks and Wildlife Service Scientific Investigation Licence SL101313;
- Animal Research Authority (Trim File No: 14/600(2)) issued by NSW Agriculture; and
- Animal Research Establishment Accreditation Number 53724.

Certification:

As the principal author, I, Ian Benson, make the following certification:

This report has been written to comply with the requirements of the BAM 2020 and obligations outlined within the BAM Assessor Code of Conduct and includes, in the opinion of the writer, a true and accurate account of the species recorded, or considered likely to occur within the Survey Area, and inferences of such for biodiversity credit calculations.

Anderson Environment and Planning have no actual, potential or perceived conflicts of interest with Hometown Australia or ADW Johnson. Anderson Environment and Planning has received commercial payment for consulting services and assessment by Hometown Australia for this project.

BAM Assessment methodology, as well as Commonwealth, state and local government policies and guidelines formed the basis of project surveying methodology, unless specified departures from industry standard guidelines are justified for scientific and/or animal ethics reasons.

All research workers have complied with relevant laws and codes relating to the conduct of flora and fauna research, including the Animal Research Act 1995, National Parks and Wildlife Act 1974 and the Australian Code of Practice for the Care and Use of Animals for Scientific Purposes.

Principal Author and Certifier:



Ian Benson
Director & Principal Ecologist

Anderson Environment & Planning

BAAS no. 18147

Calculator Ref: 00028922/BAAS18147/21/00028923

3 November 2022

Glossary of Terms

APZ	Asset Protection Zone
BAM	*Biodiversity Assessment Method Order* (2020) that determines: Methodology applicable to quantifying biodiversity values inherent within a development site; Avoid and mitigation efforts required to be employed as part of any development proposal; and Number and class of credits required to offset residual impacts of the proposal upon the biodiversity values therein.
BC Act	The NSW *Biodiversity Conservation Act 2016.*
Biodiversity Credit Report	Specifies the number and type of biodiversity credits required to offset the impacts of a development.
BAM Calculator (BAM-C)	The online tool used to interpret site survey data and regional location information to quantify ecosystem and species credits required / generated at a development / stewardship site.
Biodiversity credits	Ecosystem or Species Credits required to offset the loss of biodiversity values on a development site.
Biodiversity offsets	Specific measures that are put in place to compensate for impacts on biodiversity values.
Biodiversity values	The composition, structure, and function of ecosystems, and threatened species, populations and ecological communities, and their habitats.
Council	Port Stephens Council.
CKPoM	Comprehensive Koala Plan of Management (**Appendix F**)
DoEE	The Commonwealth Department of the Environment and Energy.
DPI	The NSW Department of Primary Industries.
DPIE	The NSW Department of Planning, Industry and Environment.
Ecosystem credit	The class of biodiversity credits created or required for the impact on EECs, CEECs and threatened species habitat for species that can be reliably predicted to occur within a vegetation type.
EEC	Endangered Ecological Community (under BC Act).
EPBC Act	The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.*
HBT	Hollow-bearing tree as defined in the BAM.
OEH	The former NSW Office of Environment and Heritage
PFC	Percentage Foliage Cover
Proposal	Planning Proposal for a Caravan Park Extension. Lot 2 DP 622229 & Lot 3622 DP 622485, 4029 & 4045 Nelson Bay Road, Bobs Farm, NSW
Study Area	Lot 2 DP 622229 & Lot 3622 DP 622485 as detailed in **Figure 1** which covers an area of approximately 3.54ha.
Subject Site	The proposed development, which covers an area of approximately 3.13ha (**Figure 1**).
Species credit	Class of biodiversity credits created or required for the impact on threatened species that cannot be reliably predicted to use an area based on habitat surrogates.
TBDC	Threatened Biodiversity Data Collection.
TEC	Threatened Ecological Community.
TSPD	Threatened Species Profile Database.
VIS	Vegetation Integrity Score.

1.0 Stage 1 – Biodiversity Assessment

1.1 Introduction

At the request of Hometown Australia Communities Pty Ltd (the client), Anderson Environment & Planning (AEP) have undertaken the necessary investigations to inform the production of a Streamlined Biodiversity Development Assessment Report (SBDAR) addressing the proposed development.

This SBDAR undertaken adheres to the approach outlined in the Biodiversity Assessment Method (OEH 2020a) (the BAM) and the Biodiversity Assessment Method Calculator User Guide (OEH 2020b).

1.1.1 Assessment Scope

The SBDAR presented herewith aims to quantify impacts of the proposal upon biodiversity values based on the methods described within the Biodiversity Assessment Method Order 2020 (BAM Order), including threatened entities listed under the NSW Biodiversity Conservation Act 2016 (BC Act Regulations).

The proposed development has been assessed under the Streamlined Assessment Module – Small Area of the BAM 2020. The minimum Lot size associated with the property is 20ha. As per Table 12 of the BAM 2020 the maximum area clearing limit for application of the small area development module for this minimum lot size is less than or equal to 2ha. The proposed development is proposing to clear 0.99ha of native vegetation, thus, the clearing threshold for the minimum lot size is not being exceeded and falls within the clearing limits prescribed in the BAM 2020 under the Streamlined Assessment Module – Small Area.

This report includes:

- **Stage 1 – Biodiversity Assessment** – including area limits, mapping of remnant vegetation communities within the location of previously identified threatened species and their habitats, and a list of threatened species, populations and communities with a likelihood of occurrence; and
- **Stage 2 – Impact Assessment (Biodiversity Values) –** identification of impact avoidance and mitigation measures, and the quantifying of offset requirements in the form of biodiversity credits based upon residual impacts of the proposal.

1.1.2 The Proposal

The Planning Proposal seeks to amend Port Stephens Local Environmental Plan 2013 (PSCLEP 2013) to permit caravan parks' on the Subject Land.

The Planning Proposal will regularise the approved existing use on part of the Subject Land (Lot 51 DP 1175028), where an approved caravan park is located. The caravan park is approved under DA-16-2013-790-4 and comprises 193 sites on which manufactured homes are currently located or being installed. It currently operates as a over 55s resort-style community, known as Sunrise Port Stephens.

Although approved, the current zoning of the site no longer permits this use and the development operates relying upon existing use rights.

The planning proposal also seeks to facilitate the extension of this use to the two parcels of land east of Lot 51 DP 1175028, being Lot 3622 DP 622485 and Lot 2 DP 622229. Subject to development consent and further approvals, additional manufactured homes/caravan park sites could potentially be accommodated on the Subject Land. As a part of the planning proposal a buffer to the east of the site will be rezoned as C2 Environmental Conservation. The purpose of the buffer along the northern

boundary is to provide an interface with the remnant vegetation to the north of Trotter Road. The retained buffer should be managed for biodiversity under a Biodiversity Management Plan to be provided at the time of a future development application.

2.0 Site Description

Table 1 provides site context details to assist with the assessment of landscape features and to establish context of the Subject site in the surrounding landscape.

Table 1 – Site Particulars

Detail	Comments
Client	Hometown Australian Communities Pty Ltd
Address	4029 & 4045 Nelson Bay Road, Bobs Farm, NSW
Title(s)	Lot 2 DP 622229 & Lot 3622 DP 622485
LGA	Port Stephens Council
Zoning	As per Port Stephens Council Local Environmental Plan 2013 (LEP), the site is zoned RU-2 – Rural Landscape
Biodiversity Value Mapped Land	Not mapped Biodiversity Value Mapped Land (BV Mapped)
Minimum Lot Size	20ha
Clearing Threshold	0.5ha
Subject Site	The Subject Site comprises the proposed development within Lot 2 DP 622229 & Lot 3622 DP 622485. The proposed development (**Appendix A**) covers a footprint of approximately 3.13ha including approximately 0.99ha of remnant vegetation and 2.23ha non-remnant / cleared areas.
Current Land Use	The Subject Site comprises two residential properties, numerous large and small sheds. Vegetation on the south boundary exists as remnant vegetation consisting of canopy trees, mid and under storey vegetation. The west boundary is cleared to approximately 15m wide and a mix of exotic and native vegetation exists along the northern boundary. The remainder of the site is comprised of canopy trees, mid storey and a managed, generally exotic, understorey. The site is bounded by Nelson Bay Road to the south, Trotter Road to the north, a residential subdivision to the west and a small fenced area of a roadside reserve containing numerous nest boxes to the east.
Surrounding Land Use	The adjoining properties to the north, east, and west are zoned RU-2 – Rural Landscape. The northern and western land consists of remnant vegetation with residential dwellings. To the east lies semi-rural properties and residential subdivisions. To the south lies Worimi National Park land approximately 50m from the Subject Site. Approximately 430m to the north lies E1 lands of Tilligerry Nature Reserve. Remnant vegetation occurs to the south-west of the Subject Site in Moderate condition, with vegetation along the northern and eastern boundary in poor condition. An existing wildlife crossing is located approx. 10m to the east of the Site providing connection between vegetation to the south and north of Nelson Bay Road. As a part of the planning proposal a buffer within the east of the Study Area is proposed to be rezoned as C2 Environmental Conservation (**Section 3.2**)

2.1.1 Information Sources

Information and spatial data provided within this SBDAR has been compiled from various sources including:

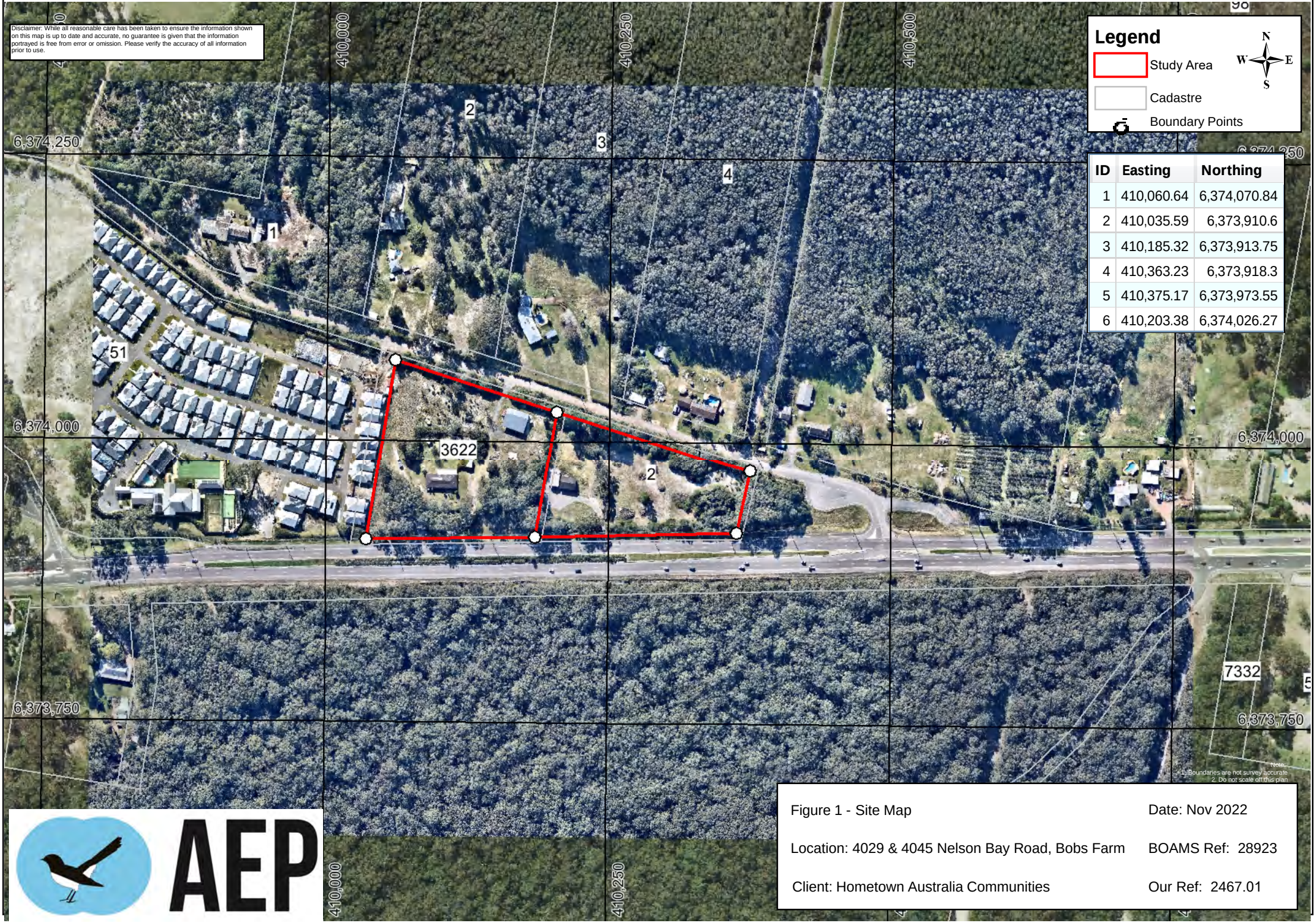
- Aerial Photograph Interpretation (API) of the site and surrounding locality (Nearmaps, 2022).
- Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities. Working Draft, November 2004.
- A Revised Interim Vegetation Classification of the Central Coast Local Government Area (Bell 2019).

- NSW Guide to Surveying Threatened Plants, NSW Office of Environment and Heritage (2020);
- OEH Threatened Biodiversity Profiles

  (https://www.environment.nsw.gov.au/threatenedSpeciesApp/);
- PlantNET NSW (http://plantnet.rbgsyd.nsw.gov.au/); and
- Anecdotal records.

In addition, database searches were carried out, namely:

- Review of flora and fauna records held by the NSW Office of Environment & Heritage (OEH) Atlas of NSW Wildlife within a 10km radius of the site (October 2022);
- Review of flora and fauna records held by the Commonwealth Department of Energy and Environment (DoEE) Protected Matters Search within a 5km radius of the site (October 2022); and
- Review of Important Area Maps held by the NSW Department of Planning, Industry and Environment (DPIE October 2022).



AEP

Figure 1 - Site Map

Date: Nov 2022

Location: 4029 & 4045 Nelson Bay Road, Bobs Farm

BOAMS Ref: 28923

Client: Hometown Australia Communities

Our Ref: 2467.01

2.2 Landscape Features

2.2.1 Regional Landscapes

The Subject Site was identified as occurring within the following landscape areas:

- *IBRA Bioregion* – North Coast.
- *IBRA Subregion* – Karuah Manning.
- *NSW Mitchell Landscape* – The site is defined as *Sydney – Newcastle Barriers and Beaches*

Delineation of NSW Landscape areas are shown in the Location Map (**Figure 2**).

2.2.2 Identified Landscape Features

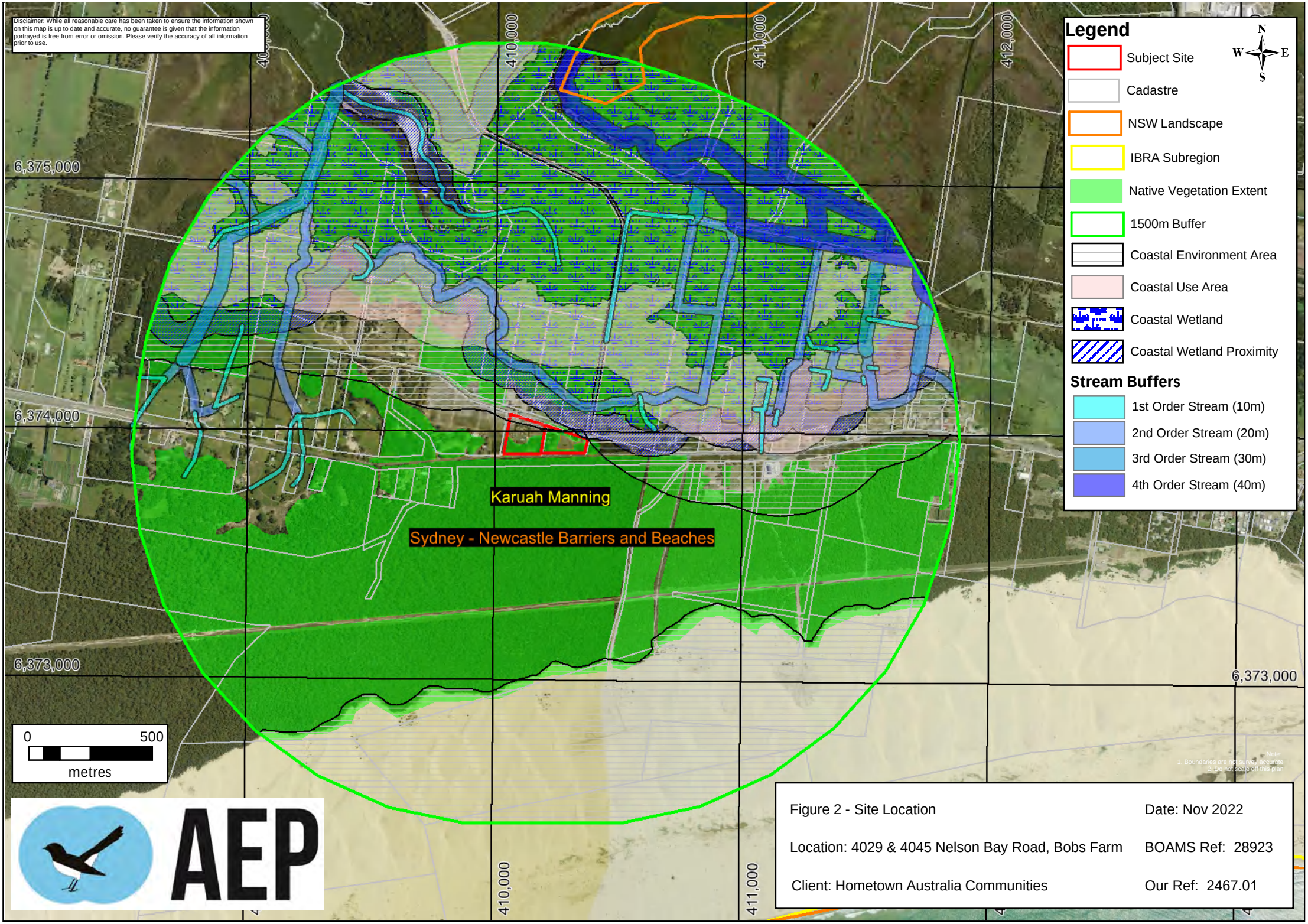
The BAM Calculator identifies nine (9) landscape features that require assessment for their relevance to the Subject Site. These features include:

- ***Rivers and Streams:*** There are no rivers, streams, dams or other water features present within the Subject Site.
- **Wetlands:** No mapped wetlands (Coastal Management SEPP or otherwise) occur within the Subject Site.
- ***Native Vegetation Extent:*** Approximately 0.99ha of native vegetation occurs in the Subject Site, of which 0.99ha is to be impacted. The following Plant Community Type was identified within the Subject Site:
    - PCT 1646 *Smooth-barked Apple - Blackbutt - Old Man Banksia woodland on coastal sands of the Central and Lower North Coast* within the Subject Site, not associated with a TEC; and
- ***Connectivity Features*:** The site is connected to larger tracts of salt marsh and bushland to the north with Tilligerry Nature Reserve at approximately 430m from the Subject Site. Approximately 50m to the south lies Worimi National Park which is densely vegetated. Nelson Bay Road separates the Subject Site from Worimi National Park and represents a significant barrier limiting connectivity for terrestrial and arboreal mammals. Development of the site will not significantly impact connectivity through the locality.
- ***Karst, Caves, Crevices, Cliffs, Rock and other Geological Features of Significance:*** There are no identified karst, caves, crevices, cliffs, rock and other geological features of significance within the Subject Site.
- ***NSW Landscape*** – Sydney – Newcastle Barriers and Beaches (**Figure 2**).
- ***Soil hazard features:*** None known on site.
- ***Features identified in SEARs for major projects*:** Proposal is not a major project.
- ***Areas of Outstanding Biodiversity Value (AOBV) under the BC Act*:** No areas of AOBV are present on the Subject Site and the adjacent lands.

2.2.3 Site Context Components

2.2.3.1 Landscape Native Vegetation Cover

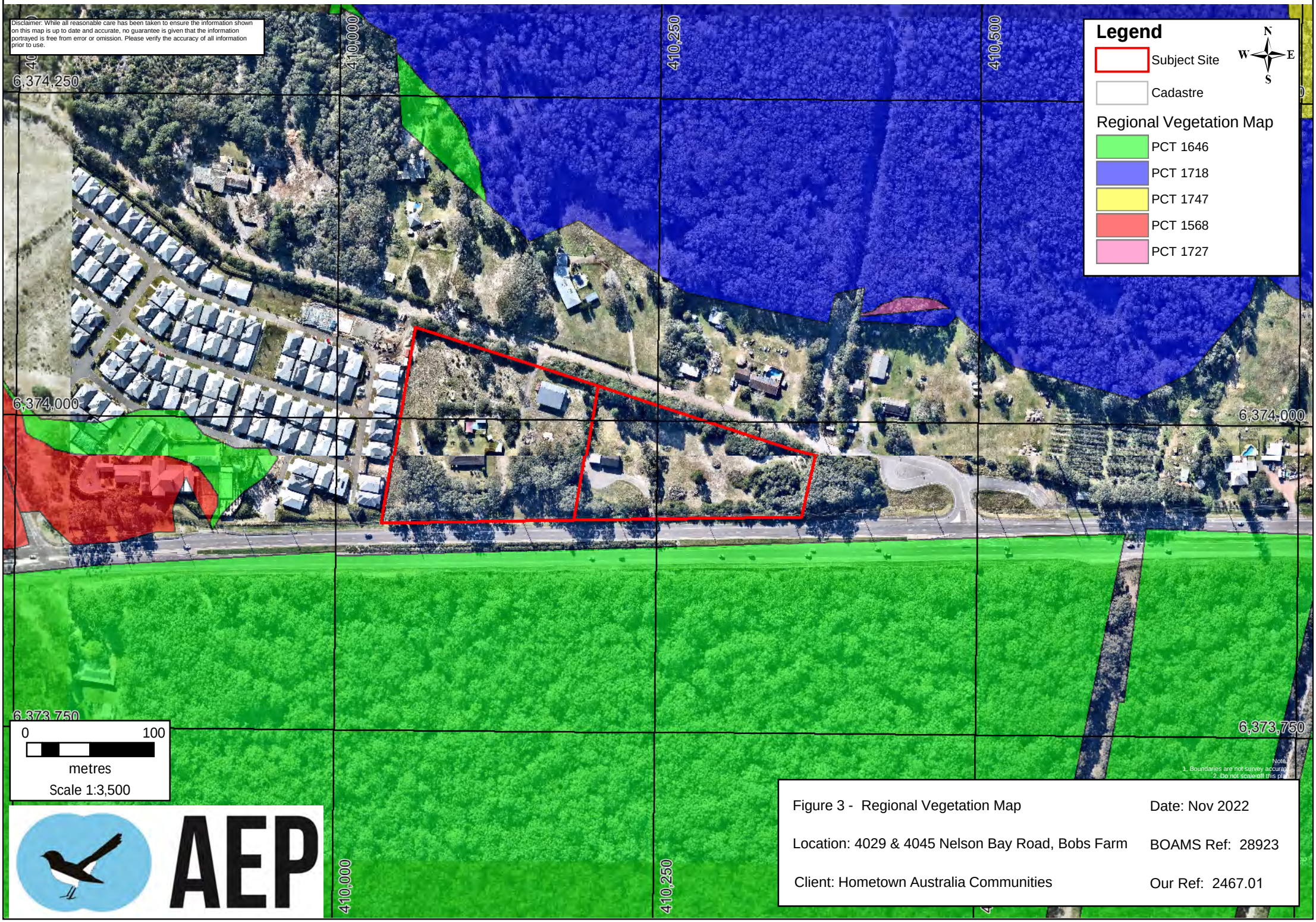
In accordance with Section 3.1.2, 4.2 of the BAM a 1500m was buffer placed around the site, totalling approx. 836.2ha. Of this, approximately 566.6ha comprises native vegetation as per Section 3.2 of the BAM (**Figure 2**). This equates to approximately 67.76% native vegetation cover and was entered as such within the Calculator.


Disclaimer: While all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.
Legend
N
W
E
S
Subject Site
Cadastre
NSW Landscape
IBRA Subregion
Native Vegetation Extent
1500m Buffer
Coastal Environment Area
Coastal Use Area
Coastal Wetland
Coastal Wetland Proximity
Stream Buffers
1st Order Stream (10m)
2nd Order Stream (20m)
3rd Order Stream (30m)
4th Order Stream (40m)
6,375,000
6,374,000
6,373,000
410,000
411,000
412,000
Karuah Manning
Sydney - Newcastle Barriers and Beaches
0
500
metres
AEP
Figure 2 - Site Location
Date: Nov 2022
Location: 4029 & 4045 Nelson Bay Road, Bobs Farm
BOAMS Ref: 28923
Client: Hometown Australia Communities
Our Ref: 2467.01

2.3 Native Vegetation

2.3.1 Regional Mapping

Previous datasets consulted include Lower Hunter Vegetation Map (SEWPaC, 2013). The Subject site is not mapped as containing regional vegetation, refer **Figure 3**.


Disclaimer: While all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.
Legend
Subject Site
Cadastre
Regional Vegetation Map
PCT 1646
PCT 1718
PCT 1747
PCT 1568
PCT 1727
N
W
E
S
410,000
410,250
410,500
6,374,250
6,374,000
6,373,750
0
100
metres
Scale 1:3,500
Note:
1. Boundaries are not survey accurate
2. Do not scale off this plan
AEP
Figure 3 - Regional Vegetation Map
Date: Nov 2022
Location: 4029 & 4045 Nelson Bay Road, Bobs Farm
BOAMS Ref: 28923
Client: Hometown Australia Communities
Our Ref: 2467.01

2.3.2 Plot Based Floristic Surveys

Plot Based Floristic surveys were undertaken by AEP from September 2021 to identify the most likely Plant Community Types within the Subject Site. The surveys are stratified and targeted to assess the expected environmental variation and address any areas with gaps in existing mapping and information. Surveys included:

- Ground-truthing of regional vegetation mapping to identify all vegetation communities present onsite as well as segregate vegetation zones according to condition and current management practices.
- The plot-based floristic vegetation survey is based on a 20m × 20m plot (or 400m^2 equivalent for linear areas). The assessor must assess the plot for the information contained in Table 1 of BAM 2020 and record these data in the BAR.
- Three (3) BAM plots were undertaken within the remnant native vegetation present within the Subject Site. One additional plot was undertaken to sample the exotic grassland and compare it with benchmarks for native grassland. Plots were located by producing random points via GIS software. Minor modifications to plot locations were made on site due to factors such as ecotones and proximity to disturbed edges.
- BAM Field sheets are provided in **Appendix D**. Survey effort including plot location is depicted in **Figures 4** and **Figure 5**. A summary of all flora species is provided in **Appendix B**.

2.3.3 Plant Community Types (PCTs) and Vegetation Zones

The Subject Site consists of modified remnant vegetation and exotic grassland and isolated canopy trees. The BAM's assessment module requires the identification of the PCT or the most likely PCTs, and all TECs, on the Subject Land. The identification must be in accordance with the NSW PCT classification as described in the BioNet Vegetation Classification. The identification of TECs must be consistent with the Threatened Species Scientific Committee Final Determination for the TEC. **Tables 2** and **3** analyse the floristic composition and landscape position of the BAM plots in the community against the Vegetation Information System (VIS) classification system provided a conclusive identification of one (1) Plant Communities Type within the Subject Site:

- PCT 1646- *Smooth-barked Apple - Blackbutt - Old Man Banksia woodland on coastal sands of the Central and Lower North Coast*, this PCT is not associated with a TEC.

Fieldwork identified two (2) vegetation zone within the Subject Site (refer **Table 4**) for a summary of vegetation zones and areas. PCT and vegetation mapping for the Subject Site is shown in **Figure 4.** Additional site photographs are included in **Appendix E.**

Table 2 – Species Data for Potential PCT Determination

Search Item	Plots 1 & 3
Dominant Species	*Eucalyptus pilularis, Corymbia gummifera, Themeda triandra*
Diagnostic species present	**Upper stratum:** *Angophora costata*, *Corymbia gummifera*, *Eucalyptus pilularis*
	Mid stratum: *Banksia serrata, Monotoca elliptica, Acacia ulicifolia*
	Ground stratum: *Pteridium esculentum, Lomandra longifolia, Imperata cylindrica, Themeda triandra and Dianella caerulea var. producta*
Potential PCTs	**184, 1626, 1646, 1648**

Table 3 – PCT Determination Plot 1 and 3

Potential PCTs	1184	1626	1646	1648
Plots 1 & 3				
Regional Vegetation	Not mapped onsite	Not mapped on site	This PCT is mapped as occurring within the surrounding locality	Not mapped on site.
IBRA Region	North Coast	North Coast	North Coast	North Coast
IBRA Subregion	Not known in Karuah Manning	Karuah Manning	Karuah Manning	Karuah Manning
NSW Landscape	No information available	Sydney - Newcastle Barriers and Beaches	Sydney - Newcastle Barriers and Beaches	Sydney - Newcastle Barriers and Beaches
Listed Key Diagnostic Species (VIS)	*Angophora costata; Eucalyptus resinifera; Corymbia gummifera; Eucalyptus robusta; Eucalyptus pilularis; Eucalyptus globoidea; Eucalyptus carnea; Acacia spp.; Banksia spp.; Epacris pulchella; Leptospermum spp.; Melaleuca spp.; Pultenaea villosa; Xanthorrhoea fulva; Baloskion tetraphyllum; Empodisma minus; Entolasia stricta; Lomandra longifolia; Ptilothrix deusta; Themeda australis;*	*Angophora costata; Eucalyptus umbra; Corymbia gummifera; Eucalyptus piperita; Eucalyptus capitellata; Eucalyptus pilularis; Pultenaea villosa; Acacia myrtifolia; Lomatia silaifolia; Dodonaea triquetra; Platylobium formosum; Doryanthes excelsa; Bossiaea rhombifolia; Hakea laevipes; Leptospermum polygalifolium; Smilax glyciphylla; Pandorea pandorana; Themeda australis; Imperata cylindrica; Caustis flexuosa; Patersonia glabrata; Dianella caerulea; Lomandra multiflora;*	*Angophora costata; Eucalyptus pilularis; Corymbia gummifera; Banksia serrata; Monotoca elliptica; Macrozamia communis; Acacia ulicifolia; Dianella caerulea; Themeda australis; Pteridium esculentum; Lomandra longifolia; Imperata cylindrica;*	*Angophora costata; Corymbia gummifera; Eucalyptus pilularis; Bossiaea rhombifolia; Banksia serrata; Acacia terminalis; Dillwynia retorta; Eriostemon australasius; Acacia suaveolens; Ricinocarpos pinifolius; Acacia ulicifolia; Persoonia levis; Themeda australis; Leucopogon ericoides; Tetratheca ericifolia; Hypolaena fastigiata; Pteridium esculentum; Epacris pulchella;*
Present Key Diagnostic Species within Subject Site	*Angophora costata; Corymbia gummifera, Eucalyptus pilularis, Acacia spp, Banksia spp, Leptospermum spp, Lomandra longifolia, Themeda triandra*	*Angophora costata; Corymbia gummifera; Eucalyptus pilularis; Dodonaea triquetra; Bossiaea rhombifolia; Pandorea pandorana; Themeda triandra; Imperata cylindrica; Dianella caerulea*	*Angophora costata; Eucalyptus pilularis; Corymbia gummifera; Banksia serrata; Monotoca elliptica; Acacia ulicifolia; Dianella caerulea; Themeda australis; Pteridium esculentum; Lomandra longifolia; Imperata cylindrica;*	*Angophora costata; Corymbia gummifera; Eucalyptus pilularis; Bossiaea rhombifolia; Banksia serrata; Acacia suaveolens; Acacia ulicifolia; Themeda australis; Pteridium esculentum;*

Potential PCTs	1184	1626	1646	1648
Plots 1 & 3				
Absence of Key Diagnostic Species within the Subject Site	*Eucalyptus resinifera; Eucalyptus robusta; Eucalyptus globoidea; Eucalyptus carnea; Epacris pulchella; Melaleuca spp.; Pultenaea villosa; Xanthorrhoea fulva; Baloskion tetraphyllum; Empodisma minus; Entolasia stricta; Ptilothrix deusta;*	*Eucalyptus umbra; Eucalyptus piperita; Eucalyptus capitellata; Pultenaea villosa; Acacia myrtifolia; Lomatia silaifolia; Platylobium formosum; Doryanthes excelsa; Hakea laevipes; Leptospermum polygalifolium; Smilax glyciphylla; Caustis flexuosa; Patersonia glabrata; Lomandra multiflora;*	*Macrozamia communis*	*Acacia terminalis; Dillwynia retorta; Eriostemon australasius; Ricinocarpos pinifolius; Persoonia levis; Leucopogon ericoides; Tetratheca ericifolia; Hypolaena fastigiata; Epacris pulchella;*
PCT Description	Mid high to tall heathy open forest or woodland. On coastal sand masses south from the Clarence River.	Open forests to woodlands with an overstorey dominated by Angophora costata along with a range of other eucalypts. The mid-storey typically consists of a diverse range of shrubs along with scrambling climbers and often has a high cover of Doryanthes excelsa. The ground layer is typically dominated by grasses and graminoids. Low hills on the coastal lowlands of the lower North Coast in the Nelson Bay area; mainly on sands.	Open Forests to Woodlands dominated in the canopy by Angophoras. The sparse mid-stratum is typically two layered the upper characterised by Banksias; the lower comprising a range of shrubs. The ground cover is relatively sparse and is characterised by grasses and ferns.This community extends along the coast from Gosford to Black Head (Darawank Nature Reserve). It is confined to Quaternary dune sands at elevations up to 100m.	Open Forests; the canopy dominated by Angophora. The mid-stratum is two- layered and characterised by Banksia over sclerophyllous shrubs. The ground stratum is made up of a mixture of grasses and forbs. This community is restricted to Quaternary sand lowlands in the Nelson Bay; Fingal Bay area (mostly within Tomaree NP). Elevation is below 50m.
Geographical Restrictions	On coastal sand masses south from the Clarence River.	Low hills on the coastal lowlands of the lower North Coast in the Nelson Bay area; mainly on sands.	Confined to Quaternary dune sands.	This community is restricted to Quaternary sand lowlands in the Nelson Bay; Fingal Bay area (mostly within Tomaree NP).
Elevation	Information not available	Information not available	Up to 100m	Below 50m
Soil Profiles	Information not available	Information not available	Information not available	Information not available

Potential PCTs	1184	1626	1646	1648
Plots 1 & 3				
Habitat Restrictions	Coastal sand masses	Coastal lowlands mainly on sands	Confined to Quaternary sand dunes	Quaternary sand lowlands
Current Land Use (disturbance and weed loads)	Land management practices include irregular underscrubbing, weed incursion and rubbish.			
Previous land use (including disturbance levels, plantings)	Historical disturbance such as land clearing, underscrubbing, sand mining for minerals			
Surrounding Vegetation	Remnant vegetation occurs to the south-west of the Subject Site in Moderate condition, with vegetation along the northern and eastern boundary in poor condition.			
PCT Determination	Based on the information above this PCT was not determined as an accurate description of the vegetation community within the Subject Site and is not known within the Subregion.	Based on the information above this PCT was not determined as an accurate description of the vegetation community within the Subject Site. Species assemblage within this community is large and diverse, PCT 1646 is considered a better fit for the community on site.	Based on above information this PCT was determined as the most accurate description of this vegetation community within the Subject Site due to the number of diagnostic species present within all strata and is consistent with the regional mapping within the surrounding locality.	Based on the information above this PCT was not determined as an accurate description of the vegetation community within the Subject Site.
Result	**PCT 1646 - Smooth-barked Apple - Blackbutt - Old Man Banksia woodland on coastal sands of the Central and Lower North Coast**			
Vegetation Formation (Type)	Dry Sclerophyll Forests (Shrubby sub-formation)			
Vegetation Class	Coastal Dune Dry Sclerophyll Forests			

Potential PCTs	1184	1626	1646	1648
Plots 1 & 3				
Estimate cleared value of PCT (%)	45			
EEC	Not Associated with an EEC.			
Vegetation Zones				
Vegetation Zones of this PCT within Subject Site	• Moderate • Poor			
Moderate Condition				
Description of Vegetation Zone	This vegetation zone comprises native vegetation within the Subject Site towards the south and centre of the site on the southern boundary adjacent to Nelson Bay Road. The vegetation onsite is considered in Moderate condition containing a small degree of weed incursion (mainly exotic grasses) and rubbish. The canopy layer consists of *Angophora costata, Eucalyptus pilularis and Corymbia gummifera.* The mid-storey comprised of *Banksia serrata* and shrub species including *Acacia longifolia, Acacia ulicifolia, Leptospermum ltrinervium, Monotoca elliptica, Glochidion ferdinandi. Pimelea linifolia, Breynia oblongifolia, Hibbertia linearis, Dillwynia glabberima* and *Gonocarpus teucrioides*. Groundcover species included both native and exotic species, natives present were *Dichelachne micrantha, Pteridium esculentum, Poranthera microphylla, Lomandra longifolia, Dianella caerulea var. producta, Imperata cylindrica, Pomax umbellate and Themeda triandra.* Native vines included *Billardiera scandens, Pandorea pandorana* and *Kennedia rubicunda*. Common weeds present across this zone comprised mostly of exotic grasses and forbs, with the occasional *Chrysanthemoides monilifera* subsp. *rotunda* (Bitou Bush). Grasses included, *Eragrostis curvula, Stenotaphrum secundatum, Andropogon virginicus,* and forbs, *Hypochaeris glabra, Hypochaeris radicata, Conyza bonariensis, Hydrocotyle bonariensis* and *Sonchus spp.* Plates 1 and 2 show examples of PCT 1646 (Moderate condition).			
Area of Vegetation Zone (ha)	This vegetation zone covers approx. 0.78ha of the Subject Site.			

Potential PCTs	1184	1626	1646	1648
Plots 1 & 3				



Plate 1 - PCT 1646 BAM Plot 1

Potential PCTs	1184	1626	1646	1648
Plots 1 & 3				
Poor Condition				
Description of Vegetation Zone	This vegetation zone comprises of native vegetation in poor/disturbed condition within the Subject Site towards the north and east of the site on the northern boundary. The vegetation onsite is considered to be in poor condition containing a large degree of weed incursion (including exotic pines, grasses and shrubs) that coincide with the previous land use (mineral mining) which has left the land in a disturbed condition. The canopy layer consisting of primarily exotic pine (*Pinus radiata*) and isolated individuals of *Cinnamomum camphora* (Camphor laurel). Small native trees persist; *Elaeocarpus reticularis* and *Glochidion ferdinandi*. The mid-storey is comprised of native shrubs including *Leptospermum laevigatum, Acacia longifolia var. sopharae, Monotoca elliptica, Breynia oblongifolia, Pittosporum undulatum, and Homalanthus populifolius.* Exotic shrubs including *Lantana camara* and *Chrysanthemoides monilifera subsp. rotundifolia* dominate the mid-stratum in some areas. Groundcover species included both native and exotic species, natives present were *Lomandra longifolia, Dianella caerulea var. producta, Imperata cylindrica* and *Pomax umbellata.* Exotic grasses and forbs included; *Eragrostis curvula, Ehrharta eracta, Asparagus aethiopithicus, Hypochaeris radicata, Plantago lanceolata, Aira cupaniana* and *Briza maxima*. Native vines included *Parsonsia straminea* and *Pandorea pandorana.* Plates 3 and 4 show examples of PCT 1646 (Poor condition).			
Area of Vegetation Zone (ha)	This vegetation zone covers approx. 0.21ha of the Subject Site.			

Potential PCTs	1184	1626	1646	1648
Plots 1 & 3				



Plate 2 - PCT 1646 BAM Plot 3



Plate 3 – Dense layer of Coastal tea tree dominates this zone.

Cleared / Exotic Grassland

The remaining 2.23ha of the Subject Site has been identified as exotic vegetation and cleared land containing dwellings, large and small sheds and managed exotic grassland. Exotic grasses included such as *Eragrostis curvula* (African Lovegrass), *Stenotaphrum secundatum* (Buffalo Grass) and *Andropogon virginicus* (Whisky grass).

The vegetation within this zone was ground-truthed along with the other vegetation zones through random meander technique. Two additional BAM plots were was undertaken within this zone to sample the exotic grassland and compare it with benchmarks for native grassland. It was confirmed that while a minor native component was present, the vegetation was dominated by exotic species and did not meet benchmarks for native grasslands.



Plate 4 - Non-remnant / Cleared Areas – BAM Plot 4.

Table 4 – Summary of Vegetation Zones Areas

Zone	Vegetation Community	Condition	Area of Removal (ha)	Area of Retention (ha)	Total Area (ha)
1	PCT 1646	Moderate	0.78	0	0.78
2	PCT 1646	Poor	0.21	0.32	0.53
		Total	**0.99**	**0.32**	
				Total – Remnant Vegetation	**1.30**
Non- remnant/ cleared areas/dams		Exotic grassland / cleared areas			2.23
				Total – Study Area	**3.54**

Note: Any small discrepancies within areas can be attributed to rounding errors


Disclaimer: While all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.
410,100
410,200
410,300
410,400
6,374,000
6,373,900
Study Area
Proposed C2 Land
N
W
E
S
Vegetation Zones
Non-Remnant/ Cleared Areas
PCT 1646 Moderate
PCT 1646 Poor
BAM Plot Location
BAM Plot Directions
P1 s
P1 e
P2 s
P2 e
P3 s
P3 e
P4 s
P4 e
0
50
metres
AEP
Figure 4 - Ground Truthed Vegetation Map
Date: Nov 2022
Location: 4029 & 4045 Nelson Bay Road, Bobs Farm
BOAMS Ref: 28923
Client: Hometown Australia Communities
Our Ref: 2467.01

2.3.4 Vegetation Integrity Assessment

2.3.4.1 Patch Size

The native vegetation that exists within the Subject Site is connected to vegetation to the north, east, south and west that, as defined by the BAM, extends as a patch for more than 100ha. The maximum patch size of '≥100ha' is therefore appropriate for each vegetation zone and was entered as such within the Calculator.

2.3.5 Vegetation Integrity Score

Plot data was used to determine the composition, structure and function condition score for the vegetation zones within the Subject Site, which informed the vegetation integrity score. Plot data has been tabulated (refer **Table 5**) and includes corresponding condition scores along with the overall vegetation integrity score. Vegetation Condition Class has been rated using the following percentage bands associated with the Vegetation Integrity Scores:

- 75 – 100% Good;
- 50 – 74 % Moderate; and
- 35 – 49% Poor

Table 5 - Vegetation Integrity Score Table

Site Attribute	PCT 1646 (Moderate)	PCT 1646 (Poor)
Plot #	**1**	**3**
Location	56	56
Bearing	345	105
Tree	5	1
Shrub	12	7
Grass & Grass-like	4	2
Forb	6	2
Fern	1	0
Other	3	2
Composition Total Score	**85.7**	**30.5**
Tree	32	0.5
Shrub	7.5	35
Grass & Grass-like	21.1	0.5
Forb	2.3	0.5
Fern	10	0
Other	1.4	2.3
Structure Total Score	**53.7**	**32.6**
Regenerating Stems (<5cm DBH)	Present	Present
Stem Classes (cm DBH)	5-9, 10-19, 20-29, 30-49	5-9, 10-19, 20-29, 30-49
# Large Trees	6	7
Hollow-bearing Trees	0	0
Litter Cover (%)	59	71

Site Attribute	PCT 1646 (Moderate)	PCT 1646 (Poor)
Plot #	**1**	**3**
Coarse Woody Debris (m)	0	15
High Threat Weed Cover	27.6	36.5
Function Total Score	**80**	**95.1**
Overall Vegetation Integrity Score	**71.7**	**45.6**

2.4 Threatened Species

Under the BAM, threatened species are classified into two types: 'Ecosystem Credit' and 'Species Credit' species, as detailed within the BioNet Atlas Threatened Species Profile Database (OEH, 2021).

A predicted Ecosystem Credit Species assessment is presented in **Table 6**, a Species Credit Species assessment is presented in **Table 7**. Other Legislation including assessment for threatened species under the EPBC Act 1999 and Port Stephens CKPoM have been addressed within **Appendix F** Other Legislation.

Field surveys were undertaken on site during September and October 2021. A summary of survey effort within the Subject Site is described **Section 2.4.3** and **Table 7**, species listed are presented in **Appendix B** and **Appendix C.**

A streamlined assessment for small area only requires specific targeted assessment to be carried out when a threatened ecological community and/or a species at risk of a Serious and Irreversible Impact (SAII) is detected on site. Furthermore, if a threatened species is incidentally recorded on site, further assessment must be undertaken to determine if species credits are required.

2.4.1 Ecosystem Credit Species

Ecosystem Credit species are associated with PCTs and other habitat surrogates that are used to predict their occurrence on a particular site.

The 'biodiversity risk weighting' (BRW) for a species is based on the 'sensitivity to loss' and 'sensitivity to potential gain' score using criteria listed in Appendix I of the BAM and are used in credit calculations to assess impacts of the proposal on a threatened species. The sensitivity to gain class is listed within the BAM calculator for Ecosystem Credit species.

Those Ecosystem Credit species predicted to occur within the site are provided in **Table 6** below.

Table 6 - Predicted Ecosystem Credit Species

Scientific name	Common name	Sensitivity to Gain Class	Recorded within 10km (NSW BioNet Wildlife Atlas 2020) Y/N	Recorded within site nearby surrounds Y/N
Anthochaera phrygia	Regent Honeyeater (foraging)	High	Y	N
Callocephalon fimbriatum	Gang-gang Cockatoo	Moderate	N	N
Calyptorhynchus lathami	Glossy Black-Cockatoo	High	Y	N

Scientific name	Common name	Sensitivity to Gain Class	Recorded within 10km (NSW BioNet Wildlife Atlas 2020) Y/N	Recorded within site nearby surrounds Y/N
Chthonicola sagittata	Speckled Warbler	High	N	N
Daphoenositta chrysoptera	Varied Sittella	Moderate	Y	N
Glossopsitta pusilla	Little Lorikeet	High	Y	N
Haliaeetus leucogaster	White-bellied Sea-Eagle	High	Y	Y
Hieraaetus morphnoides	Little Eagle (Foraging)	Moderate	Y	N
Lathamus discolor	Swift Parrot	Moderate	Y	N
Lophoictinia isura	Square-tailed Kite	Moderate	N	N
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	Moderate	N	N
Neophema pulchella	Turquoise Parrot	High	N	N
Ninox connivens	Barking Owl	High	Y	N
Ninox strenua	Powerful Owl	High	Y	N
Pandion cristatus	Eastern Osprey	Moderate	Y	N
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	Moderate	N	N
Tyto novaehollandiae	Masked Owl (Foraging)	High	Y	N
Dasyurus maculatus	Spotted-tailed Quoll	High	Y	N
Falsistrellus tasmaniensis	Eastern False Pipistrelle	High	Y	N
Hirunduapus caudacutus	White Throated Needletail	Moderate	Y	N
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	High	Y	N
Miniopterus australis	Little Bentwing-bat	Very High	Y	N
Miniopterus orianae oceanensis	Large Bent-winged Bat	High	Y	N
Petaurus australis	Yellow-bellied Glider	High	N	N
Phascolarctos cinereus	Koala (Foraging)	High	Y	N
Phoniscus papuensis	Golden-tipped Bat	High	N	N
Pseudomys gracilicaudatus	Eastern Chestnut Mouse	High	N	N

Scientific name	Common name	Sensitivity to Gain Class	Recorded within 10km (NSW BioNet Wildlife Atlas 2020) Y/N	Recorded within site nearby surrounds Y/N
Pteropus poliocephalus	Grey-headed Flying-fox	High	Y	N
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	High	Y	N
Scoteanax rueppellii	Greater Broad-nosed Bat	High	Y	N
Syconycteris australis	Common Blossom-bat	High	N	N

2.4.2 Species Credit Species

Additional threatened fauna species determined by the BAM calculator that have the potential to use the Subject Site area as suitable habitat are identified in **Table 7**. For the streamlined assessment, targeted surveys for these species are not required. This assessment focuses only on those entities at risk of a serious and irreversible impact (SAII).

The flora and fauna species lists for the site are included in **Appendix B** and **Appendix C**.

Table 7 – Species Credit Species & Survey Effort

Species / Biodiversity	Risk Weighting (BRW)	SAII (Y/N)	Specified Survey Period (BAM – C)	Habitat Requirements / Habitats Searched / General Notes	Survey Guidelines	AEP Survey Method Undertaken
Flora						
Sand Doubletail *Diuris arenaria*	3	Y	August - Sept	Occurs in coastal heath and dry grassy eucalypt forest on sandy flats. Also found in gently undulating country in eucalypt forest with a grassy understorey on clay soil.	5m – 10m Parallel Transects	September & October 2021 Habitat Assessment 5m – 10m Parallel Transects Incidentals
Eastern Australian Underground Orchid *Rhizanthella slateri*	3	Y	Sept - Nov	Highly cryptic given that it grows almost completely below the soil surface, with flowers being the only part of the plant that can occur above ground. Therefore, usually located only when the soil is disturbed.	5m – 10m Parallel Transects	September & October 2021 Habitat Assessment 5m – 10m Parallel Transects Incidentals
Fauna						
Koala *Phascolarctos cinereus*	2	N	All Year	Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Inactive for most of the day, feeding and moving mostly at night. Spend most of their time in trees, but will descend and traverse open ground to move between trees. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size.	Spot Assessment Technique (SAT), one night of nocturnal survey Targeted Searches, Habitat Assessment, Camera Trapping. (Survey effort carried out in line with the Port Stephens CKPoM **Appendix F**)	September & October 2021 Habitat Assessment Three (3) SATs One night of spotlighting and call playback Incidentals

The following candidate threatened species did not require further consideration and were ruled out of the above list as habitat or location constraints were not met:

- *Allocasuarina simulans* (Nabiac Casuarina): The Subject Site is not located between Nabiac and Foster, there are also no BioNet records for the species of the species within the area, therefore no further assessment is required.
- *Lathamus discolor* (Swift Parrot): An enquiry with the Biodiversity Offset Scheme support confirmed that the Subject Site is not mapped areas of important habitat for this species, therefore no further survey is required.
- *Anthochaera phrygia* (Regent Honeyeater - breeding): The Subject Site is not consistent with the known breeding areas in NSW. An enquiry with the Biodiversity Offset Scheme support confirmed that the Subject Site is not mapped areas of important habitat for this species, therefore no further survey is required.
- *Petrogale penicillata* (Brush-tailed Rock-wallaby): The Subject Site does not contain and is not within 1km of land with rocky escarpments, gorges, steep slopes, boulder piles or clifflines.
- *Chalinolobus dwyeri* (Large-eared Pied Bat): The Subject Site is not within 100m of suitable breeding habitat. The house onsite was inspected and deemed not suitable for breeding habitat for this species. As this species is not at risk of SAII no surveys were required. Foraging habitat for the species is not considered to be at risk of SAII.
- *Miniopterus australis* (Little Bent-winged Bat): The Subject Site does not contain known or suspected breeding habitat. The house onsite was inspected and deemed not suitable for breeding habitat for this species, as such no surveys were required as this species is not considered to be at risk of SAII.
- *Miniopterus orianae oceanensis* (Large Bent-winged Bat): The Subject Site does not contain known or suspected breeding habitat. The house onsite was inspected and deemed not suitable for breeding habitat for this species, as such no surveys were required as this species is not considered to be at risk of SAII.
- *Vespadelus troughtoni (*Eastern Cave Bat): The Subject Site does not contain known or suspected breeding habitat. The house onsite was inspected and deemed not suitable for breeding habitat for this species, as such no surveys were required as this species is not considered to be at risk of SAII.

2.4.3 Field Survey Methods

2.4.3.1 Habitat Features

An assessment of the relative habitat values present within the Subject Site was undertaken in September and October 2021. This assessment focused primarily on the identification of specific habitat types and resources within the Subject Site favoured by known threatened species listed in **Section 2.4.2.** The assessment also considered the potential value of the Subject Site (and surrounding areas) for all major guilds of native flora and fauna. The assessment was based on the specific habitat requirements of each threatened fauna species in regards to home range, feeding, roosting, breeding, movement patterns and corridor requirements.

Consideration was given to contributing factors including topography, soil, light and hydrology for threatened flora and assemblages. In particular, focus was put on documenting the presence of key habitat features such as tree hollows. Hollows are an important resource utilised by a variety of forest fauna, and are particularly relevant for several of the likely key threatened species in this locality.

2.4.3.2 Flora Field Survey

All required flora survey techniques were utilised for targeted survey of the species listed in **Table 7** above and guided by the *Threatened Species Survey and Assessment Guidelines* (2004) and the BAM (2020).

The following survey methods were undertaken to record the presence of threatened species on site:

- Ground-truthing of regional vegetation mapping to identify all vegetation communities present onsite as well as segregate vegetation zones according to condition and current management practices.
- Identification of all vascular plant species encountered during fieldwork. Subject Site coverage was both systematic to ensure all key points of the site were checked, and therein the Random Meander Technique (Cropper 1993) was utilised to maximise species encountered.
- Seasonal threatened flora surveys walking 5 – 10m line transects throughout the site, targeting a range of threatened flora.
- Four (4) BAM plots were undertaken in accordance with BAM 2020.
- Updated/Refined Vegetation Community Mapping involving traversal over the entire Subject Site, concentrating particularly on mapping the boundaries between the identified Biometric Vegetation Types of the BAM 2020 and refining the original mapping which involved a larger number of vegetation units.

2.4.3.3 Fauna Field Surveys

All required fauna survey techniques were utilised for targeted survey of the species listed in **Table 7,** above and guided by the Threatened Species Survey and Assessment Guidelines (2004); Threatened species survey and assessment guidelines: field survey methods for fauna – Amphibians (2009) and Port Stephens CKPoM (refer **Appendix F** for koala assessment). Survey effort is shown in **Figure 5**.

2.4.3.4 Incidental Observations

Incidental records of any fauna species observed during fieldwork were noted. This included opportunistic sightings of secondary indications (scratches, scats, diggings, tracks etc.) of any resident or migratory species. Searches were also conducted for whitewash, regurgitation pellets and prey remain from Owls, chewed Casuarina cones from Black-Cockatoos, chewed fruit remains from frugivorous birds etc.

These surveys are deemed to fulfill minimum survey requirement. Details of the flora and fauna survey are presented in **Table 7** and was conducted using relevant guidelines, in particular DPIE survey guidelines for threatened plants (2020c) along with applicable EPBC guidelines (2010; 2011). Flora Survey Effort, Threatened Flora Sightings and Fauna Survey Effort is shown in **Figure 5**.

Field sheets are provided in **Appendix D**, and flora and fauna species list for those species recorded during field surveys are provided in **Appendix B** and **Appendix C**. Refer **Figures 5** for survey effort undertaken on site.

2.4.4 Survey Effort Results

2.4.4.1 Habitat Trees

A total of 3 Hollow-bearing trees (HBTs) are present, with a total of 5 hollows identified within the Subject Site. Hollows present onsite range from small to extra-large and may be suitable for a range of species of arboreal mammals, birds and microbats. Details of the HBT survey is provided in **Table 8** below. Hollow-bearing tree locations are presented in **Figure 5.**

Table 8 - Habitat Tree Detail

ID	GPS ID	Species	DBH (cm)	Hollows				
				S	M	L	XL	Habitat feature
1	HBT 1	*Eucalyptus pilularis*	110	2	0	0	1	Limb & basal hollows
2	HBT 2	*Eucalyptus pilularis*	150	1	0	0	0	Limb hollow
3	HBT 3	*Corymbia gummifera*	95	0	1	0	0	Trunk hollow
			Total	**3**	**1**	**0**	**1**	
			Total	**5**				

Notes for hollow size: XS <5cm, S 5-10cm, M 10-15cm, L 15-20cm, XL >20cm, **DBH** - diameter at breast height

2.4.4.2 Water Features

Mapping of the Subject site has concluded that there are no water features present. The nearest water features are two dams approximately located 400m to the north-east and 480m to the north-west with a drainage gully that, at its closest, is approximately 100m to the northern border of the Subject Site. Mapped biodiversity values lands to the north of the Subject Site encompass Tilligerry Nature Reserve, Bobs Farm Creek and Fenninghams Island Creek.

2.4.4.3 Other habitat features

The Subject Site also possesses other habitat features including large areas of refuse and piles of logs that provide potential habitat for reptiles, amphibians and small mammals.

2.4.5 Species Credit Species Survey Results

Overall survey effort within the site (for plots, targeted searches and habitat assessments) and within the Subject Site (including plots, targeted searches, habitat assessments) are detailed in **Table 7** and **Section 2.4.3**, and was conducted using relevant guidelines, in particular OEH survey guidelines for plants (2016) and amphibians (2020), along with applicable EPBC guidelines (2010; 2011). Survey periods are shown in **Table 7** and survey effort is shown in **Figures 5**.

Species credit species assessment and associated survey results are provided in **Table 9**.

Table 9 – Species Credit Species & Survey Results

Species	Survey Technique Adhere to Guidelines in Table 8 (Y/N)	Surveyed in Season (Y/N)	BioNet Records (10km)	BioNet Records within Subject Site	Geographical Restrictions (Y/N)	Habitat (Present / Condition)	Records from Deployed Equipment	Observed Within Subject Site (Y/N)	Determination	Species Credits Apply (Y /N)
Flora										
Sand Doubletail *Diuris arenaria*	Y	Y	124	N	N	Habitat is present within the Subject Site in varying conditions (poor – good).	N/A	N	Targeted surveys carried out AEP Ecologists during September and October failed to detect any sign of the species.	N
Eastern Australian Underground Orchid *Rhizanthella slateri*	Y	Y	0	N	N	As there is limited information about the species and its habitat, the generally habitat on site is deem Moderate to poor.	NA	N	Targeted surveys carried out AEP Ecologists during September and October failed to detect any sign of the species.	N
Fauna										
Koala *Phascolarctos cinereus*	Y	Y	2058	N	N	Habitat is present within the Subject Site in varying conditions (poor – good).	NA	N	Targeted surveys carried out AEP Ecologists during September and October failed to detect any sign of the species.	N


Disclaimer: While all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.
Legend
Study Area
Proposed C2 Boundary
Survey Effort
Call Playback
Koala SAT
Hollow Bearing Tree
BAM Plot Location
BAM Plot Directions
Survey Tracks
September Flora and Fauna
September Flora
September Fauna
October BAM
October Fauna
N
W
E
S
P1 s
P2 s
P3 s
P4 s
0
50
metres
AEP
Figure 5 - Survey Effort
Date: Nov 2022
Location: 4029 & 4045 Nelson Bay Road, Bobs Farm
BOAMS Ref: 28923
Client: Hometown Australia Communities
Our Ref: 2467


Disclaimer: While all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.
Legend
Study Area
Proposed C2 Land
Impact Area
N
W
E
S
RU2
C2
0
50
metres
Note:
1. Boundaries are not surveyed accurately
2. Do not scale off this plan
AEP
Figure 6 - Impact and Retained Areas
Date: Nov 2022
Location: 4029 & 4045 Nelson Bay Road, Bobs Farm
BOAMS Ref: 28923
Client: Hometown Australia Communities
Our Ref: 2467.01

3.0 Stage 2 – Impact Assessment (Biodiversity Values)

3.1 Avoid and Minimise Summary

Section 7 of the BAM provides a list of measures that need to be taken into consideration during project planning and design to minimise impacts upon native vegetation, habitat and other prescribed biodiversity values. Applicable measures taken as part of this project to minimise impacts are provided below.

When detailed designs are finalised for the Subject Site, the preparation of a Biodiversity Development Assessment Report (BDAR) including a detailed review of Section 7 of the BAM will be undertaken.

3.2 Avoid and Minimise Impacts

Parts of the Subject Site are disturbed and have been subjected to historical sand mining and on-going management. Furthermore, waste and rubbish is present within vegetated areas. Where native vegetation remains, it does so in a degraded state. While the vegetation integrity scores indicate a moderate patch of vegetation, site observations have shown that this is represented in the species diversity within the remnant vegetation on site. However, this is not the case for vegetation structure and function. For example, the shrub layer is present but in a regenerating form providing limited suitable habitat opportunities for local fauna. It should also be noted that a significant portion of the vegetation within this zone (approx. 27.6%) are listed as High Threat Weeds, this is indicative of a highly modified and degraded site.

Vegetation within the Site is predominantly fragmented from larger tracts of vegetation to the north and south, as it is located between Nelson Bay and Trotter Road. The site is also located in close proximity to a round-about to the east. The fragmentation and location of the site in relation to roads and high movement of vehicles reduces the suitability of the habitat for local fauna within the site and it also increases the risk of direct impacts such as vehicle strike to local fauna in the area that move across Nelson Bay Road.

To facilitate movement and mitigate risks to local fauna an underground fauna crossing is present within land adjacent to the east of the Site. Avoid and minimise considerations within the planning proposal have been recommended to mitigate any potential impacts and maintain functionality of the existing fauna crossing. A wildlife connectivity buffer, covering 0.40ha, is proposed in the east and north east of the site. The buffer begins at its narrowest point (10m) along the northern boundary. The north east corner expands out to approx 61.5m wide and then tapers down to 41m wide at the south boundary (**Figure 6**). The purpose of the buffer along the northern boundary is to provide an interface with the remnant vegetation to the north of Trotter Road. Following assessment by Council's ecologist, the proposed retained buffer has been accepted as fit for purpose. Council ecologist supports the planning proposal proceeding on the basis of the retained native vegetation buffer being rezoned C2 Environmental Conservation (**Figure 6**). The proposed buffer (~0.40ha) will result in the retention of approx. 0.32ha of PCT 1646 – Smooth-barked Apple – Blackbutt – Old Man Banksia woodland on coastal sands of the Central and Lower North Coast. The widened buffer ensures approximately 95m of retained vegetation at the Fauna Crossing Point.

The retained buffer should be managed for biodiversity under a Biodiversity Management Plan to be provided at the time of a future development application. Details within a Biodiversity Management Plan should include weed control, supplementary planting, fencing and nest boxes.

As the site is located in close proximity to wetlands to the north, measures that can be undertaken to reduce indirect and direct impacts on surrounding environments should be incorporated into the development and include incorporation of Water Sensitive Urban Designs (WSUD) and the development of an Erosion and Sedimentation Control Plan (ESCP) that should be prepared for the proposal following guidelines from *Landcom* (2004). Erosion and sedimentation controls should be put

in place to limit offsite movement of materials into the adjacent vegetation.

Impacts to biodiversity from the planning proposal to rezone the Subject Site have been considered in this report. As part of the rezoning, the greatest factor surrounding avoid and minimise is through the site selection phase. Council ecologist supports the planning proposal proceeding on the basis of the retained native vegetation buffer being rezoned C2 Environmental Conservation. Hometown Australia are looking to expand their operations within Port Stephens, and the subject site represents the least ecologically constrained site available for this purpose. Further, the fact that it adjoins the existing village ensures that servicing and infrastructure can be provided without further impacting surrounding vegetation.

4.0 Conclusion

The vegetation within the site was found to be commensurate with PCT 1646 which is in a moderate to poor condition across the Subject Site. It is evident that the site has previously been cleared for farming practices with historical sand mining, and is in a managed state. The habitat function is limited across most of the Site. Within the east of the site a buffer is proposed to mitigate any potential impacts and maintain functionality of the existing fauna crossing. The purpose of the buffer along the northern boundary is to provide an interface with the remnant vegetation to the north of Trotter Road. The retained buffer should be managed for biodiversity under a Biodiversity Management Plan to be provided at the time of a future development application.

Koalas and or presence of koalas were not detected on site during the survey period. Further to this there were no preferred koala feed trees identified within the site. The site is mapped as `Mainly Cleared' koala habitat and does not contain habitat linking areas over mainly cleared land according to the Port Stephens Koala Habitat Planning Map. As per the Port Stephens Council CKPoM (2002) no further assessment is required and the consent should not be constrained by koala habitat as the site meets the conditions as defined in the Koala Habitat Mapping.

Considering no threatened species were identified on site during the survey period and the site is highly degraded it is unlikely that removal of the vegetation on site will significantly impact threatened flora and fauna species in the area. It has been determined that a referral under the EPBC Act is unlikely to be required for this rezoning proposal.

Impacts to biodiversity from the planning proposal to rezone the Subject Site have been considered in this report and avoid and minimise has been accommodated through the retention of the buffer vegetation and its zoning to C2 Environment Conservation. The retained buffer should be managed for biodiversity under a Biodiversity Management Plan to be provided at the time of a future development application. Details within a Biodiversity Management Plan should include weed control, supplementary planting, fencing and nest boxes.

The client has committed to undertaking Stage 2 of the BAM to quantify the required offsets within a SBDAR. The SBDAR would subsequently be lodged with the DA for the site.

The retention of the vegetation buffer as C2 land has been agreed by Council that this conservation zoning can form the basis of avoid and minimise for the future development application.

5.0 References

Churchill, S (2008) *Australian Bats* (2nd ed.). Allen & Unwin Publishers.

Harden, G (ed.) (2000) *Flora of New South Wales, Volume 1* (rev. ed.). UNSW, Kensington NSW.

Harden, G (ed.) (2002) *Flora of New South Wales, Volume 2* (rev. ed.). UNSW, Kensington NSW.

Harden, G (ed.) (1992) *Flora of New South Wales, Volume 3*. UNSW, Kensington NSW.

Harden, G (ed.) (1993) *Flora of New South Wales, Volume 4*. UNSW, Kensington NSW.

Keith D (2004) *Ocean Shores to Desert Dunes*. DEC, Sydney NSW.

Landcom (2004) *Managing Urban Stormwater: Soils and Construction* 4th edition. New South Wales Government, Parramatta, NSW.

NSW Department of Environment and Conservation (2004) Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (working draft, November 2004). DEC, Sydney NSW.

NSW Department of Planning and Environment [DPE] (2022) Atlas of NSW Wildlife. Accessed April 2021. NSW OEH. https://www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx

NSW Department of Planning, Industry and Environment (2020a) Biodiversity Assessment Methodology. August 2020. DPIE, Sydney NSW.

NSW Department of Planning, Industry and Environment (2020b) Biodiversity Assessment Method (BAM) Calculator User Guide. August 2020. DPIE, Sydney NSW.

NSW Department of Planning, Industry and Environment (2020c) Surveying threatened plants and their habitats NSW survey guide for the Biodiversity Assessment Method. April 2020. DPIE, Sydney NSW.

NSW Department of Planning, Industry and Environment (2020d) NSW Survey Guide for Threatened Frogs – A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method. September 2020. DPIE, Sydney, NSW.

NSW Department of Planning, Industry and Environment (2021) Threatened Species, Populations and Ecological Communities website. https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species

Parsons Brinckheroff (2013). *Lower Hunter Vegetation Mapping*. Report funded by the Department of Sustainability, Environment, Water, Population, and Communities through the Sustainable Regional Development Program. Parsons Brinckerhoff, Canberra.

Pizzey, G (2012) *The Field Guide to the Birds of Australia* (9th ed.). Harper Collins Publishers, Sydney NSW.

Robinson, L (1991) *Field Guide to the Native Plants of Sydney* (rev. 2nd ed.). Kangaroo Press.

Strahan, R (2004) *The Mammals of Australia*. New Holland Publishers, Chatswood NSW.

Wilson, S and Swan, G (2003) *A Complete Guide to Reptiles of Australia*. Reed New Holland Publishers, Chatswood NSW.

Appendix A – Development Plan



TOTAL NO.OF EXISTING SITES	**193 SITES**
PROPOSED TOTAL NO.OF SITES IN EXPANSION AREA LOT 3622 DP 622485 LOT 2 DP622229	**62 SITES** 43 SITES 19 SITES
TOTAL NO.OF EXISTING & PROPOSED SITES	**255 SITES**

ISSUE	DATE	REVISION
E	27/10/22	AMENDED ISSUE
D	26/10/22	AMENDED ISSUE
C	17/02/21	AMENDED ISSUE
B	15/02/21	AMENDED ISSUE
A	19/01/21	DRAFT ISSUE

HOMETOWN AUSTRALIA COMMUNITIES

PROJECT SUNRISE LIFESTYLE RESORT

ADDRESS 4011 NELSON BAY ROAD, BOBS FARM, NSW 2316

SUNRISE PORT STEPHENS

DRAWING TITLE CONCEPT PLAN FOR LOT 3622 DP 622485 & LOT 2 DP622229

N

JOB NO.

DATE	SCALE	DRAWN	DRAWING NO.	ISSUE
01/2021	1:1000 @ A3	HTA	04.5	E

Appendix B – Flora Species List

FLORA SPECIES LIST

The following list includes all species of vascular plants observed on site during fieldwork. It should be noted that such a list cannot be considered comprehensive, but rather indicative of the flora present on the site. It can take many years of flora surveys to record all of the plant species occurring within any area, especially plant species that are only apparent in some seasons such as Orchids.

A number of species cannot always be accurately identified during a brief survey, generally due to a lack of suitable flowering and/or fruiting material. Any such species are identified as accurately as possible, and are indicated in the list as thus:

- specimens that could only be identified to genus level are indicated by the generic name followed by the abbreviation “sp.”, indicating an unidentified species of that genus;
- specimens for which identification of the genus was uncertain are indicated by a question mark (“?”) placed in front of the generic, which is followed by the abbreviation “sp.” and;
- specimens that could be accurately identified to genus level, but could be identified to species level with only a degree of certainty are indicated by a (“?”) placed in front of the epithet.

Authorities for the scientific names are not provided in the list. These follow the references outlined below.

Harden, G. (ed) (2000). *Flora of New South Wales, Volume 1*. Revised edition. UNSW, Kensington, NSW.

Harden, G. (ed) (2002). *Flora of New South Wales, Volume 2*. Revised edition. UNSW, Kensington, NSW.

Harden, G. (ed) (1992). *Flora of New South Wales, Volume 3.* UNSW, Kensington, NSW.

Harden, G. (ed) (1993). *Flora of New South Wales, Volume 4*. UNSW, Kensington, NSW.

Names of families and higher taxa follow a modified Cronquist System (1981).

Introduced species are indicated by an asterisk “*”.

Threatened species listed under the *Biodiversity Conservation Act 2016* (BC Act) or the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) are indicated in **bold font.**

Family	Scientific Name	Common Name
Fabaceae	*Acacia longifolia subsp. longifolia*	Sydney Golden Wattle
Fabaceae	*Acacia longifolia subsp. sophorae*	Coastal Wattle
Fabaceae	*Acacia suaveolens*	Sweet Scented Wattle
Fabaceae	*Acacia ulicifolia*	Prickly Moses
Asteraceae	*Acanthospermum australe**	
Poaceae	*Aira cupaniana**	Silvery Hairgrass
Asteraceae	*Ambrosia tenuifolia**	Lacy Ragweed
Poaceae	*Andropogon virginicus**	Whisky Grass
Myrtaceae	*Angophora costata*	Smooth-barked Apple
Asparagaceae	*Asparagus aethiopicus**	Asparagus Fern
Proteaceae	*Banksia serrata*	Old Man Banksia
Pittosporaceae	*Billardiera scandens*	Hairy Appleberry
Fabaceae	*Bossiaea rhombifolia*	
Euphorbiaceae	*Breynia oblongifolia*	Coffee Bush
Poaceae	*Briza maxima**	Quaking Grass
Poaceae	*Chloris gayana**	Rhodes Grass
Asteraceae	*Chrysanthemoides monilifera subsp. rotundata**	Bitou Bush
Lauraceae	*Cinnamomum camphora**	Camphor Laurel
Asteraceae	*Conyza bonariensis**	Flax-leaf Fleabane
Myrtaceae	*Corymbia gummifera*	Red Bloodwood
Poaceae	*Cynodon dactylon*	Common Couch
Cyperaceae	*Cyperus spp.*	
Fabaceae	*Daviesia alata*	
Phormiaceae	*Dianella caerulea var. producta*	Blue Flax Lily
Poaceae	*Dichelachne micrantha*	Short-hair Plume Grass
Fabaceae	*Dillwynia glaberrima*	Parrot Pea
Sapindaceae	*Dodonaea triquetra*	Hop-bush
Poaceae	*Ehrharta erecta**	Panic Veldtgrass
Elaeocarpaceae	*Elaeocarpus reticulatus*	Blueberry Ash
Poaceae	*Eragrostis curvula**	African Lovegrass
Myrtaceae	*Eucalyptus fibrosa*	Broad Leaved Ironbark
Myrtaceae	*Eucalyptus pilularis*	Blackbutt
Asteraceae	*Euchiton involucratus*	Star Cudweed
Santalaceae	*Exocarpos cupressiformis*	Native Cherry
Asteraceae	*Facelis retusa**	Annual Trampweed
Phyllanthaceae	*Glochidion ferdinandi*	Cheese Tree
Haloragaceae	*Gonocarpus teucrioides*	Raspwort

Family	Scientific Name	Common Name
Dilleniaceae	*Hibbertia linearis*	
Euphorbiaceae	*Homalanthus populifolius*	Bleeding Heart
Apiaceae	*Hydrocotyle bonariensis**	Kurnell Curse / Pennywort
Asteraceae	*Hypochaeris glabra**	Smooth Catsear
Asteraceae	*Hypochaeris radicata**	Flatweed
Poaceae	*Imperata cylindrica*	Blady Grass
Fabaceae	*Kennedia rubicunda*	Dusky Coral Pea
Verbenaceae	*Lantana camara**	Lantana
Myrtaceae	*Leptospermum laevigatum*	Coast Tea-tree
Myrtaceae	*Leptospermum trinervium*	Slender Tea-tree
Lomandraceae	*Lomandra longifolia*	Spiky-headed Mat-rush
Orchidaceae	*Microtis spp.*	
Ericaceae	*Monotoca elliptica*	Tree Broom-heath
Onagraceae	*Oenothera mollissima**	
Oxalidaceae	*Oxalis perennans*	Yellow-flowered Wood Sorrel
Bignoniaceae	*Pandorea pandorana*	Wonga Vine
Apocynaceae	*Parsonsia straminea*	Common Silkpod
Caryophyllaceae	*Petrorhagia dubia**	
Thymelaeaceae	*Pimelea linifolia*	Slender Rice Flower
Pinaceae	*Pinus radiata**	Radiata or Monterey Pine
Pittosporaceae	*Pittosporum undulatum*	Sweet Pittosporum
Plantaginaceae	*Plantago lanceolata**	Ribwort
Rubiaceae	*Pomax umbellata*	Pomax
Euphorbiaceae	*Poranthera microphylla*	Small Poranthera
Dennstaedtiaceae	*Pteridium esculentum*	Bracken
Rubiaceae	*Richardia humistrata**	
Polygonaceae	*Rumex vulgaris**	Sheep Sorrel
Asteraceae	*Senecio madagascariensis**	Fireweed
Asteraceae	*Sonchus spp.**	Sowthistle
Caryophyllaceae	*Stellaria media**	Common Chickweed
Poaceae	*Stenotaphrum secundatum**	Buffalo Grass
Asteraceae	*Taraxacum officinale**	Dandelion
Poaceae	*Themeda triandra*	Kangaroo Grass
Anthericaceae	*Tricoryne elatior*	Yellow Rush Lily
Poaceae	*Vulpia fasciculata**	
Campanulaceae	*Wahlenbergia gracilis*	Australian Bluebell

Appendix C– Expected Fauna Species List

EXPECTED FAUNA SPECIES LIST

The following list includes fauna species that could be reasonably expected to occur on the Study Area at some point, given site attributes and location.

"●"-species observed or indicated by scats, tracks etc. on, over or near the site during recent surveys by AEP (2020).

A - NSW Atlas of Wildlife record of threatened species for the site.

Threatened species listed under the Biodiversity Conservation Act 2016 (BC Act) or the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) are indicated in **bold font**.

Family	Scientific Name	Common Name	Surveyed Observations	Survey Equipment
			Observed (O), Heard (H), Scat (S), Marking (M), Track (T), Nest (N), Burrow (B)	Anabat (A), Songmeter (SM), Camera Trap (CT), Nest (N).
Amphibia				
Myobatrachidae	*Crinia signifera*	Common Eastern Froglet		
Myobatrachidae	*Paracrinia haswelli*	Haswell's Froglet		
Myobatrachidae	*Pseudophryne bibronii*	Bibron's Toadlet		
Myobatrachidae	*Pseudophryne coriacea*	Red-backed Toadlet		
Myobatrachidae	*Uperoleia fusca*	Dusky Toadlet		
Hylidae	*Litoria caerulea*	Green Tree Frog		
Hylidae	*Litoria fallax*	Eastern Dwarf Tree Frog		
Hylidae	*Litoria jervisiensis*	Jervis Bay Tree Frog		
Hylidae	*Litoria latopalmata*	Broad-palmed Frog		
Hylidae	*Litoria nasuta*	Rocket Frog		
Hylidae	*Litoria peronii*	Peron's Tree Frog		
Hylidae	*Litoria tyleri*	Tyler's Tree Frog		
Hylidae	*Litoria verreauxii*	Verreaux's Frog		
Limnodynastidae	*Limnodynastes dumerilii*	Eastern Banjo Frog		
Limnodynastidae	*Limnodynastes peronii*	Brown-striped Frog		
Limnodynastidae	*Limnodynastes tasmaniensis*	Spotted Grass Frog		
Limnodynastidae	*Platyplectrum ornatum*	Ornate Burrowing Frog		
Reptilia				
Scincidae	*Bellatorias major*	Land Mullet		
Scincidae	*Concinnia tenuis*	Barred-sided Skink		
Scincidae	*Ctenotus robustus*	Robust Ctenotus		
Scincidae	*Ctenotus taeniolatus*	Copper-tailed Skink		
Scincidae	*Eulamprus quoyii*	Eastern Water-skink		

Family	Scientific Name	Common Name	Surveyed Observations	Survey Equipment
			Observed (O), Heard (H), Scat (S), Marking (M), Track (T), Nest (N), Burrow (B)	Anabat (A), Songmeter (SM), Camera Trap (CT), Nest (N).
Scincidae	*Lampropholis delicata*	Dark-flecked Garden Sunskink		
Scincidae	*Lampropholis guichenoti*	Pale-flecked Garden Sunskink		
Scincidae	*Saiphos equalis*	Three-toed Skink		
Scincidae	*Tiliqua scincoides*	Eastern Blue-tongue		
Agamidae	*Amphibolurus muricatus*	Jacky Lizard		
Agamidae	*Intellagama lesueurii lesueurii*	Eastern Water Dragon		
Agamidae	*Pogona barbata*	Bearded Dragon		
Varanidae	*Varanus varius*	Lace Monitor		
Typhlopidae	*Anilios nigrescens*	Blackish Blind Snake		
Pythonidae	*Morelia spilota spilota*	Diamond Python		
Colubridae	*Dendrelaphis punctulatus*	Common Tree Snake		
Elapidae	*Cacophis squamulosus*	Golden-crowned Snake		
Elapidae	*Cryptophis nigrescens*	Eastern Small-eyed Snake		
Elapidae	*Demansia psammophis*	Yellow-faced Whip Snake		
Elapidae	*Hemiaspis signata*	Black-bellied Swamp Snake		
Elapidae	*Hydrophis platurus*	Yellow-bellied Seasnake		
Elapidae	*Pseudechis porphyriacus*	Red-bellied Black Snake		
Elapidae	*Pseudonaja textilis*	Eastern Brown Snake		
Aves				
Phasianidae	*Synoicus ypsilophora*	Brown Quail		
Anatidae	*Anas castanea*	Chestnut Teal		
Anatidae	*Anas gracilis*	Grey Teal		
Anatidae	*Anas rhynchotis*	Australasian Shoveler		
Anatidae	*Anas superciliosa*	Pacific Black Duck		

Family	Scientific Name	Common Name	Surveyed Observations	Survey Equipment
			Observed (O), Heard (H), Scat (S), Marking (M), Track (T), Nest (N), Burrow (B)	Anabat (A), Songmeter (SM), Camera Trap (CT), Nest (N).
Anatidae	*Aythya australis*	Hardhead		
Anatidae	*Biziura lobata*	Musk Duck		
Anatidae	*Chenonetta jubata*	Australian Wood Duck		
Anatidae	*Dendrocygna eytoni*	Plumed Whistling-Duck		
Podicipedidae	*Tachybaptus novaehollandiae*	Australasian Grebe		
Columbidae	*Columba leucomela*	White-headed Pigeon		
Columbidae	*Columba livia**	Rock Dove		
Columbidae	*Geopelia humeralis*	Bar-shouldered Dove		
Columbidae	*Lopholaimus antarcticus*	Topknot Pigeon		
Columbidae	*Macropygia phasianella*	Brown Cuckoo-Dove		
Columbidae	*Ocyphaps lophotes*	Crested Pigeon		
Columbidae	*Phaps chalcoptera*	Common Bronzewing		
Columbidae	*Spilopelia chinensis**	Spotted Turtle-Dove		
Podargidae	*Podargus strigoides*	Tawny Frogmouth		
Caprimulgidae	*Eurostopodus mystacalis*	White-throated Nightjar		
Aegothelidae	*Aegotheles cristatus*	Australian Owlet-nightjar		
Threskiornithidae	*Threskiornis moluccus*	Australian White Ibis		
Threskiornithidae	*Threskiornis spinicollis*	Straw-necked Ibis		
Accipitridae	*Accipiter cirrocephalus*	Collared Sparrowhawk		
Accipitridae	*Accipiter fasciatus*	Brown Goshawk		
Accipitridae	*Accipiter novaehollandiae*	Grey Goshawk		
Accipitridae	*Aviceda subcristata*	Pacific Baza		
Accipitridae	*Circus approximans*	Swamp Harrier		
Accipitridae	*Elanus axillaris*	Black-shouldered Kite		

Family	Scientific Name	Common Name	Surveyed Observations	Survey Equipment
			Observed (O), Heard (H), Scat (S), Marking (M), Track (T), Nest (N), Burrow (B)	Anabat (A), Songmeter (SM), Camera Trap (CT), Nest (N).
Accipitridae	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	OH	
Accipitridae	*Haliastur indus*	Brahminy Kite		
Accipitridae	*Haliastur sphenurus*	Whistling Kite		
Accipitridae	*Milvus migrans*	Black Kite		
Accipitridae	*Pandion cristatus*	Eastern Osprey		
Falconidae	*Falco berigora*	Brown Falcon		
Falconidae	*Falco cenchroides cenchroides*	Nankeen Kestrel		
Falconidae	*Falco longipennis*	Australian Hobby		
Falconidae	*Falco peregrinus*	Peregrine Falcon		
Cacatuidae	*Cacatua galerita*	Sulphur-crested Cockatoo	OH	
Cacatuidae	*Cacatua sanguinea*	Little Corella		
Cacatuidae	*Cacatua tenuirostris*	Long-billed Corella		
Cacatuidae	*Eolophus roseicapilla*	Galah		
Cacatuidae	*Zanda funereus*	Yellow-tailed Black-Cockatoo	OH	
Psittacidae	*Alisterus scapularis*	Australian King-Parrot		
Psittacidae	*Glossopsitta concinna*	Musk Lorikeet		
Psittacidae	*Platycercus elegans*	Crimson Rosella		
Psittacidae	*Platycercus eximius*	Eastern Rosella	OH	
Psittacidae	*Psephotus haematonotus*	Red-rumped Parrot		
Psittacidae	*Trichoglossus chlorolepidotus*	Scaly-breasted Lorikeet		
Psittacidae	*Trichoglossus haematodus*	Rainbow Lorikeet	OH	
Cuculidae	*Cacomantis flabelliformis*	Fan-tailed Cuckoo		
Cuculidae	*Cacomantis variolosus*	Brush Cuckoo		
Cuculidae	*Centropus phasianinus*	Pheasant Coucal		

Family	Scientific Name	Common Name	Surveyed Observations	Survey Equipment
			Observed (O), Heard (H), Scat (S), Marking (M), Track (T), Nest (N), Burrow (B)	Anabat (A), Songmeter (SM), Camera Trap (CT), Nest (N).
Cuculidae	*Chalcites basalis*	Horsfield's Bronze-Cuckoo		
Cuculidae	*Chalcites lucidus*	Shining Bronze-Cuckoo		
Cuculidae	*Eudynamys orientalis*	Eastern Koel		
Cuculidae	*Heteroscenes pallidus*	Pallid Cuckoo		
Cuculidae	*Scythrops novaehollandiae*	Channel-billed Cuckoo		
Alcedinidae	*Ceyx azureus*	Azure Kingfisher		
Alcedinidae	*Dacelo novaeguineae*	Laughing Kookaburra	OH	
Alcedinidae	*Todiramphus macleayii*	Forest Kingfisher		
Alcedinidae	*Todiramphus sanctus*	Sacred Kingfisher		
Coraciidae	*Eurystomus orientalis*	Dollarbird	OH	
Climacteridae	*Cormobates leucophaea*	White-throated Treecreeper		
Ptilonorhynchidae	*Ptilonorhynchus violaceus*	Satin Bowerbird		
Maluridae	*Malurus cyaneus*	Superb Fairy-wren	OH	
Maluridae	*Malurus lamberti*	Variegated Fairy-wren	OH	
Maluridae	*Stipiturus malachurus*	Southern Emu-wren		
Acanthizidae	*Acanthiza chrysorrhoa*	Yellow-rumped Thornbill		
Acanthizidae	*Acanthiza lineata*	Striated Thornbill		
Acanthizidae	*Acanthiza nana*	Yellow Thornbill		
Acanthizidae	*Acanthiza pusilla*	Brown Thornbill		
Acanthizidae	*Acanthiza reguloides*	Buff-rumped Thornbill		
Acanthizidae	*Gerygone levigaster*	Mangrove Gerygone		
Acanthizidae	*Gerygone mouki*	Brown Gerygone		
Acanthizidae	*Gerygone olivacea*	White-throated Gerygone		
Acanthizidae	*Sericornis frontalis*	White-browed Scrubwren		

Family	Scientific Name	Common Name	Surveyed Observations	Survey Equipment
			Observed (O), Heard (H), Scat (S), Marking (M), Track (T), Nest (N), Burrow (B)	Anabat (A), Songmeter (SM), Camera Trap (CT), Nest (N).
Acanthizidae	*Sericornis magnirostra*	Large-billed Scrubwren		
Pardalotidae	*Pardalotus punctatus*	Spotted Pardalote		
Pardalotidae	*Pardalotus striatus*	Striated Pardalote		
Meliphagidae	*Acanthorhynchus tenuirostris*	Eastern Spinebill	OH	
Meliphagidae	*Anthochaera carunculata*	Red Wattlebird	OH	
Meliphagidae	*Anthochaera chrysoptera*	Little Wattlebird	OH	
Meliphagidae	*Caligavis chrysops*	Yellow-faced Honeyeater	OH	
Meliphagidae	*Entomyzon cyanotis*	Blue-faced Honeyeater		
Meliphagidae	*Lichmera indistincta*	Brown Honeyeater		
Meliphagidae	*Manorina melanocephala*	Noisy Miner		
Meliphagidae	*Meliphaga lewinii*	Lewin's Honeyeater	OH	
Meliphagidae	*Melithreptus brevirostris*	Brown-headed Honeyeater		
Meliphagidae	*Melithreptus lunatus*	White-naped Honeyeater		
Meliphagidae	*Myzomela sanguinolenta*	Scarlet Honeyeater		
Meliphagidae	*Nesoptilotis leucotis*	White-eared Honeyeater		
Meliphagidae	*Philemon corniculatus*	Noisy Friarbird		
Meliphagidae	*Phylidonyris niger*	White-cheeked Honeyeater	OH	
Meliphagidae	*Phylidonyris novaehollandiae*	New Holland Honeyeater		
Meliphagidae	*Plectorhyncha lanceolata*	Striped Honeyeater		
Meliphagidae	*Ptilotula fusca*	Fuscous Honeyeater		
Meliphagidae	*Ptilotula penicillata*	White-plumed Honeyeater		
Falcunculidae	*Falcunculus frontatus frontatus*	Eastern Shrike-tit		
Psophodidae	*Psophodes olivaceus*	Eastern Whipbird		
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike		

Family	Scientific Name	Common Name	Surveyed Observations	Survey Equipment
			Observed (O), Heard (H), Scat (S), Marking (M), Track (T), Nest (N), Burrow (B)	Anabat (A), Songmeter (SM), Camera Trap (CT), Nest (N).
Campephagidae	*Edolisoma tenuirostris*	Cicadabird		
Pachycephalidae	*Colluricincla harmonica*	Grey Shrike-thrush		
Pachycephalidae	*Pachycephala pectoralis*	Golden Whistler		
Pachycephalidae	*Pachycephala rufiventris*	Rufous Whistler		
Oriolidae	*Oriolus sagittatus*	Olive-backed Oriole	OH	
Oriolidae	*Sphecotheres vieilloti*	Australasian Figbird	OH	
Artamidae	*Artamus leucoryn*	White-breasted Woodswallow		
Artamidae	*Artamus superciliosus*	White-browed Woodswallow		
Artamidae	*Cracticus nigrogularis*	Pied Butcherbird		
Artamidae	*Cracticus torquatus*	Grey Butcherbird		
Artamidae	*Gymnorhina tibicen*	Australian Magpie	OH	
Artamidae	*Strepera graculina*	Pied Currawong		
Dicruridae	*Dicrurus bracteatus*	Spangled Drongo	OH	
Rhipiduridae	*Rhipidura albiscapa*	Grey Fantail		
Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail		
Rhipiduridae	*Rhipidura rufifrons*	Rufous Fantail	OH	
Corvidae	*Corvus coronoides*	Australian Raven		
Corvidae	*Corvus orru*	Torresian Crow		
Monarchidae	*Grallina cyanoleuca*	Magpie-lark		
Monarchidae	*Monarcha melanopsis*	Black-faced Monarch		
Monarchidae	*Myiagra cyanoleuca*	Satin Flycatcher		
Monarchidae	*Myiagra inquieta*	Restless Flycatcher		
Monarchidae	*Myiagra rubecula*	Leaden Flycatcher		
Corcoracidae	*Corcorax melanorhamphos*	White-winged Chough		

Family	Scientific Name	Common Name	Surveyed Observations	Survey Equipment
			Observed (O), Heard (H), Scat (S), Marking (M), Track (T), Nest (N), Burrow (B)	Anabat (A), Songmeter (SM), Camera Trap (CT), Nest (N).
Petroicidae	*Eopsaltria australis*	Eastern Yellow Robin	OH	
Petroicidae	*Petroica rosea*	Rose Robin		
Petroicidae	*Tregellasia capito*	Pale-yellow Robin		
Cisticolidae	*Cisticola exilis*	Golden-headed Cisticola		
Acrocephalidae	*Acrocephalus australis*	Australian Reed-Warbler		
Locustellidae	*Cincloramphus timoriensis*	Tawny Grassbird		
Locustellidae	*Poodytes gramineus*	Little Grassbird		
Hirundinidae	*Hirundo neoxena*	Welcome Swallow	OH	
Hirundinidae	*Petrochelidon ariel*	Fairy Martin		
Hirundinidae	*Petrochelidon nigricans*	Tree Martin		
Sturnidae	*Acridotheres tristis**	Common Myna		
Sturnidae	*Sturnus vulgaris**	Common Starling		
Zosteropidae	*Zosterops lateralis*	Silvereye	OH	
Dicaeidae	*Dicaeum hirundinaceum*	Mistletoebird		
Estrildidae	*Neochmia temporalis*	Red-browed Finch	OH	
Motacillidae	*Anthus novaeseelandiae*	Australian Pipit		
Mammalia				
Tachyglossidae	*Tachyglossus aculeatus*	Short-beaked Echidna		
Dasyuridae	*Antechinus flavipes*	Yellow-footed Antechinus		
Dasyuridae	*Antechinus mimetes*	Mainland Dusky Antechinus		
Dasyuridae	*Antechinus stuartii*	Brown Antechinus		
Peramelidae	*Isoodon macrourus*	Northern Brown Bandicoot		
Peramelidae	*Perameles nasuta*	Long-nosed Bandicoot		
Phascolarctidae	*Phascolarctos cinereus*	Koala		

Family	Scientific Name	Common Name	Surveyed Observations	Survey Equipment
			Observed (O), Heard (H), Scat (S), Marking (M), Track (T), Nest (N), Burrow (B)	Anabat (A), Songmeter (SM), Camera Trap (CT), Nest (N).
Petauridae	*Petaurus breviceps*	Sugar Glider		
Pseudocheiridae	*Pseudocheirus peregrinus*	Common Ringtail Possum		
Acrobatidae	*Acrobates pygmaeus*	Feathertail Glider		
Phalangeridae	*Trichosurus vulpecula*	Common Brushtail Possum		
Macropodidae	*Macropus giganteus*	Eastern Grey Kangaroo		
Macropodidae	*Notamacropus rufogriseus*	Red-necked Wallaby		
Macropodidae	*Wallabia bicolor*	Swamp Wallaby		
Pteropodidae	*Pteropus alecto*	Black Flying-fox		
Pteropodidae	*Pteropus poliocephalus*	Grey-headed Flying-fox		
Pteropodidae	*Pteropus scapulatus*	Little Red Flying-fox		
Pteropodidae	*Pteropus sp.*	Flying-fox		
Rhinolophidae	*Rhinolophus megaphyllus*	Eastern Horseshoe-bat		
Emballonuridae	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat		
Molossidae	*Austronomus australis*	White-striped Freetail-bat		
Molossidae	*Micronomus norfolkensis*	Eastern Coastal Free-tailed Bat		
Molossidae	*Ozimops ridei*	Eastern Free-tailed Bat		
Vespertilionidae	*Chalinolobus gouldii*	Gould's Wattled Bat		
Vespertilionidae	*Chalinolobus morio*	Chocolate Wattled Bat		
Vespertilionidae	*Falsistrellus tasmaniensis*	Eastern False Pipistrelle		
Vespertilionidae	*Myotis macropus*	Southern Myotis		
Vespertilionidae	*Nyctophilus geoffroyi*	Lesser Long-eared Bat		
Vespertilionidae	*Nyctophilus gouldi*	Gould's Long-eared Bat		

Family	Scientific Name	Common Name	Surveyed Observations	Survey Equipment
			Observed (O), Heard (H), Scat (S), Marking (M), Track (T), Nest (N), Burrow (B)	Anabat (A), Songmeter (SM), Camera Trap (CT), Nest (N).
Vespertilionidae	*Nyctophilus sp.*	long-eared bat		
Vespertilionidae	*Scoteanax rueppellii*	Greater Broad-nosed Bat		
Vespertilionidae	*Scotorepens orion*	Eastern Broad-nosed Bat		
Vespertilionidae	*Vespadelus darlingtoni*	Large Forest Bat		
Vespertilionidae	*Vespadelus pumilus*	Eastern Forest Bat		
Vespertilionidae	*Vespadelus vulturnus*	Little Forest Bat		
Muridae	*Mus musculus**	House Mouse		
Muridae	*Rattus lutreolus*	Swamp Rat		
Muridae	*Rattus rattus**	Black Rat		
Canidae	*Canis familiaris**	Dog	OH	
Canidae	*Vulpes vulpes**	Fox	S	
Felidae	*Felis catus**	Cat		
Leporidae	*Oryctolagus cuniculus**	Rabbit	OH	

Appendix D – BAM Field Sheets

Date: 16/10/21	Job number: 2467	Site: Babs Farm	Plot ID: 1	Bearing: 345	Observers: BY, AH
Starting point Easting / Northing:			End point Easting / Northing:		

AEP
ECOLOGY | BIOBANKING | OFFSETS | BUSHFIRE

Upper stratum	C	Ab	Mid stratum	C	Ab	Lower stratum	C	Ab	Lower stratum	C	Ab
C. gummifera	5	1	Dodonaea triquetra	0.2	2	Pteridium esculentum	10	50+	Hypochaeris rad.	0.2	5
E. pilularis	25	5	Breynia oblongifolia	2	20	Themeda triandra	20	200	Sonchus sp.	0.1	1
Angophora costata	1	1	Monotoca? elliptica	0.5	5	Lomandra longifolia	0.3	2	Poa - Dichelachne micrantha spreading panicle	~~2.5~~ 0.5	~~100+~~ 20
Banksia serrata	0.5	1	Daviesia alata Pea- Cactus like	0.3	3	Imperata cylindrica	0.3	10	Buffalo grass	2	50
Calochlaena dub	0.5	5	~~Pea - trailing~~	~~0.5~~	~~4~~	Pandorea pandorana	1	5	Hydrocotyle bonariensis	0.1	1
			Acacia suaveolens	0.5	10	Dianella caerulea var. producta	0.5	10	Oxalis perennans?	0.1	10
			Pimelea linifolia	0.3	5	Eragrostis curvula Grass- tussock eragrostis?	2.5	100+	Conyza bon	0.1	5
			Gonocarpus teucrioides?	1	20	Pomax umbellata	0.5	30	Andropogon virginicus	0.3	5
			Pea Bossiaea rhombifolia	0.5	5	Kennedia rubicunda ~~Desmodium~~	0.1				
			Acacia ulicifolia	0.5	10	Hypochaeris glabra	0.1	2			
			Leptospermum sp. 1 cinereum	0.7	3	Billardiera scandens	0.3	1			
			Hibbertia ~~obtusa~~ linearis?	0.7	15	Paranthera microphylla tiny white flower	0.1	1			
			Bitou bush	0.3	3	Microtis sp.	0.1	3			
			Dillwynia ~~floribunda~~ glaberrima?	0.3	5						
			Acacia long var sppL.	1	5						
			~~Shrub red berry~~	~~0.2~~	~~1~~						
			~~Ground cover Conyza bon~~								
Total Cover DO FIRST	35-40			10?							

20mx20m plot = 400m² **Note:** 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

C (%): 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ... (to nearest 5%). Include overhanging plants.

Abundance: 1-20, 50, 100, 500, 1000 etc. (numbers >20 are estimates only. For overhanging plants, record abundance as 1.

Outside plot
Persoonia laevis

Date: 18/10/21	Job number: 2467	Site: 4029.. Bobs Farm	Plot ID: 1	Bearing: 345	Observers: BM, AH
Starting point Easting / Northing: 0410062, 6373914			End point Easting / Northing: 0410058, 6373965		

AEP ECOLOGY | BIOBANKING | OFFSETS | BUSHFIRE

Arrival time: **Departure time:** **Weather:** **TWO** Transect photos (one landscape one Portrait) taken ☐

1000m² plot **Mapped Vegetation community:** Likely PCT 1646 **Transect GPS points taken** ☐

Tree Stem Size Class DBH (1.3m high)	Presence/Absence Count above 50 cm	Count of Hollow Bearing Trees
< 5 cm	(P) / A	
5 - 9 cm	(P) / A	
10 – 19 cm	(P) / A	Total 0
20 – 29 cm	(P) / A	Length of logs (m) **Note:** >10cm diameter, >50cm length
30 – 49cm	(P) / A	
50 -79cm	# III	
>80cm	# II	Total metres 0

Leaf Litter Cover within 5 x 1m² sub-plots

Note: - located at 5m, 15m, 25m, 35m and 45m along the transect - first plot located 5m on the left of the transect

Litter includes leaves, seeds, twigs and branches less than 10cm in diameter.

Also include dead material attached to living plants that is touching the ground.

	Leaf litter	Live vegetation, bare ground, rocks, etc.
1	90	
2	45	
3	80	
4	50	
5	30	
Average	59	

Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)

minimal shrub layer – past understorubbing? some exotic dust.

Habitat features, comments and incidental fauna observations:

Note: Tree Stem Size Class <5cm refers to any regenerating stems and does not require a height of 1.3m.

Note: Large Trees on the BAM Calculator vary dependant on PCT. We record number of all trees over 50cm, BAM Calculator may have large trees only over 80cm and 50 -79cm as Present or Absent this is PCT dependant.

Date: 18.10.21	Job number:	Site: Bobs Farm	Plot ID: B2	Bearing:	Observers: BY
Starting point Easting / Northing:			End point Easting / Northing:		

AEP
ECOLOGY | BIOBANKING | OFFSETS | BUSHFIRE

Upper stratum	C	Ab	Mid stratum	C	Ab	Lower stratum	C	Ab	Lower stratum	C	Ab
Ironbark sp. (zebra?)	5	2	Hibbertia linearis	1	10	Grass Eragrostis curvula 1 (tussock)	40	1000+			
(Eucalyptus fibrosa			Acacia 1 leptospermum laevigatum	2	5	~~fuzzy silver fol~~ Plantago?	2	~~500+~~			
						reddish Rumex acetoselia	1	500			
			Bitou bush	0.5	1	Lily like Trirorgne elatior	0.5	50+			
			Bossiaea (diamond leaf) rhombifolia	0.3	1	fuzzy skinny Oenothera mollissima (orange infl	0.2	10			
			Exocarpus cupressiformis	0.2	1	Conyza bonariensis	0.3	10			
			Acacia long var soph	0.3	2	Cyperus sp.	0.3	20			
			Lantana camara	0.1	1	Euchiton involucratus	0.1	10			
						Hypochaeris radicata	1	100			
						~~Orange infl~~ ~~red sl~~ Aira cupariana					
						shiny grass	0.1	1			
						Chloris gayana	0.2	10			
						Lomandra long.	0.5	5			
						Richardia humistrata	0.1	1			
						Hydrocotyle bonariensis	0.1	1			
						Andropogon virginicus	0.1	1			
						Acanthospermum australe	0.5	30			
Total Cover DO FIRST											

20mx20m plot = 400m² **Note:** 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

C (%): 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ... (to nearest 5%). Include overhanging plants.

Abundance: 1-20, 50, 100, 500, 1000 etc. (numbers >20 are estimates only. For overhanging plants, record abundance as 1.

Date: 18/10/21	Job number: 2467	Site: Bobs farm	Plot ID: P2	Bearing: 105	Observers: AM, BY
Starting point Easting / Northing: 0410081, 6374042			End point Easting / Northing: 0410130, 6374025		

AEP ECOLOGY | BIOBANKING | OFFSETS | BUSHFIRE

Arrival time: **Departure time:** **Weather:** **TWO** Transect photos (one landscape one Portrait) taken ☐

1000m² plot **Mapped Vegetation community:** **Transect GPS points taken** ☐

Tree Stem Size Class DBH (1.3m high)	Presence/Absence Count above 50 cm	Count of Hollow Bearing Trees
< 5 cm	(P) / A	
5 - 9 cm	P / A	
10 – 19 cm	P / A	Total 0
20 – 29 cm	(P) / A	Length of logs (m) **Note:** >10cm diameter, >50cm length
30 – 49cm	(P) / A	11
50 -79cm	#	
>80cm	#	Total metres 2

Leaf Litter Cover within 5 x 1m² sub-plots
Note: - located at 5m, 15m, 25m, 35m and 45m along the transect - first plot located 5m on the left of the transect
Litter includes leaves, seeds, twigs and branches less than 10cm in diameter.
Also include dead material attached to living plants that is touching the ground.

	Leaf litter	Live vegetation, bare ground, rocks, etc.
1	20	
2	5	
3	10	
4	5	
5	10	
Average	10	

Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)

Rubbish, exotic grasses, exposed sand - prev ~~sand~~ mining?

Habitat features, comments and incidental fauna observations:

Outside plot – Persoonia lavis, Banksia serrata

Note: Tree Stem Size Class <5cm refers to any regenerating stems and does not require a height of 1.3m.
Note: Large Trees on the BAM Calculator vary dependant on PCT. We record number of all trees over 50cm, BAM Calculator may have large trees only over 80cm and 50 -79cm as Present or Absent this is PCT dependant.

Date: 18/10/21	Job number: 2467	Site: Bobs Farm	Plot ID: P3	Bearing: 105	Observers: AH, BY
Starting point Easting / Northing:			End point Easting / Northing:		

AEP
ECOLOGY | BIOBANKING | OFFSETS | BUSHFIRE

Upper stratum	C	Ab	Mid stratum	C	Ab	Lower stratum	C	Ab	Lower stratum	C	Ab
Pinus radiata	20		Leptospermum laevigatum	30		Lomandra longifolia	0.3	5	Plantago lanceolata	0.5	
Camphor laurel	0.5		Breyna oblongifolia	0.5	5	Parsonsia straminea	2	1	Ehrharta erecta	0.5	
Glochidion ferd	0.5	5	Acacia long var long	0.5	3	Dianella caerulea var producta	0.3	5	Asparagus aethiopicus	0.2	
			Elaeocarpus reticulatus?	3	5	Pandorea pandorana	0.3	1	Briza maxima	1	
			Bitou bush	5	20*	Pomax umbellata	0.2		Eragrostis curvula? Tussock grass	10	
			Pittosporum undulatum	0.5	2	~~Carex sp (small)~~	~~0.1~~		Hypochaeris radicata	0.1	
			Bleeding heart	0.2	1	Aira cupaniana	0.1				
			Monotoca elliptica	0.3	1	Imperata cylindrica	0.2				
			Lantana camara	0.3	1						
Total Cover DO FIRST											

20mx20m plot = 400m² **Note:** 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

C (%): 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ... (to nearest 5%). Include overhanging plants.

Abundance: 1-20, 50, 100, 500, 1000 etc. (numbers >20 are estimates only. For overhanging plants, record abundance as 1.

Date: 18/10/21	Job number: 2467	Site: 4029 & 4045 Nelson Bay Rd Bobs Farm	Plot ID: 3	Bearing: 105	Observers: AH BY
Starting point Easting / Northing: 56H UTM 0410239 6374009			End point Easting / Northing: 56H UTM 0410255 6373994		

AEP ECOLOGY | BIOBANKING | OFFSETS | BUSHFIRE

Arrival time: 1615 **Departure time:** 1710 **Weather:** fine PtA Cloud

TWO Transect photos (one landscape one Portrait) taken ✓

1000m² plot **Mapped Vegetation community:**

Transect GPS points taken ✓

Tree Stem Size Class DBH (1.3m high)	Presence/Absence Count above 50 cm	Count of Hollow Bearing Trees
< 5 cm	(P) / A	NIL
5 - 9 cm	(P) / A	
10 – 19 cm	(P) / A	**Total**
20 – 29 cm	(P) / A	**Length of logs (m)** **Note:** >10cm diameter, >50cm length ~~2x 5m~~ (No hollows) 1x 5m " "
30 – 49cm	(P) / A	
50 -79cm	# 7	
>80cm	#	**Total metres**

Leaf Litter Cover within 5 x 1m² sub-plots

Note: - located at 5m, 15m, 25m, 35m and 45m along the transect - first plot located 5m on the left of the transect

Litter includes leaves, seeds, twigs and branches less than 10cm in diameter.

Also include dead material attached to living plants that is touching the ground.

		Leaf litter	Live vegetation, bare ground, rocks, etc.
L	1 5m	100%	Pine needles, cones Brayina (coffee bush) Bitou, Parsonsia Straminea
R	2 15m	85%	Some rubbish - treated pine/concrete 5% base ground; 5% tussock grass 5% bitou
L	3 25m	50% 10% bitou bush 10% rubbish (roof sheet)	30% lepto spermum debris — multiple prostrate branches (Stag)
R	4 35m	50%	~~40%~~ lepto spermum debris 2% bitou bush
L	5 45m	70%	30% lepto spermum debris
Average		71% Average cover	

Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)

Exotic Sp.: Pinus, bitou bush

Habitat features, comments and incidental fauna observations:

Pinus Sp (Radiata?), Coastal teatree lepto spermum, ~~spiky teatree~~ Monotoca (eliptica?) Blueberry ash, cheesetree (Glochidion)

Note: Tree Stem Size Class <5cm refers to any regenerating stems and does not require a height of 1.3m.

Note: Large Trees on the BAM Calculator vary dependant on PCT. We record number of all trees over 50cm, BAM Calculator may have large trees only over 80cm and 50 -79cm as Present or Absent this is PCT dependant.

Date: 18/10/21	Job number: 2467	Site: Bobs Farm	Plot ID: P4	Bearing: 106	Observers: AH, BY
Starting point Easting / Northing:			End point Easting / Northing:		

AEP
ECOLOGY | BIOBANKING | OFFSETS | BUSHFIRE

Upper stratum	C	Ab	Mid stratum	C	Ab	Lower stratum	C	Ab	Lower stratum	C	Ab
			(1) Petrorhagia dubia			(1) Petrorhagia dubia (pink inflor)	10		Acanthospermum australe	1	100
						Plantago lance	2		Oenothera mollissima Orange-flower weed	0.5	5
						Euchiton involucratus	2		Senecio madagasca...	0.1	1
						Briza maxima	0.5	50	Wahlenbergia gracilis	0.1	1
						Hypochaeris radicata	0.3		Vulpia fasciculata	0.1	1
						Eragrostis curvula Grass 1- tussock	35				
						Rumex acetoselia Red weed	8				
						Facelis retusa	0.3	20			
						Aira cupaniana	0.4	50			
						Cynodon dactylon	0.5				
						Ambrosia tenuifolia Fragrant forb	0.3	50			
						Cyperus sp.	0.2	50			
						Conyza bon	0.3				
						Taraxicum officinale	0.1	2			
						Chickweed - Stellaria media	0.1	10			
						~~Hetero...~~	~~0.2~~				
						Richardia humistrata	0.2	10			
Total Cover DO FIRST											

20mx20m plot = 400m² **Note:** 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

C (%): 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ... (to nearest 5%). Include overhanging plants.

Abundance: 1-20, 50, 100, 500, 1000 etc. (numbers >20 are estimates only. For overhanging plants, record abundance as 1.

Date: 18/10/21	Job number: 2467	Site: 4045 NELSON BAY RD BOBS FARM	Plot ID: 4	Bearing: 181°	Observers: AH BY
Starting point Easting / Northing: 56H UTM 0410253 6373964			End point Easting / Northing: 56H UTM 0410253 6373964		

AEP ECOLOGY | BIOBANKING | OFFSETS | BUSHFIRE

Arrival time: 1715 **Departure time:** **Weather:** Fine Part Cloud

TWO Transect photos (one landscape one Portrait) taken ☑

1000m² plot **Mapped Vegetation community:**

Transect GPS points taken ☑

Tree Stem Size Class DBH (1.3m high)	Presence/Absence Count above 50 cm	Count of Hollow Bearing Trees
< 5 cm	P / (A)	NIL
5 - 9 cm	P / (A)	
10 – 19 cm	P / (A)	Total
20 – 29 cm	P / (A)	Length of logs (m) Note: >10cm diameter, >50cm length
30 – 49cm	(P) / A	NIL
50 -79cm	# —	
>80cm	# —	Total metres

Leaf Litter Cover within 5 x 1m² sub-plots

Note: - located at 5m, 15m, 25m, 35m and 45m along the transect - first plot located 5m on the left of the transect

Litter includes leaves, seeds, twigs and branches less than 10cm in diameter.

Also include dead material attached to living plants that is touching the ground.

		Leaf litter	Live vegetation, bare ground, rocks, etc.
L	1 5	10%; 50% grasses 20% bare ground 20% exotic weeds	Hypacanne radicata, tussock grass, cychiton sp.
R	2 15	2% leaf litter	20% bare ground 60% grasses 18% exotic weeds
L	3 25	0% leaf litter	70% bare ground 25% grasses 5% exotic weeds
R	4 35	60% leaf litter Pinus needles	20% grasses 10% exotic weeds 5% acacia longifolia 5% bitou bush
L	5 45	5% leaf litter	40% bare ground 56% grasses 5% exotic weeds
	Average	15.4%	

Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)

Exotic orange weed, Petalagia dubia, ground veg has been slashed/cleared, piles of tree branches & roots

Habitat features, comments and incidental fauna observations:

Lewins honeyeater WBSE, Magpie butcher birds, pied lark, Red Wattlebird

Note: Tree Stem Size Class <5cm refers to any regenerating stems and does not require a height of 1.3m.

Note: Large Trees on the BAM Calculator vary dependant on PCT. We record number of all trees over 50cm, BAM Calculator may have large trees only over 80cm and 50 -79cm as Present or Absent this is PCT dependant.

Appendix E – Site Photographs



Plate 1 – Wood Piles on Site



Plate 2 – Vegetation on Site.



Plate 3 – Vegetation Northern Boundary



Plate 4 – *Eucalyptus pilularis (Blackbutt)*

Appendix F – Other Legislation

Appendix F – Other Legislation

EPBC Act Assessment

A Protected Matters Search of an area of 5km radius of the Study Area was conducted in October 2021 for Matters of National Environmental Significance as relevant to the Environment Protection & Biodiversity Conservation Act 1999 (EPBC Act). The following Matters of National Significance are considered in this assessment.

World Heritage Properties:

The site is not a World Heritage area and is not in close proximity to any such area.

National Heritage Places:

The site is not a National Heritage place, and it is not in close proximity to any such place.

Wetlands of International Significance (declared Ramsar wetlands):

The site is approximately 10 – 20 km south of Ramsar Listed Myall Lakes and is 20km north of the Ramsar listed Hunter estuary wetlands. The development as proposed will not impact the Ramsar listed wetlands.

Great Barrier Reef Marine Park:

The site is not part of, or within close proximity to, the Great Barrier Reef Marine Park.

Commonwealth Marine Areas:

The site is not part of, or within close proximity to, any Commonwealth Marine Area.

Threatened Ecological Communities:

From a search of the EPBC Protected Matters website (07/09/2021), four (4) listed Threatened Ecological Communities (TECs) were considered likely to occur or may occur within a 5km radius of the Study Area.

One (1) Critically Endangered Ecological Communities:

- Lowland Rainforest of Subtropical Australia;

Two (2) Endangered Ecological Communities:

- Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland;
- *Posidonia australis* seagrass meadows of the Manning-Hawkesbury ecoregion

One (1) Vulnerable Ecological Community:

- Subtropical and Temperate Coastal Saltmarsh

Ground truthing was undertaken against mapped Regional Vegetation maps within the Study Area, and the following Community was identified as being present:

- *PCT 1646 - Smooth-barked Apple - Blackbutt - Old Man Banksia woodland on coastal sands of the Central and Lower North Coast*.

Desktop assessment and ground-truthing during field surveys found that the vegetation community present on site is not commensurate with the aforementioned Threatened Ecological Communities.

Threatened Species:

Threatened species listed under the EPBC Act considered likely to occur on site were assessed from field inspections, Bird Data and using the BioNet Atlas search tool within a 10km search radius to the Study Area with most recent records assessed in **Table 1.**

No other matters of note relating to koala impact are considered relevant to the proposal, and as such it is not considered that a referral is required under the EPBC Act for the Koala.

Migratory Species

A number of EPBC listed migratory species have some potential to visit the site on an irregular basis. However, it is not considered that the development of this land as proposed is likely to significantly impact the potential habitat of such species or disrupt migratory patterns.

EPBC Act Assessment Conclusion

The location of the proposed development is primarily located within highly disturbed areas adjacent to a main road. The site has previously been cleared for farming practices and is in a managed state. Considering no threatened species were identified on site during the survey period and the site is highly degraded it is unlikely that removal of the vegetation on site will significantly impact threatened flora and fauna species in the area. It has been determined that a referral under the EPBC Act is not required for this rezoning proposal, therefore a referral is considered unlikely to be required.

Table 2: EPBC Listed Threatened Species Assessment

Scientific Name	Common Name	EPBC Status	No. of Local Records	Most Recent Record	Assessment
Fauna					
Anthochaera phrygia	Regent Honeyeater	Critically Endangered	7	2017	*Anthochaera phrygia* (Regent Honeyeater) has been recorded seven times within the 10km BioNet search area. All the records are from Tanilba Bay. The site is not mapped under the Important Area Mapping and considering the paucity of records in the local area and degraded nature of the site it is unlikely the development will have a significant impact on this species.
Dasyurus maculatus	Spotted-tailed Quoll	Endangered	3	2009	*Dasyurus maculatus* (Spotted-tailed Quoll) was recorded most recently in 2009 to the north-east of the Subject Site, observed on Nelson Bay Road. The species was not detected during nocturnal surveys or diurnal surveys. As much of the Subject Site is cleared and managed land and there have been no observations in over 10 years within the locality of the Subject Site, it is considered highly unlikely that species is present within the Subject Site and thus the development is not likely to have a significant impact on the species.
Hirundapus caudacutus	White-throated Needletail	Vulnerable	24	2020	*Hirundapus caudacutus* (White-throated Needletail) are a non-breeding terrestrial migrant in Australia. The most recent last record was located to the west of the Subject Site along Nelson Bay Road in 2020. There is a possibility that the species may occasionally forage on flying insects above the Subject Site. The proposed development is unlikely to have a significant impact on the species.
Lathamus discolor	Swift Parrot	Critically Endangered	24	2012	*Lathamus discolor* (Swift Parrot) has been recorded six times within the 10km BioNet search area. All the records are from Tanilba Bay/Lemon Tree Passage/Salamander Bay region. The site is not mapped under the Important Area Mapping and considering the paucity of records in the local area and degraded nature of the site it is unlikely the development will have a significant impact on this species.
Phascolarctos cinereus	Koala	Vulnerable	2058	2058	*Phascolarctos cinereus* (Koala) was not detected on site and no presence of koalas were detected on site during the survey period. Further to this there were no preferred koala feed trees identified within the site. The site is mapped as `Mainly Cleared' koala habitat, according to the Port Stephens Council CKPoM (2002) Koala Habitat Mapping and the site does not contain habitat linking areas over mainly cleared land according to the Port Stephens Koala Habitat Planning Map.

Scientific Name	Common Name	EPBC Status	No. of Local Records	Most Recent Record	Assessment
					As such it is unlikely that this site would support koalas due to the lack of preferred habitat and it is unlikely the development will have a significant impact on koalas in the area.
Pseudomys novaehollandiae	New Holland Mouse	Vulnerable	1	2008	*Pseudomys novaehollandiae* (New Holland Mouse) was not detected on site during field surveys. One record of this species was recorded to the south west of the site in the Worimi Conservation Lands south of Bob's Farm. Considering the paucity of records in the area and disturbed nature of the site, it is unlikely that this development will significantly impact this species
*Pteropus poliocephalus**	Grey-headed Flying-fox	Vulnerable	31	2020	*Pteropus poliocephalus* (Grey-headed Flying-fox) was not detected during nocturnal field surveys. Nor were any camps or roosts identified on site. Given that no maternity or roosting colony was observed within or near the Site Boundary during seasonal surveys, the highly mobile nature of Grey-headed Flying-fox and the presence of a only a small amount of foraging habitat within the Subject Site, it is considered unlikely to impact significantly on this highly mobile species.
Flora					
Cryptostylis hunteriana	Leafless Tongue Orchid	Vulnerable	7		*Cryptostylis hunteriana* (Leafless Tongue Orchid). One BioNet record of this species occurs in the Lemon Tree Passage area. Considering the record is located north of Tilligerry Creek in 2008 and there are substantial tracks of remnant vegetation within the area, it is unlikely the development will significantly impact this species.
Diuris praecox	Newcastle Doubletail	Vulnerable	1172	2018	*Diuris praecox* (Newcastle Doubletail) was not identified on site during seasonal surveys undertaken for this species when local reference populations were flowering. As such it is unlikely that the species occurs on site and unlikely for the development to significantly impact this species.
Angophora inopina	Charmhaven Apple	Vulnerable	1	2016	*Angophora inopina* (Charmhaven Apple). One BioNet record of this species occurs in the Salamander Bay area in 2016. This species was not detected on site during field surveys and it is unlikely to occur on site. As such it is considered unlikely the development will significantly impact this species.
Persicaria elatior	Tall Knotweed	Vulnerable	1		*Persicaria elatior* (Tall Knotweed). One BioNet record of this species

Scientific Name	Common Name	EPBC Status	No. of Local Records	Most Recent Record	Assessment
					occurs in the Salamander Bay area in 2019. This species was not detected on site during field surveys and no suitable habitat was identified on site for this species. As such it is considered unlikely the development will significantly impact this species.
Syzygium paniculatum	Magenta Lilly Pilly	Vulnerable	3		*Syzygium paniculatum* (Magenta Lilly Pilly). Three BioNet record of this species occurs in the Lemon Tree Passage area and have been recorded between 2014 and 2021. This species was not detected during field surveys. Considering the record is located north of Tilligerry Creek and there are substantial tracks of remnant vegetation within the area, it is unlikely the development will significantly impact this species.
Tetratheca juncea	Black-eyed Susan	Vulnerable	1		*Tetratheca juncea* (Black-eyed Susan) was not identified on site during seasonal surveys undertaken for this species when local reference populations were flowering. As such it is unlikely that the species occurs on site and unlikely for the development to significantly impact this species.

Port Stephens Comprehensive Koala Plan of Management Assessment

The report is specifically intended to respond to each of the performance criteria laid out in the Port Stephens Council Comprehensive Koala Plan of Management (CKPoM) for rezoning proposals as detailed in Appendix 2.

The site was inspected by AEP ecologists in September and October 2021 to undertake general site observations, habitat mapping and Plant Community Type determination, koala SAT surveys, nocturnal spotlighting and call playback.

The inspection included general site reconnaissance and traversal, with a view to verifying information that had been gathered at the desktop level, and also to identify the presence of potential important ecological features. Such searches included specific examination for any signs of Koala activity on the site, as well as nocturnal spotlighting and call playback of Koala calls, via a speaker.

No koalas or evidence of koalas were located on site during nocturnal surveys paired with call playback conducted in October 2021.

Performance Criteria for Rezoning Applications

Consideration is to be given to the following matters when assessing rezoning requests including any amendment to the Port Stephens LEP. Prior to approving any such rezoning proposal, Council is to take into consideration the likely impacts of the development made possible by the rezoning including environmental impacts on both the natural and built environment, and social and economic impacts on the locality. In particular Council should be satisfied that the rezoning would:

- **not result in development within areas of Preferred Koala Habitat (PKH) or defined Habitat Buffers;**

According to the Koala Habitat Planning Map (KHPB), the proposed rezoning plan is not located within areas of;

- Preferred Koala Habitat (PKH);
- Supplementary Koala Habitat (SKH);
- Habitat Buffers; or within
- Habitat Linking Areas (excluding those over mainly cleared land);

Additionally, the site does not contain preferred koala food trees *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus parramattensis* (Parramatta Red Gum) or *Eucalyptus robusta* (Swamp Mahogany).

Canopy trees Identified on site included;

- *Eucalyptus fibrosa* (Broad Leaved Ironbark)*;*
- *Eucalyptus pilularis* (Blackbutt);
- *Angophora costata* (Smooth-barked Apple); and
- *Corymbia gummifera* (Red Bloodwood).

Further to this the PCT identified on site (*PCT 1646 - Smooth-barked Apple - Blackbutt - Old Man Banksia woodland on coastal sands of the Central and Lower North Coast*) is not listed as a PCT that is aligned with Preferred Koala Habitat. As such no further koala habitat assessment is required.

- **allow for only low impact development within areas of Supplementary Koala Habitat and Habitat Linking Areas;**

The site is located within 'Mainly Cleared Areas' as per the Port Stephens KHPM and will not impact SKH and Habitat Linking Areas. As such no further assessment is required.

- **minimise the removal of any individuals of preferred koala food trees, where ever they occur on the site; and**

No preferred koala feed trees have been identified on site. As such no further assessment is required.

- **not result in development which would sever koala movement across the site. This should include consideration of the need for maximising tree retention on the site generally and for minimising the likelihood of impediments to safe/unrestricted koala movement.**

There is approximately 1.66ha of PCT 1646 in moderate and poor condition within the Subject Site that is proposed to be removed as part of this development. The site is fragmented by Nelson Bay Road to the south and Trotter Road to the north. The vegetation on site may provide some connectivity for koala movement between areas of PKH to the north and SKH to the south, however, movement across Nelson Bay Road is not considered suitable for koalas as this increase's vehicle strikes and impact to koalas. As such it is not considered that the vegetation on site functions as a suitable corridor for koalas given its proximity to Nelson Bay Road.

Conclusion

Koalas and or presence of koalas were not detected on site during the survey period. Further to this there were no preferred koala feed trees identified within the site. The site is mapped as `Mainly Cleared' koala habitat and the site does not contain habitat linking areas over mainly cleared land according to the Port Stephens Koala Habitat Planning Map. As per the Port Stephens Council CKPoM (2002) no further assessment is required and the site meets the conditions as defined in the Koala Habitat Mapping and the consent should not be constrained by koala habitat.

Water Management Act 2000

There are no streams or waterways that pass through the Subject Site. Therefore, no further assessment is required under the Water Management Act 2000.

Fisheries Management Act 1994

No streams or waterways are to be impacted by this development and as such the development will not require assessment under the Fisheries Management Act 1994.

SEPP Coastal Management 2018

The Subject Site is mapped within a small portion of Proximity to Coastal Wetland Area and Coastal Environmental Area, in accordance with the State Environmental Planning Policy (Coastal Management) 2018 (Coastal SEPP.). Therefore, in accordance with Clause 11 and 13 of the Coastal SEPP respectively the following assessment has been undertaken (**Table 1**).

Table 1 – Coastal Environment Area Assessment

Clause Number	Clause	Assessment
11 (1)	Development consent must not be granted to development on land identified as "proximity area for coastal wetlands" or "proximity area for littoral rainforest" on the *Coastal Wetlands and Littoral Rainforests Area Map* unless the consent authority is satisfied that the proposed development will not significantly impact on—	
11 (1a)	(a) the biophysical, hydrological or ecological integrity of the adjacent coastal wetland or littoral rainforest, or	No waterways pass through the site. As part of future developments Stormwater assessment and modelling will be required to ensure that the Development meets Port Stephens Council water quality targets and will not have an adverse impact on the downstream environment including the coastal wetlands to the north of the Subject Site. Typical water sensitive urban design is expected to be incorporated into the management of water on site and around the development, to ensure erosion does not occur and water run-off is contained and managed.
11 (1b)	(b) the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland or littoral rainforest.	As above.
11 (2)	This clause does not apply to land that is identified as "coastal wetlands" or "littoral rainforest" on the *Coastal Wetlands and Littoral Rainforests Area Map*.	Not applicable to this application.
13 (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	
13 (1a)	(a) the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment,	No waterways pass through the site. As part of future developments Stormwater assessment and modelling will be required to ensure

Clause Number	Clause	Assessment
		that the Development meets Port Stephens Council water quality targets and will not have an adverse impact on the downstream environment including the coastal wetlands to the north of the Subject Site. Typical water sensitive urban design is expected to be incorporated into the management of water on site and around the development, to ensure erosion does not occur and water run-off is contained and managed.
13 (1b)	(b) coastal environmental values and natural coastal processes,	The proposed rezoning area is located approx. 95m from the SEPP Wetland located along Tilligerry Creek, avoiding direct impact on coastal environmental values and natural coastal processes.
13 (1c)	(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,	As part of future developments Stormwater assessment and modelling will be required to ensure that the Development meets Port Stephens Council water quality targets and will not have an adverse impact on the downstream environment including the coastal wetlands to the north of the Subject Site. Typical water sensitive urban design is expected to be incorporated into the management of water on site and around the development, to ensure erosion does not occur and water run-off is contained and managed. Direct impacts to coastal lakes should be avoided as part of the Stormwater management plan.
13 (1d)	(d) marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms,	The proposed rezoning area is located approx. 95m from the SEPP Wetland located along Tilligerry Creek, avoiding direct impact on coastal environmental values and natural coastal processes.
13 (1e)	(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,	The rezoning is located within private property and will not impact 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 disability.
13 (1f)	(f) Aboriginal cultural heritage, practices and places,	No known Aboriginal cultural heritage, practices or places are known to this Lot and no adverse impacts are expected.

Clause Number	Clause	Assessment
		No known cultural and built environment and heritage places are known to this Lot and no adverse impacts are expected. Searches were carried out on the NSW Public Aboriginal Heritage Map Website. For an extensive search consultation with a registered Heritage Assessor is required (Heritage NSW 2021).
13 (1g)	(g) the use of the surf zone.	The development is set back from the foreshore and is separated by a road. The site will not impact or use the surf zone in the foreshore.
13 (2)	Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that—	
13 (2a)	(a) the development is designed, sited and will be managed to avoid an adverse impact referred to in subclause (1), or	The proposed rezoning area is located away from the foreshore avoiding direct impact on the nearby wetlands.
13 (2b)	(b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or	As above.
13 (2c)	(c) if that impact cannot be minimised—the development will be managed to mitigate that impact.	As above.
13 (3)	This clause does not apply to land within the Foreshores and Waterways Area within the meaning of *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005*.	Not applicable to this application.

As demonstrated in the above assessment it is likely that the proposed rezoning and future development will have minimal to no impact on the catchment area following the use of appropriate stormwater modelling and implementation of a Stormwater Management Plan and Water Sensitive Urban Design.

Appendix G – CVs

IAN BENSON
Curriculum Vitae

Ian works with AEP in the role of Principal Ecologist. He is an experienced field ecologist, bird watcher and a regular participant in wader surveys. Ian has previously had a successful career as a project manager with a local geotechnical engineering firm. His background in project management and soil sciences combined with his ecological knowledge is utilised in a diverse array of applications in his current role.

Qualifications

- Graduate Diploma in Science (Ecology) University of New England (2014)
- Bachelor Engineering (Civil) University of Newcastle (2008)

Further Education & Training (select summary)

- Biobank and Biocertification Assessors Training Course
- Advanced Plant Identification (University of New South Wales)
- NSW Class C Driver's Licence. Experienced 4WD operator
- Occupational Health & Safety Training
- Remoted Piloted Aircraft Excluded Category Training with Aviassist Pty Ltd
- Rail Industry Worker
- ARTC Safety Induction for Contractors (NSW)
- ARTC Hunter Bulk Terminal Induction

Fields of Special Competence

- Biobanking & Biodiversity Offset Commissions – initial scoping and feasibility, BAM impact assessments and BDAR reporting, biobank calculations, Stewardship site creation
- Detailed knowledge of environmental legislation and approval pathways
- Ecological field survey and habitat assessment covering terrestrial and aquatic flora and fauna. Experienced in camera trap methods particularly targeting cryptic and difficult to identify mammal species.
- Highly proficient at avifauna surveys, including challenging wetland and shorebird environs
- High level of experience undertaking nocturnal survey of arboreal mammals and nocturnal birds
- Project Management

Key Project Experience

- Targeted surveys for *Dichanthium setosum* in Glen Innes Region;
- Target surveys for Eucalyptus cannonii, Western Rail Coal Unloader, Pipers Flat;
- White-bellied Sea-Eagle nest locating and monitoring Glenning Valley and Chisholm;
- Powerful Owl nest locating and monitoring: Salamander Bay, Soldiers Point, Anna Bay North, Wallsend, Cameron Park and Edgeworth;
- Accredited Assessor for approved Biodiversity Development Assessment Reports:
    - Berkeley Vale Road, Glenning Valley;
    - Railway Road, Warnervale;
    - Barden Ridge Townhouses;
    - McFarlane's Road, Chisholm;
    - Fairlands Road, Medowie;
    - Rosella Rise, Warnervale;
    - Carr's Road, Neath;
    - Jack Grant Avenue, Warnervale;
    - Minnesota Road, Hamlyn Terrace;
    - Bellbird North;
    - Waterford, Chisholm;
- Ecological Assessment Report for Proposed Modification To Approved Western Rail Coal Unloader At Pipers Flat;
- Spot Analysis Techniques surveys: Nelsons Plains, Wallsend, Anna Bay, Boat Harbour, Salamander Bay, North Arm Cove, Warnervale, Hamlyn Terrace, Kincumber, Palmdale, Wyee, Charlestown, Chisholm, Gillieston Heights, Mount Vincent, Radford Park, Cessnock
- Infrastructure;
    - Gwandalan Recycled Water Main;
    - Lower Belford Water Main;
    - Raymond Terrace Rising Main;
    - Astra Street Landfill Rehabilitation Assessment;
- Cat Tracker Pilot Program Associated With The Hunter Estuary Wetlands for Hunter Local Land Services;
- Surveys for Squirrel Glider (*Petaurus norfolcensis*) Warnervale Area June 2020
- Biodiversity Stewardship Agreements including:

- o • Bobs Farm (approved);
- o • Cedar Brush Creek (ready for signing);
- o • Girvan (final assessment);
- o • Mardi (under assessment);
- o • Wallsend (report being drafted);
- o • Ellalong (report being drafted);
- o • Blueys Beach (surveys continuing);
- o • South-West Rocks (surveys continuing).

Professional Affiliations / Memberships (past / present)

- Hunter Bird Observers Club (HBOC)
- Australasian Seabird Group

Relevant Employment History

2019-Current **Principal Ecologist**
Anderson Environment & Planning, Newcastle

Currently employed by Anderson Environment & Planning in the role of Principal Ecologist overseeing a team of 15 professional ecology staff and all aspects of the business including training and management of field and office staff undertaking ecology and bushfire works to assist in the provision of consulting services to land, property, mining industry, legal and government sectors. Covering ecological, project management, environmental, planning services, advices, strategy and representation.

2018-2019 **Senior Ecologist**
Anderson Environment & Planning, Newcastle

2016-2018 **Ecologist**
Anderson Environment & Planning, Newcastle

2012-2016 **Project Manager**
Douglas Partners, Newcastle

As a project manager with Douglas Partners I was responsible for proposal and tender preparation, planning, implementation and reporting of geotechnical and geo-environmental investigations for a broad range of projects including site classification, foundations, pavements, bridges and slope stability. I was required to liaise with clients regarding project requirements, project goals and deadlines. I was responsible for the development and implementation of Work Health and Safety Plans as well as Environmental Plans and documentation. This included the development of safe work procedures, safety inspections on site and implementing improved safety procedures with staff. I was responsible for ensuring projects were completed on time and on budget whilst meeting the clients' expectations and achieving quality assurance standards.

2008-2012 **Geotechnical Engineer**
Douglas Partners, Newcastle

As a geotechnical engineer for Douglas Partners I was involved in the planning and implementation of geotechnical investigations for a wide range of development in the Hunter Valley area. I was primarily involved in site supervision of geotechnical investigations using drilling rigs for boreholes, truck mounted cone penetration testing and test pit excavations using excavators and backhoes. My role also included site inspections involving the assessment of conditions for piles, piers and shallow footings. I also undertook site walkovers for assessment of mine subsidence and slope stability.

2007-2008 **Undergraduate Geotechnical Engineer**
Douglas Partners, Newcastle

Whilst an undergraduate engineer with Douglas Partners I experienced a broad range of practice areas and developed a diverse range of engineering skills.

Relevant Ecological Experience

2013 - Current **Bird Surveyor**
Hunter Bird Observers Club

Volunteer survey work for Hunter Bird Observers Club for regular wader and water bird counts and Tomago and Kooragang Island.

2017 – Current **Birdata Moderator**
Birdlife Australia

Volunteer moderating and vetting bird surveys from *Birdata* which is the Birdlife Australia Atlas to ensure a robust database for both the Hunter Valley and Central Coast reporting areas totalling approximately 5000 surveys per year.

Andrew Harker

Curriculum Vitae

Andrew works with AEP in the role of Ecologist. He graduated with a Bachelor of Environmental Science and Management, majoring in Earth Systems. Whilst studying at the University of Newcastle he conducted tailored his degree to focus on conservation biology and environmental remediation. Andrew gained experience in a range of ecological field studies as a requirement of his degree courses. Working with Enviropacific Services he gained further experience in ecological field surveys as a graduate environmental scientist working on environmental remediation projects in the civil construction sector. He has experience in bushfire threat assessments, targeted fauna and flora surveys, Koala Spot Assessment Technique (SAT) surveys, fauna handling and tree surveys. Andrew also has extensive experience in the civil construction sector in large scale remediation projects, residential developments, excavation and trades.

Qualifications

- Bachelor of Environmental Science and Management – University of Newcastle (2017)
- Masters Degree in Disaster Resilience and Sustainable Development (2019 – current)
- Diploma of Public Safety (Royal Australian Air Force 2012)
- Diploma of Management (Royal Australian Air Force 2009)
- Cert IV in Training & Assessment (Royal Australian Air Force 2010)
- Cert II in Civil Construction
    - FPIFGM069A – Trim & Cross-cut Felled Tree
    - FPIFGM111A – Fall Trees Manually – Intermediate

Licences/Certificates

- Apply First Aid
- Class HC NSW Drivers Licence
- Light & Heavy 4WD, ATV
- Construction White Card
- PADI Open Water; Advanced Diver; Rescue Diver
- Backhoe/Loader & Forklift
- Bush Firefighter (BF 2003)

Field Survey Experience

- Aquatic & marine water quality surveys, sampling and analysis
- Terrestrial fauna survey, including koala SAT surveys and spotlighting
- Bushfire Treat Assessments

Volunteer Experience

- NSW Rural Fire Service

Employment History

Mar 2021 – Current	**Ecologist**
	Anderson Environment & Planning, Newcastle
Sep 2018 – Mar 2021	**Water Treatment Specialist**
	Water Treatment Services Australia
Nov 2017 – Apr 2019	**Graduate Environmental Scientist / Engineer**
	Enviropacific Services
Oct 1995 – Sep 2012	**Aircraft/Armament Technician/Manager**
	Royal Australian Air Force

ANGELA METCALFE

Curriculum Vitae

Angela works with AEP in the role of Ecologist. She graduated with a Bachelor of Environmental Science and Management (Honours), majoring in Ecosystems and Biodiversity. Angela has previously worked in bush regeneration before coming to AEP. Angela has experience in a variety of environmental work, both paid and unpaid in, flora and fauna terrestrial and aquatic field surveys, reporting, GIS and mapping and habitat restoration. Her background in ecological surveying projects and growing flora knowledge and experience is utilised in a diverse array of applications in her current role.

Qualifications

- Bachelor of Environmental Science and Management (Honours) (Ecosystems and Biodiversity), University of Newcastle (2020)

Further Education & Training

- Class C NSW Driver's Licence
- NSW Construction White Card
- First Aid (Provide first aid HLTAID003)
- Chemcert and EPA ground applicator licence

Fields of Competence

- Ecological field survey, covering terrestrial fauna and flora
- Experience in reptile handling and fauna trapping
- Growing proficiency in botanical surveys
- Adept experience in operating 4x4 vehicles

Relevant Employment History

2021 - Present	**Ecologist** Anderson Environment & Planning, Newcastle
2020	**Conservation Field Officer** SkyLand Management, Bolwarra Heights
2019	**Research Assistant** University of Newcastle, Callaghan

Currently employed by Anderson Environment & Planning to assist in the provision of consulting services to land, property, legal and government sectors. Covering ecological, project management, environmental, planning services, advices, strategy and representation. Expanding knowledge of field survey methodology, report writing, mapping and data manipulation.

BONNI YARE
Curriculum Vitae

Bonni works with AEP in the role of Ecologist has a Bachelor of Science, majoring in Natural Resource Management. Bonni has experience in a variety of environmental work, in a professional and volunteer capacity, including flora, fauna and aquatic field surveys, reporting, GIS and mapping, habitat restoration and community volunteering.

Qualifications

- Bachelor of Science (Natural Resource Management) University of Newcastle, completed in November, 2020

Further Education & Training

- Bush Regeneration Training
- NSW Driver's Licence: Car (Class "C").
- Chemqual (RTO 70207)
- First Aid (Provide first aid HLTAID003)

Fields of Special Competence

- Ecological field surveys, covering terrestrial and aquatic flora and fauna
- Growing proficiency at botanical surveys

Relevant Employment History

2019-present **Ecologist**

Anderson Environmental Planning, Newcastle

Currently employed by Anderson Environment & Planning to assist in the provision of consulting services to land, property, legal and government sectors. Covering ecological, project management, environmental, planning services, advices, strategy and representation.

2015-2016 **Green Army Participant**

Bush regeneration/supporting local land care groups

Supported local land care groups and reserve areas in weed removal and site restoration, including tree planting, seed collection and nursery work. Bird surveying and koala surveys were also carried out.

Relevant Ecological Experience

2018-present **Field assistance**

Participated as a volunteer in various PhD and Honours projects with the University of Newcastle and University of Technology Sydney. I have experience with small mammal trapping for squirrel gliders, nest box construction, aquatic surveys, infaunal sampling and mark recapture population surveys for *Litoria aurea* (Green and Golden Bell Frog).

2019 **Undergraduate Research Project associated with NPWS**

Undertook flora and habitat surveys for a locally threatened orchid, *Diuris praecox*, supervised volunteers, data analysis and project write up.

2019 **Volunteer Botanical Training Program**

Australian National Herbarium

Understanding of Herbarium practices, including fieldwork, use of databases, maps and GPS, botanical terminology and up to date taxonomic information, curatorial experience including identification and processing of specimens.

2018 **Stream sampling using macroinvertebrates as bioindicators**

Newcastle Council

Contracted to finish stream sampling for the community program, Waterbug Blitz, which involved water quality testing of Newcastle's urban streams.

Natalie Black
Curriculum Vitae

Natalie works with AEP in the role of Senior Environmental Manager. She has extensive knowledge in environmental management, environmental planning, and report writing and assessment. With a detail understanding of planning, catchment management, coastal management and rehabilitation. Natalie has had a successful career with both state and local government in conservation, planning and field investigation roles. Natalie has also gained extensive communication skills and project management through her previous career in lecturing. Her background and experience in the ecological and planning fields is utilised in a diverse array of application in her current role.

Qualifications

- B.Sc (Hons), University of Newcastle, 2002 Sustainable Resource Management and Marine Science.
- Master Planning, University of Technology Sydney 2007.
- Certificate IV Training and Assessment at NSW TAFE 2012.
- BAM Assessor; accreditation number: BAAS19076.

Certification

- Evidence Gathering and Legal Process (Australian Institute of Environmental Health).
- Conflict Resolution Course (LGSA).
- Report Writing Course (LGSA).
- Powerful Presentation (LGSA).
- NSW Rural Fire Services Bush Fire Assessment
- Relocation of Threatened Species (Botanical Gardens Sydney).
- Sustainable Home Assessment Reduction Revolution.
- Flora and Fauna Survey Assessments Niche Environment and Heritage.
- First Aid TAFE.

Fields of Special Competence

- Environmental Planning
- Environmental Management and rehabilitation of catchments coastal waterways. Statement of Environmental Effects (preparation and assessing).
- Fish Passage
- Marine ecosystems including; mangroves, seagrasses, algae, Fauna and habitat assessment.
- vegetation.
- Communicating with a wide range of stakeholders.
- Development Application.
- Education in both Environmental and Planning industries.
- Koala Plans of Management.
- Policy Development.

Employment History

2019 to present AEP Senior Environmental Manager

2010 to 2019

Natalie Black is the Principal Environmental Planner for Black EARTH Environmental. Working a a range of projects, Bush Fire Assessments, Landscaping, Development Applications, Statements of Environmental Effect's, Environmental Management Plans, Sustainability Assessment of both private and businesses, sustainable gardens, environmental assessments for proposed projects and environmental advice and volunteering for local Sustainable Community Group and Landcare. During this time Natalie also lectured at Hunter TAFE teaching a range of environmental units both face to face and on-line to a varying range of qualification and levels.

2003 to 2010
Natalie was the Natural Resource Manager and Development Assessment Officer at Lismore City Council working with diverse range of professions such as engineers, town planners, environmental health officer, accountants, building surveyors, arborists, councillors. During this time the main projects were grants application, restoration projects, flora and fauna assessments, environmental legal adviser, bush fire assessments, strategic work, development application assessment (ranging from sheds to Designated Developments) and council development application team for internal projects, Council's for climate change, water wise programs and others. During 2006 -2007 Natalie was the lead Environmental Officer and Development Planner for the development of Council Plans of Management (POM). The POMs were for each parcel of land owned and managed lands, by Council. The parcels of land ranged from easements, parks and recreation areas to urban bushland, each POM provided clear guidelines and procedures for all works including civil, maintence and regeneration etc.

2002 to 2003 was a step into the Policy unit within DPI where Natalie was part of the team working on the Jervis Bay Indigenous Fishing Strategy, and the closure of Port Botany. Dealing with many stakeholders and running workshops with Ministers and community. During 2003 with Natalie was the North Coast Fish Passage Officer. Managing an Environmental Trust Grant of $1 million to remove 50 structures that block fish passage within the catchments of the North Coast. This project had all 50 sites contracted by the end of the 12 months with 70% of these projects commenced. This role allowed for the development of field assessments, independent work and communication with a range of stakeholders.

2000 saw the commencement of Natalie's career with NSW Department of Primary Industries (Fisheries Unit) in the Office of Conservation in Sydney. Natalie was part of the Conservation team that reviewed integrated development applications in the Sydney Region, with a focus on the seagrasses present within the estuaries. The assessments ranged from jetties to the Lane Cove Tunnel, North West T-Way and the expansion of the M7 and fish ladders.

BSc Honours Project was research paper into the variations of *Zostera capricorni* wrack located within the Tuggerah Lakes system in comparison to Brisbane Waters and Lake Macquarie.

Simon Purcell
Curriculum Vitae

Simon works with AEP in the role of Senior Ecologist. Simon has over 7 years of professional experience managing projects in the fields of terrestrial ecology, mining and mine rehabilitation and environmental management.

Qualifications

- Bachelor of Applied Science, Major Wildlife Science, University of Queensland Gatton 2013
- Certificate III in Animal Care and Management, Companion Animal Services (2008)

Further Education & Training (select summary)

- Current NSW Class C Driver's Licence. Experienced 4WD operator.
- 2019 First AID, CPR and Remote First AID
- 2019 HLTAID001 Provide Cardiopulmonary Resuscitation
- 2019 HLTAID005 Provide First Aid in Remote Situations
- 2018 Bioacoustic Processing Workshop run by Ted Pedersen- Automated Signal Detection and Acoustic Remote Sensing
- 2017 Venomous Snake Handling
- 2015 Venomous Snake and Fauna Handling – Geckoes Wildlife

Fields of Special Competence

- Terrestrial Ecology field survey, covering terrestrial flora and fauna
- Project Management

<u>Relevant Employment History</u>

2020 (November) -present **Senior Ecologist**
Anderson Environment & Planning, Newcastle

- Currently employed by Anderson Environment & Planning to assist in the provision of consulting services to land, property, mining industry, legal and government sectors. Covering ecological, project management, environmental, planning services, advices, strategy and representation.

2018-2019 **Team Leader / Ecologist**
Ecotone Flora Fauna Consultants, Weipa, QLD

- Conducted client liaison meetings, providing ecological advice and recommendations for flora, fauna and land management, complying with Queensland state and Commonwealth environmental legislation.
- Wrote proposal and executed surveys for Prefeasibility studies and EIS on Western Cape York for multi-national mining company complying with Commonwealth environmental legislation.

- Negotiated increases to budget and survey requirements with the client in relation to ongoing changes and project requirements
- Led high level discussions with the client to provide new services.
- Developed wide scale camera monitoring program to assess presence /absence of EVNT fauna within the survey site.
- Complex logistical planning for remote work
- Co-developed and implemented new safety system within the business
- Mentored project managers through training, and leadership guidance to ensure quality and standards of business were met
- Managed human relation matters within the business
- Digitally transformed infield data collection through roll out of ArcGIS Collector, leading to the reduction in the use of paper in the field.

2014-2018 **Team Leader / Ecologist**
Ecotone Flora Fauna Consultants, Weipa, QLD

- Lead project manager (6 years) for all aspects of mine / drill preclearing environmental surveys across three different mine sites and exploratory sites, including during the construction phase of a new mine in the Weipa region.
- Project managed and participated in numerous annual EVNT projects that led to cultural and process practices changing within a multinational mining company.
- Played a critical role in maintaining client and stakeholder relationships and built stability with onsite leadership to further grow business opportunities.
- Maintained client confidentiality on sensitive and impactful projects.
- Ensured all projects complied with Queensland state and Commonwealth environmental legislation and clients Environmental Authority.
- Assisted in the development of growth and innovation projects such as cloud-based document storage solution to support multi-site users.

2013-2014 **Field Technician / Ecologist**
Ecotone Flora Fauna Consultants, Weipa, QLD

- Pre-clear flora and fauna mining and drilling programs
- Baseline fauna surveys of future mining areas
- Sensitive vegetation ground truthing
- EVNT flora and fauna surveys
- Seed Processing (storing, drying management of inventory)
- Mixing of seed in preparation for annual rehabilitation season

2010-2012 **Mine Operator and Trainer**
Rio Tinto, Weipa, QLD

- Acted as Crew Leader to manage 30 mine operators, production targets and minimising environmental impacts
- Skilled Caterpillar 992G, 993K & Komatsu WA900 Loader and 776D, 777F and 785C Caterpillar haul truck operator
- Crew Trainer/Assessor - completed five certificate IV modules to Training and Assessing.

2009 - 2010 **Parks and Garden Maintainer**
Spotless Group, Weipa, QLD

- Attained six competencies towards Certificate III Forest Growing and Management.
- Maintained local green spaces and houses.

2009-2009 **Vet Nurse**
Tableland Veterinary Service, Weipa, QLD

- Prepared surgery for surgeries including use of autoclave to sterilise implements
- Administered sedation via injections in the muscle and intravenously
- Prepared and monitored animals before, during and after surgeries
- Monitored animal and anaesthetic during surgery focussing on breath rate, colour of gum and pupil movements
- Took blood samples from veins and prepared samples of foreign bodies for analysis
- Successfully directed and carried out on-call emergency cases with vet assistance over the phone

2003 – 2009 **Manager**
The Pet Centre, Sydney, NSW

2001 – 2003 **Sales Assistant**
The Pet Centre, Sydney, NSW

- Implemented standard procedures for staff to follow
- Focussed on achieving a high level of OHS standards within the store
- Responsible for daily takings up to five thousand dollars per day
- Accountable for people management including rosters, recruitment and managing employee issues
- Responsible for management of store inventory
- Developed skills in handling a range of domestic animals
- Maintained animal's health and welfare in store and complied with state laws and regulations
- Analysed store's and customer's aquarium water quality
- Developed sound knowledge of animals including their origin, identification and general requirements

Relevant Volunteer Experience

2012 **Fauna Spotter / Field Assistant**
Humble Bee Films

- Volunteered as a fauna spotter/field assistant with Dr Brad Purcell and Humble Bee Films in a ten day research camp, during the production of the natural history documentary "Dingo".

2012 **Volunteer Ecological Field Assistant**
Rio Tinto, Weipa, QLD

- Participated in an ethno-botanical workshop with Rio Tinto Alcan Land and Rehabilitation team.
- Participated as a field technician during pre-mining survey work. The work included assessing flora and the land formations to identify buffer zones for natural drainage systems and sensitive areas in the Andoom mine site Weipa.

2012 **Fauna Technician**
Brad Purcell PhD, Greater Blue Mountains World Heritage Area

- Field technician for Brad Purcell during his doctoral research project on dingoes in the Greater Blue Mountains World Heritage Area. Developed skills in use of VHF radio tracking to retrieve collars, triangulation method to determine positioning of dingoes or deployed collars and traversing bushland.

Biodiversity Development Assessment Report: Streamlined assessment module – Small area

BAM Reference	Information	SBDAR Section	Completed
Report			
Introduction - Chapters 2 and 3	Introduction to the biodiversity assessment including: • brief description of proposed development • identification of subject land3 boundary, including: operational footprint and construction footprint indicating clearing associated with temporary/ancillary construction facilities and infrastructure • general description of the subject land	**1.1, 1.1.2**	✓
	Sources of information used in the assessment, including reports and spatial data	**1.1.4, 4.0**	✓
	Identification of assessment method applied (i.e. linear or site-based)	**1.2.3.1**	✓
Landscape - Section 3.1, 3.2 and Appendix E	General description of subject land topographic and hydrological setting, geology and soils	**1.2**	✓
	Percent native vegetation cover in the assessment area (as described in BAM Subsection 3.2(4.)	**1.2.2**	✓
	IBRA bioregions and subregions (as described in BAM Subsection 3.1.3(2.))	**1.2.1**	✓
	Rivers and streams classified according to stream order (as described in BAM Subsection 3.1.3(3–4.) and Appendix E)	**1.2.2**	✓
	Wetlands within, adjacent to and downstream of the site (as described in BAM Subsection 3.1.3(4.))	**1.2.2**	✓
	Connectivity of different areas of habitat (as described in BAM Subsection 3.1.3(5–6.))	**1.2.2**	✓
	Areas of geological significance and soil hazard features (as described in BAM Subsections 3.1.3(7.) and 3.1.3(10.)	**1.2.2**	✓
Native vegetation, TECs and vegetation integrity - Chapter 4	Patch size (in accordance with BAM Subsection 4.3.2)	**1.3.4.1**	✓
	Identification of the dominant PCT on the subject land and extent (ha) with justification of method used (existing information or plot-based survey data)	**1.3.3**	✓
	Identification of any TEC associated with the PCT (BAM Subsection 4.2.2)	**1.3.3**	✓

BAM Reference	Information	SBDAR Section	Completed
		Table 2	
	Estimate of percent cleared value of dominant PCT (BAM Subsection 4.2.1(5.)	**1.3.3** **Table 2**	✓
	Identification of any TEC on site that is not associated with the dominant PCT (Note: This TEC is required to be assessed and offset.)	**N/A**	
	Equivalence with mapping units of previous vegetation maps reviewed as part of the assessment (i.e. equivalent mapping units)	**1.3.1**	✓
	Vegetation integrity of the PCT(s) on the subject land as individual vegetation zones	**1.3.5.1, 1.3.5.2**	✓
	Justification for how this was determined (i.e. qualitatively by observing values for the condition attributes set out in Table 2 of the BAM or quantitatively by collecting field data for the condition attributes at a plot in accordance with BAM Subsection 4.3.4)	**1.3.5.1, 1.3.5.2**	✓
	Use of relevant benchmark data from BioNet Vegetation Classification (as described in BAM Subsections 4.3.3(5.)) Where use of more appropriate local benchmark data is proposed (as described in BAM Subsection 1.4.2, BAM Subsection 4.3.3(5.) and BAM Appendix A): • identify the PCT or vegetation class for which local benchmark data will be applied • identify published sources of local benchmark data (if benchmarks obtained from published sources) • describe methods of local benchmark data collection (if reference plots used to determine local benchmark data) • provide justification for use of local data rather than BioNet Vegetation Classification benchmark values	**1.3.5**	✓
Chapter 5 and Section 9.1	Describe the review of existing information and any field survey undertaken to assess habitat constraints and microhabitats for threatened species within the subject land	**1.3.4, 1.3.5, 1.4**	✓
	Determination of the suite of threatened species likely to occur on or use the proposed site according to Steps 1 and 2 in BAM Section 5.2 including species to be assessed for ecosystem credits and the list of species to be assessed for species credits	**1.4**	✓

BAM Reference	Information	SBDAR Section	Completed
	List of ecosystem credit species derived from the TBDC (as described in BAM Subsections 5.2.1 and 5.2.2) with justification for the exclusion of any ecosystem credit species based on habitat constraints (as described in BAM Subsection 5.2.2)	**1.4.1**	✓
	Identification of candidate species credit species that are at risk of an SAII and therefore, must be further assessed (BAM Section 9.1). Note: Candidate species credit species that are not at risk of an SAII and not incidentally recorded on the subject land do not require further assessment.	**1.4.2**	✓
	For candidate species credit species that are at risk of an SAII, a description of the species, any habitat constraints or microhabitats associated with the species on the subject land and information used to create the species polygon/s in accordance with Steps 3 to 5 of BAM Section 5.2 including: • justification for determining that a candidate species credit species at risk of an SAII is unlikely to have suitable habitat on the subject land or specific vegetation zone (based on a field assessment of the subject land and published literature or an expert report prepared in accordance with Box 3 of the BAM) • determination of the presence of remaining candidate species credit species at risk of an SAII (by assuming presence, conducting a threatened species survey or an expert report). Note: If the subject land is mapped on an important habitat map for a species, or for a component of its habitat, the subject land is considered to have suitable habitat for the species to be present. • species polygons identifying the location and area of suitable habitat for each candidate threatened species at risk of an SAII that is recorded on the subject land and is measured by area, OR • species polygons identifying the area of suitable habitat and targeted surveys identifying the count and location of individuals on the subject land for each candidate threatened flora species at risk of an SAII that is recorded on the subject land and is measured by count • species polygons for each threatened species identified on the subject land that is not at risk of an SAII (i.e. incidentally observed during site visit)	**1.4 (all)**	✓
	Determination of habitat condition within species polygon/s for each threatened species (measured by area) at risk of an SAII or incidentally observed during the site visit (Step 6 of BAM Section 5.2)	**1.3.5**	✓
	For flora species credit species at risk of an SAII or incidentally observed during site visit, provide a count, or an estimation, of the number of individual plants present on the subject land (as described in BAM Subsection 5.2.5(4.))	**N/A**	

BAM Reference	Information	SBDAR Section	Completed
Prescribed impacts Chapter 6	Any prescribed impacts from the small area proposal must be set out in the BDAR consistent with Appendix K	**2.1, 2.2**	✓
Avoid and minimise impacts – Chapter 7	Demonstration of efforts to avoid and minimise impacts on biodiversity values (including prescribed impacts) associated with the proposal location in accordance with Chapter 7, including an analysis of alternative: • modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology • alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location • alternative sites within a property on which the proposal is located that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site	**2.1, 2.2** **Table 8**	✓
	Describe efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design (as described in BAM Subsections 7.1.2 and 7.2.2	**2.1, 2.2** **Table 8**	✓
	Identification of any other site constraints that the proponent has considered in determining the location and design of the proposal (as described in BAM Subsection 7.2.1(3.)	**Table 8**	✓
Assessment of Impacts - Chapter 8, Section 8.1 and 8.2	Determine the impacts on native vegetation and threatened species habitat, including: • description of direct impacts of clearing of native vegetation, threatened ecological communities and threatened species habitat (as described in BAM Sections 8.1) • description of the nature, extent, frequency, duration and timing of indirect impacts of the proposal (as described in BAM Subsection 8.2	**2.2** **Table 8**	✓
Mitigation and Management of Impacts - Chapter 8, Section 8.4 and 8.5	Identification of measures to mitigate or manage impacts in accordance with the recommendations in BAM Subsections 8.4.1 and 8.4.2, including (as described in BAM Subsection 8.4.1(2.): • techniques, timing, frequency and responsibility • identify measures for which there is risk of failure • evaluate the risk and consequence of any residual impacts • document any adaptive management strategy proposed	**2.2** **Table 10** **Table 11**	✓
	Identification of measures for mitigating impacts related to: • displacement of resident fauna (as described in BAM Subsection 8.4.1) • indirect impacts on native vegetation and habitat (as described in BAM Subsection 8.4.1(3.))	**2.2** **Table 10**	✓

BAM Reference	Information	SBDAR Section	Completed
	• mitigating prescribed biodiversity impacts (as described in BAM Subsection 8.4.2)		
	Details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain (BAM Section 8.5)	**2.1, 2.2**	✓
Thresholds for assessing and offsetting the impacts of the proposal - Chapter 9	Information from the TBDC and/or other sources to report on the current status of threatened species, threatened populations at risk of an SAII and TEC/s for the proposal, and	**2.2.2**	✓
	Report on impacts of the proposal on TEC/s in accordance with BAM Subsection 9.2.1	**2.2**	✓
	Report on impacts of the proposal on threatened species and/or threatened populations at risk of an SAII in accordance with BAM Section 9.1	**2.2**	✓
	Identification of impacts requiring offset in accordance with BAM Section 9.2	**2.2.3**	✓
	Identification of impacts not requiring offset in accordance with BAM Subsection 9.2.1(3.)	**N/A**	
	Identification of areas not requiring assessment in accordance with BAM Section 9.3	**2.2.4**	✓
Applying the no net loss standard - Chapter 10	Description of the impact on PCTs/TECs	**2.2**	✓
	Description of the impact on threatened species at risk of an SAII or incidentally observed via site visit	**2.2** **Table 16**	✓
	Number of ecosystem credits required for impacts on biodiversity values according to BAM Subsection 9	**2.2.3.1** **Table 17**	✓
	Number of species credits required for impacts on biodiversity values according to BAM Subsection 10.1.3, including any species credit species that has been incidentally observed on the subject land Note: Species credits for any species at risk of an SAII are calculated in the event that the decision-maker forms the opinion that the proposed impact is unlikely to be serious and irreversible and therefore can be offset.	**2.2.3.2** **Table 18**	✓
	Identification of credit class for ecosystem credits and species credits according to BAM Section 10.2 (this can be generated from BAM-C)	**Appendix E**	✓
Maps			
Introduction - Chapters 2 and 3	Map of the subject land boundary showing the final proposal footprint, including the construction footprint for any clearing associated with temporary/ancillary construction facilities and infrastructure (if BDAR)	**Appendix A**	✓

BAM Reference	Information	SBDAR Section	Completed
Landscape - Section 3.1, 3.2 and Appendix E	Site Map • boundary of subject land • cadastre of subject land • landscape features identified in BAM Subsection 3.1.3 • areas of outstanding biodiversity value within the subject land	**Figure 1**	✓
	Location Map - digital aerial photography at 1:1,000 scale or finer • boundary of subject land • 1500 m buffer area *or* 500 m buffer for linear development • landscape features identified in BAM Subsection 3.1.3 • additional detail (e.g. local government area boundaries) relevant at this scale • areas of outstanding biodiversity value within the assessment area	**Figure 2**	✓
	Landscape features identified in BAM Subsection 3.1.3 and to be shown on the Site Map and/or • IBRA bioregions and subregions • rivers, streams and estuaries • wetlands and important wetlands • connectivity of different areas of habitat • areas of geological significance and soil hazard features	**Figure 2**	✓
Native vegetation, TECs and vegetation integrity - Chapter 4	Map of native vegetation extent for the subject land (as described in BAM Section 3.1)	**Figure 4**	✓
	Map of PCT/vegetation zones within the subject land (as described in BAM Section 4.2(1.)	**Figure 4**	✓
	Map the location of floristic vegetation survey plots and vegetation integrity survey plots relative to PCT boundaries	**Figure 5**	✓
	Map of TEC distribution on the subject land	**Figure 4**	✓
	Patch size of native vegetation (as described in BAM Subsection 4.3.2)	**Figure 2, Figure 4**	✓
Chapter 5 and Section 9.1	Map of species credit species records within the subject land and species polygons for flora and fauna species at risk of an SAII or incidentally observed during the site visit (as described in BAM Subsection 5.2.5(1–7.))	**Figure 6** (incidentally observed)	✓

BAM Reference	Information	SBDAR Section	Completed
Prescribed impacts Chapter 6	If relevant, maps showing location of any prescribed impact features (i.e. karst, caves, crevices, cliffs, rocks, humanmade structures, etc.)	**N/A**	
Avoid and minimise impacts – Chapter 7	Map of final proposal footprint, including construction and operation	**Appendix A**	✓
	Maps demonstrating indirect impact zones where applicable	**Appendix A**	✓
Assessment of Impacts - Chapter 8, Section 8.1 and 8.2	No Maps		
Mitigation and Management of Impacts - Chapter 8, Section 8.4 and 8.5	No Maps		
Thresholds for assessing and offsetting the impacts of the proposal - Chapter 9	Map showing the extent of TECs at risk of an SAII within the subject land	**Figure 4**	✓
	Map showing the location of threatened species at risk of an SAII within the subject land	**N/A**	✓
	Map showing location of: • impacts requiring offset • impacts not requiring offset • areas not requiring assessment	**Appendix A**	✓
Applying the no net loss standard - Chapter 10	No Maps		
Tables			
Native vegetation, TECs and vegetation integrity - Chapter 4	Table of current vegetation integrity scores for vegetation zone within the site including: • composition condition score • structure condition score • function condition score	**Table 5**	✓

BAM Reference	Information	SBDAR Section	Completed
	Report from BAM-C (Small area module) including vegetation integrity scores (BAM Section 4.4)	**Appendix E**	✓
Chapter 5 and Section 9.1	Table showing ecosystem credit species in accordance with BAM Subsection 5.1.1, and: • identifying any ecosystem credit species removed from the list of species on the basis of further assessment in accordance with BAM Subsections 5.2.2 and 5.2.3 • identifying the sensitivity to gain class of each species (BAM Section 5.4)	**Table 17**	✓
	Table detailing species credit species within the subject land at risk of an SAII (BAM Section 9.1) or incidentally observed during the site visit including any associated habitat feature/components and its abundance (flora)/extent of habitat (flora and fauna) and biodiversity risk weighting (BAM Sections 5.2–5.4)	**Table 18**	✓
Prescribed impacts Chapter 6	No tables		✓
Avoid and minimise impacts – Chapter 7	Table of measures to be implemented before, during and after construction to avoid and minimise the impacts of the proposal, including action, outcome, timing and responsibility	**Table 10 to 16**	✓
Assessment of Impacts - Chapter 8, Section 8.1 and 8.2	Table showing change in vegetation integrity score for each vegetation zone as a result of identified impacts	**N/A**	
Mitigation and Management of Impacts - Chapter 8, Section 8.4 and 8.5	Table of measures to be implemented before, during and after construction to mitigate and manage impacts of the proposal, including action, outcome, timing and responsibility	**Table 10 to 16**	✓
Thresholds for assessing and offsetting the impacts of the proposal - Chapter 9	No Tables		✓
Applying the no	Table showing biodiversity risk weightings	**Table 9**	✓

BAM Reference	Information	SBDAR Section	Completed
net loss standard - Chapter 10	Table of BC Act listing status for PCTs and threatened species requiring offset	**Table 6**	✓
	Table of PCTs requiring offset and number of ecosystem credits required (Subsection 10.2.1)	**Table 17**	✓
	Table of species at risk of an SAII or incidentally observed on site assessed for species credits and the number of credits required	**Table 18**	✓
	BAM-C credit report	**Appendix E**	✓
Data			
Landscape - Section 3.1, 3.2 and Appendix E	All report maps as separate jpeg files / Individual digital shape files of: • subject land boundary • assessment area (i.e. buffer area) boundary • cadastral boundary of subject land • areas of native vegetation cover • areas of habitat connectivity	**Attached Files**	✓
Native vegetation, TECs and vegetation integrity - Chapter 4	All report maps as separate jpeg files • Plot field data (MS Excel format) • Digital shape files for all maps and spatial data • Field data sheets (if relevant) for determining vegetation integrity (BAM Subsection 4.3.4)		✓
Chapter 5 and Section 9.1	Digital shape files of species polygons • Species polygon map in jpeg format • Expert reports and any supporting data used to support conclusions of the expert report • Field data sheets (if relevant) for threatened species surveys		✓
Prescribed impacts Chapter 6	• If relevant, digital shape files of prescribed impact feature locations • Prescribed impact features map in jpeg format		✓
Avoid and minimise impacts – Chapter 7	Digital shape files of: • final proposal footprint • direct and indirect impact zones • Maps in jpeg format		✓

BAM Reference	Information	SBDAR Section	Completed
Assessment of Impacts - Chapter 8, Section 8.1 and 8.2	No data.		✓
Mitigation and Management of Impacts - Chapter 8, Section 8.4 and 8.5	No Data		✓
Thresholds for assessing and offsetting the impacts of the proposal - Chapter 9	Digital shape files of: extent of TECs at risk of an SAII within the subject land • threatened species at risk of an SAII within the subject land • boundary of impacts requiring offset • boundary of impacts not requiring offset • boundary of areas not requiring assessment Maps in jpeg format		✓
Applying the no net loss standard - Chapter 10	No Data		✓

Attachment 4 – Strategic Bushfire Study & Bushfire Assessment Report

BUSHFIRE PLANNING AUSTRALIA

STRATEGIC BUSHFIRE STUDY & BUSHFIRE ASSESSMENT REPORT

Expansion of Sunrise Lifestyle Village

4029 & 4045 Nelson Bay Road, Bob's Farm

Prepared for Hometown Australia Communities Pty Ltd



Bushfire Planning Australia

Stuart Greville
Accredited Bushfire Practitioner
BPAD-26202
✆ 0400 917 792
✉ stuart@bfpa.com.au
BPA Reference: 2280 Bobs Farm

Prepared for: Hometown Australia Communities
Attn: Joseph Waugh
✆ 0421 109 183
✉ jwaugh@hometownaustralia.com.au

FPA AUSTRALIA BRONZE MEMBER Fire Protection Association Australia

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

Disclaimer and Limitation

This report is prepared solely for Hometown Australia Communities Pty Ltd C/- ADW Johnson (the 'Client') for the specific purposes of only for which it is supplied (the 'Purpose'). This report is not for the benefit of any other person; either directly or indirectly and is strictly limited to the purpose and the facts and matters stated in it and will not be used for any other application.

This report is based on the site conditions surveyed at the time the document was prepared. The assessment of the bushfire threat made in this report is made in good faith based on the information available to Bushfire Planning Australia at the time.

The recommendations contained in this report are considered to be minimum standards and they do not guarantee that a building or assets will not be damaged in a bushfire. In the making of these comments and recommendations it should be understood that the focus of this document is to minimise the threat and impact of a bushfire.

Finally, the implementation of the adopted measures and recommendations within this report will contribute to the amelioration of the potential impact of any bushfire upon the development, but they do not and cannot guarantee that the area will not be affected by bushfire at some time.

Document Status: 2280 - SBS & BAR SFPP

Version	Status	Purpose	Author	Review Date
1	Draft	Draft for Review	Katrina Mukevski	18 October 2022
2	Draft	Draft for Client Review	Stuart Greville	2 November 2022
3	Final	Final for Submission	Stuart Greville	3 November 2022

Certification

As the author of this Strategic Bushfire Study (SBS) and Bushfire Assessment Report (BAR), I certify this SBS & BAR provides the detailed information required by the NSW Rural Fire Service under Clause 44 of the Rural Fires Regulation 2013 and Appendix 1 of Planning for Bushfire Protection 2019 for the purposes of an application for a bush fire safety authority under section 100B(4) of the Rural Fires Act 1997.



BPAD Bushfire Planning & Design Accredited Practitioner Level 2

Stuart Greville

Accredited Bushfire Practitioner

BPAD-26202

Date: 3 November 2022

In signing the above, I declare the report is true and accurate to the best of my knowledge at the time of issue

Executive Summary

Bushfire Planning Australia (BPA) has been engaged by Hometown Australia Communities Pty Ltd (the 'Proponent') c/- ADW Johnson to undertake a Strategic Bushfire Study (SBS) and Bushfire Assessment Report (BAR) to support a Planning Proposal that seeks to amend the Port Stephens Local Environmental Plan 2013 (PSLEP) to permit *caravan parks* on the subject site.

The BAR has also been prepared for the proposed expansion to the Sunrise Lifestyle Village, a manufactured home estate (MHE), within Lot 3622 DP622485 and Lot 2 DP622229, known as 4029 and 4045 Nelson Bay Road, Bobs Farm.

The existing caravan park currently occupies Lot 51 DP1175028 and has development consent to operate 193 long-term sites. The proposed development site, Lot 3622 DP622485 and Lot 2 DP622229, are the adjoining sites to the east and occupied by a rural residential property. The proposed development includes the addition of 62 manufactured home dwelling sites and ancillary community facilities and services. All sites within the existing caravan park and any additional sites are restricted to long-term occupation only. All dwellings are occupied by long-term residents who have signed a land lease agreement with the Operator. A land lease agreement grants the resident the right to occupy the residential site within the caravan park.

A caravan park is defined as a Special Fire Protection Purpose (SFPP) under the NSW Rural Fire Service (RFS) document Planning for Bushfire Protection 2019 (PBP 2019). As the successful outcome of the Planning Proposal will permit the expansion of an existing SFPP, an assessment of the bushfire hazard the site is exposed to has been undertaken and an appropriate combination of bushfire protection measures are recommended to ensure any future development is not exposed to an unacceptable risk of bushfire attack.

This BAR found the site was exposed to a medium to high bushfire hazard located primarily to the south of the site which is mapped as Category 1 Vegetation in the NSW Bushfire Prone Land Map (RFS 2021). There is an ecotone between disturbed and remnant vegetation located along the northern and eastern boundaries of Lot 2 DP622229 which will be retained for native species as part of the Planning Proposal. The vegetation to be retained forms a fauna movement corridor and transitions from a *tall heath* to a *forest*.

This Bushfire Assessment Report (BAR) has been prepared in accordance with the submission requirements detailed in Appendix 2 of PBP 2019 and has demonstrated the proposed expansion satisfies the Aims and Objectives of PBP 2019, including the Specific Objectives for SFPP developments.

The following recommendations have been designed to enable the proposed development to achieve Performance Criteria for SFPP developments detailed in Section 6.8 of PBP 2019:

1. The areas within the site identified as an Asset Protection Zone in **Figure 18** shall be managed as an Inner Protection Area (IPA) as outlined within Appendix 4 of PBP 2019 and the RFS document *Standards for asset protection zones*;
2. All land within the site; with the exception of the land proposed to be zoned C2 Environmental Conservation, shall be maintained as an IPA as outlined in Appendix 4 of PBP 2019;
3. All future buildings to be constructed on the proposed sites shall have due regard to the specific considerations given in the National Construction Code: Building Code of Australia (BCA) which makes specific reference to Australian Standard AS3959-2018 Construction of buildings in bushfire prone areas (AS3959-2018) and the NASH Standard Steel Framed Construction in Bushfire Prone Areas;
4. Where the new dwellings are not required to be comply with the BCA, each dwelling shall be constructed in accordance with the relevant Bushfire Attack Level (BAL) identified in **Table 7**. An Approval to Operate (issued under Section 68 of the Local Government Act 1993) shall include a BAL Contour Plan and require each new dwelling to be constructed to the

nominated BAL rating. Furthermore, a suitably worded instrument(s) must be created pursuant to section 88 of the Conveyancing Act 1917 clearly outlining the require BAL ratings for each dwelling;

5. All new sites are to be connected to a reliable water supply network and that suitable fire hydrants are located throughout the development site that are clearly marked and provided for the purposes of bushfire protection. Fire hydrant spacing, sizing and pressure shall comply with AS2419.1 2005 and section 6.8.3 of PBP 2019;
6. The internal access road is to be designed and constructed in accordance with section 6.8.2 of PBP 2019 **or** as shown in the plans contained in **Appendix A**;
7. Consideration should be given to landscaping and fuel loads on site to decrease potential fire hazards on site; and
8. A Bushfire Emergency Management and Evacuation Plan (BEMEP) shall be prepared that is consistent with the RFS Guidelines 'Development Planning – A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan December 2014'.

This assessment has been made based on the bushfire hazards observed in and around the site at the time of inspection and production (November 2022).

Should the above recommendations be implemented, the future caravan park will result in a better bushfire outcome as the existing bushfire risk should be suitably mitigated to offer an acceptable level of protection to life and property for those persons and assets occupying the site but they do not and cannot guarantee that the area will not be affected by bushfire at some time.

Table of Contents

Executive Summary ii
Terms and Abbreviations vii
1. Introduction 1
2. Site Description 2
2.1. Bushfire Prone Land 4
2.2. Background - Approved Development 6
2.3. Proposed Development 7
3. Strategic Bushfire Study 8
3.1. Establishing Risk and Applying Treatment 8
3.2. Ministerial Directions 9
3.3. Aim of the SBS 9
3.4. Bushfire Landscape Assessment 10
3.4.1. Vegetation 10
3.4.2. Topography 12
3.4.3. Weather and Climate 15
3.4.4. Bushfire Behaviour and Fire History 17
3.5. Land Use Assessment 20
3.6. Access and Egress 21
3.7. Emergency Services 23
3.8. Infrastructure 24
3.9. Adjoining Land 24
4. Bushfire Hazard Assessment 25
4.1. Aims and Objectives 25
4.2. Specific Objectives for Special Fire Protection Purposes 25
4.2.1. Specific Residential-Based SFPP 26
4.3. Vegetation Assessment 26
4.3.1. Reliability Assessment 26
4.4. Slope Assessment 31
4.5. Significant Environmental Features 34
4.6. Threatened Species, populations or ecological communities 34
4.7. Aboriginal Objects 34
4.8. Results 35
5. Bushfire Protection Measures 37
5.1. Asset Protection Zones 37
5.1.1. Special Fire Protection Purposes 39
5.1.2. Determining the Appropriate Setbacks 39
5.3. Landscaping and Vegetation Management 41
5.4. Construction Standards - Bushfire Attack Level 42
5.5. Access 46
5.6. Services - water, electricity and gas 46
5.6.1. Water 46
5.6.2. Electricity 46
5.6.3. Gas 46

6. Conclusion and Recommendations 47
7. References 49

Figures

Figure 1: Port Stephens Local Environmental Plan 2013 (Land Zoning Map Sheet) 2
Figure 2: Site Locality Plan 3
Figure 3: Bushfire Prone Land Map (RFS 2021) 5
Figure 4: Proposed Development 7
Figure 5: NERAG Risk Assessment Methodology 8
Figure 6: Vegetation Types Across the Study Area 11
Figure 7: Digital Elevation Model (DEM) - 2km 13
Figure 8: Slope Analysis LIDAR - 2km 14
Figure 9: NSW State Fire History 18
Figure 10: Human Settlement Assets Within Lower Hunter BFRMP 19
Figure 11: NSW State Vegetation Type Mapping 2022 27
Figure 12: Digital Elevation Model 32
Figure 13: Slope Analysis LiDAR 33
Figure 14: Bushfire Hazard Assessment – Slope & Vegetation 36
Figure 15: Asset Protection Zone – Inner & Outer Protection Areas 38
Figure 16: Asset Protection Zone profile 38
Figure 17: BAL example 43
Figure 18: Required Asset Protection Zones 45

Tables

Table 1: Site Description 2
Table 2: Vegetation Communities and Corresponding Structural Formations and Fuel Loads 10
Table 3: Climate Statistics Recorded at Williamtown RAAF Weather Station (BOM Climate Statistics for Australian Locations, October 2022) 15
Table 4: Fire Brigades within 30kms of the Study Area 23
Table 5: Slope and Vegetation Assessment Results 35
Table 6: Required APZ setbacks 40
Table 7: Bushfire Attack Levels 44

Plates

Plate 1: Existing internal road network within Sunrise Village 6
Plate 2: Multiple visitor parking spaces provided outside carriageway of non-perimeter roads 6
Plate 3: Access to Sunrise Village from Nelson Bay Road is via Binder Road 22
Plate 4: Emergency egress from existing Sunrise Village to Trotter Road 22
Plate 5: T2 – Northern side of Trotter Road closest connection of vegetation 28
Plate 6: T3 – Northern side of Trotter Road indicating *forest* vegetation setback from road 28
Plate 7: T4 – looking west towards narrow and isolated pocket of forest vegetation to be retained 29
Plate 8: Vegetation corridor between Trotter Road and subject site to be retained (<50m wide) 29
Plate 9: T8 – looking south west from Sunrise Village across Nelson Bay Road to *forest* hazard . 30
Plate 10: Fenninghams Island Road looking north towards *Coastal Swamp Forest* 30

Appendices

Appendix A: Indicative Layout of Expansion of Sunrise Estate
Appendix B: Planning for Bushfire Protection 2019 Compliance Tables
Appendix C: AHIMS Report
Appendix D: NBC Bushfire Attack Assessor V4.1 Report

Terms and Abbreviations

Abbreviation	Meaning
APZ	Asset Protection Zone
AS2419-2005	Australian Standard – Fire Hydrant Installations
AS3959-2018	Australian Standard – Construction of Buildings in Bush Fire Prone Areas
BAR	Bushfire Assessment Report
BCA	Building Code of Australia
BC Act	NSW Biodiversity Act 2016
BDAR	Biodiversity Development Assessment Report
BMP	Bush Fire Management Plan
BPA	Bush Fire Prone Area (Also Bushfire Prone Land)
BPL	Bush Fire Prone Land
BPLM	Bush Fire Prone Land Map
BPM	Bush Fire Protection Measures
DoE	Commonwealth Department of the Environment
DPI Water	NSW Department of Primary Industries – Water
EPA Act	NSW Environmental Planning and Assessment Act 1979
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FDI	Fire Danger Index
FMP	Fuel Management Plan
ha	hectare
IPA	Inner Protection Area
LGA	Local Government Area
MHE	Manufactured Home Estate
NPWS	NSW National Parks and Wildlife Service
OPA	Outer Protection Area
OEH	NSW Office of Environment and Heritage
PSC	Port Stephens Council
PBP 2019	Planning for Bushfire Protection 2019
RF Act	Rural Fires Act 1997
RF Regulation	Rural Fires Regulation
RFS	NSW Rural Fire Service
SBS	Strategic Bushfire Study
TSC Act	NSW Threatened Species Conservation Act 1995 (as repealed)
VMP	Vegetation Management Plan

1. Introduction

Bushfire Planning Australia (BPA) has been engaged by Hometown Australia Communities Pty Ltd c/- ADW Johnson to undertake a Strategic Bushfire Study (SBS) and Bushfire Assessment Report (BAR) to support a Planning Proposal that seeks to amend the Port Stephens Local Environmental Plan 2013 (PSLEP) to permit *caravan parks* on the subject site.

The Planning Proposal will regularise the approved existing use on part of the Lot 51, where an approved caravan park is located. The caravan park is approved under DA-16-2013-790-4 and comprises 193 sites on which manufactured homes are currently located or being installed. It currently operates as an over 55s resort-style community, known as Sunrise Port Stephens. All existing homes are occupied by long-term residents who have signed a land lease agreement with the Operator. A land lease agreement grants the resident the right to occupy the residential site within the caravan park.

The Planning Proposal seeks to facilitate the extension of this use to the two parcels of land east of Lot 51 DP 1175028, being Lot 3622 DP 622485 and Lot 2 DP 622229. Subject to development consent and further approvals, an additional 62 manufactured homes could potentially be accommodated on the Subject Land. In addition, the LEP amendment has the potential to support an expansion of the existing community facilities on the Subject Land.

To achieve the above objectives, it is proposed to amend Schedule 1 of the PSCLEP 2013 to include an additional permitted use over the Subject Land for the purposes of a 'caravan park'.

In addition to the Schedule 1 amendment, this Planning Proposal will also rezone part of the site from RU2 Rural Landscape to C2 Environmental Conservation for the purposes of retaining vegetation as a corridor to connect vegetation north and south of the site. The retention of this land has resulted in the loss of sites and was proposed as part of the ecological "avoid and minimise" process.

The assessment aims to consider and assess the bushfire hazard and associated potential bushfire threat relevant to the proposed development, and to outline the minimum mitigative measures which would be required in accordance with the provisions of the New South Wales Rural Fire Service (RFS) publication *Planning for Bushfire Protection 2019* (PBP 2019) that has been released and adopted through the *Environmental Planning and Assessment Amendment* (Planning for Bushfire Protection) *Regulation 2007* and the *Rural Fires Regulation 2021*.

2. Site Description

Table 1: Site Description

Address	4029 & 4045 Nelson Bay Road, Bobs Farm
Title	Lot 3622 DP622485 Lot 2 DP622229
LGA	Port Stephens Council
Site Area	4.16 ha
Land Use Zone	RU2 Primary Production (**Figure 1**)
Context	The site is located between Trotter Road (north) and Nelson Bay Road (south). Both lots contain a dwelling and industrial shed. Vegetation exists along the southern, northern and eastern boundary edges, although most is managed and maintained. To the west of the proposed site, is the existing Sunrise Lifestyle Village, whilst to the east there is a small, isolated patch of vegetation.
Fire History	The site lies within a local government area with a Fire Danger Index (FDI) rating of 100.

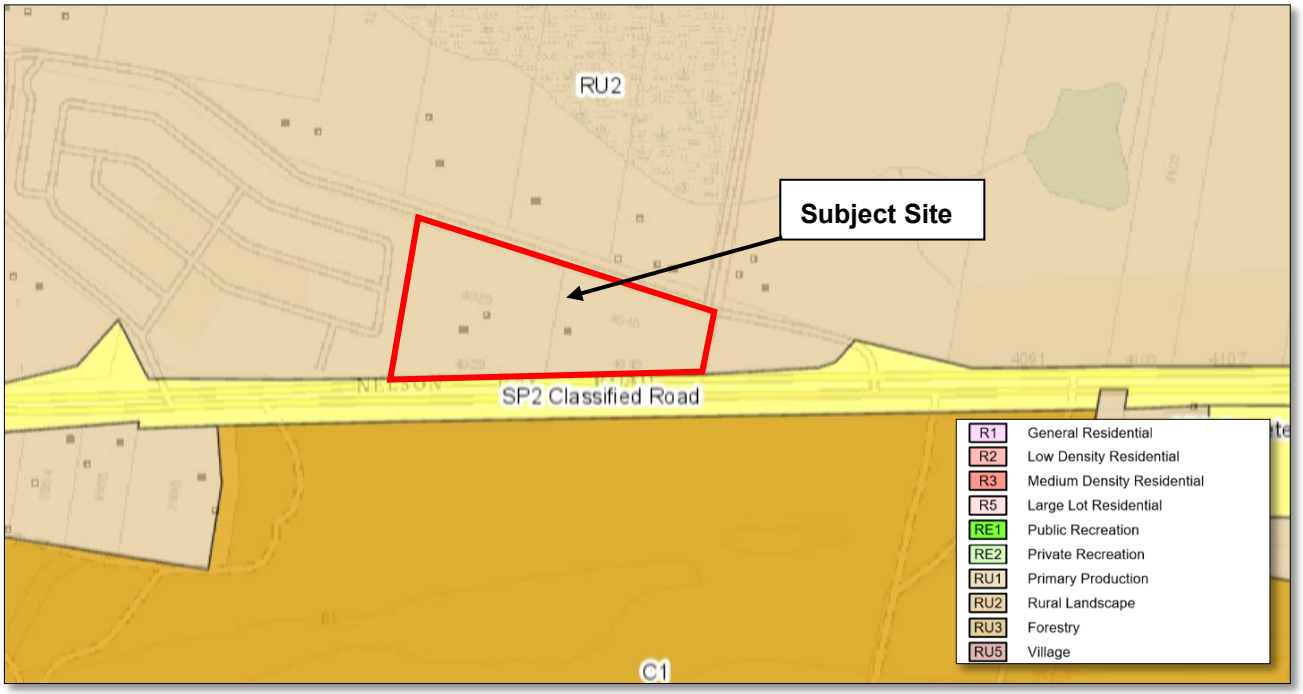


Figure 1: Port Stephens Local Environmental Plan 2013 (Land Zoning Map Sheet)

Project: 4029 & 4045 Nelson Bay Road, Bobs Farm
Job No: 2280

Figure 2

Site Location

BUSHFIRE PLANNING AUSTRALIA



Subject site
100m Buffer
140m Buffer

SOURCE:
Base Map © Department of Customer Service 2020

N
W E
S

0 250 500 750
Meters

A3 Scale: 1:15,000

File:2280-BobsFarm-Fig1-SiteLocation-221102 Date: 2/11/2022

The information shown on this plan may be insufficient for some types of design. GEOVIEW should be consulted as to the suitability of the information shown herein prior to the commencement of any works based on this plan.

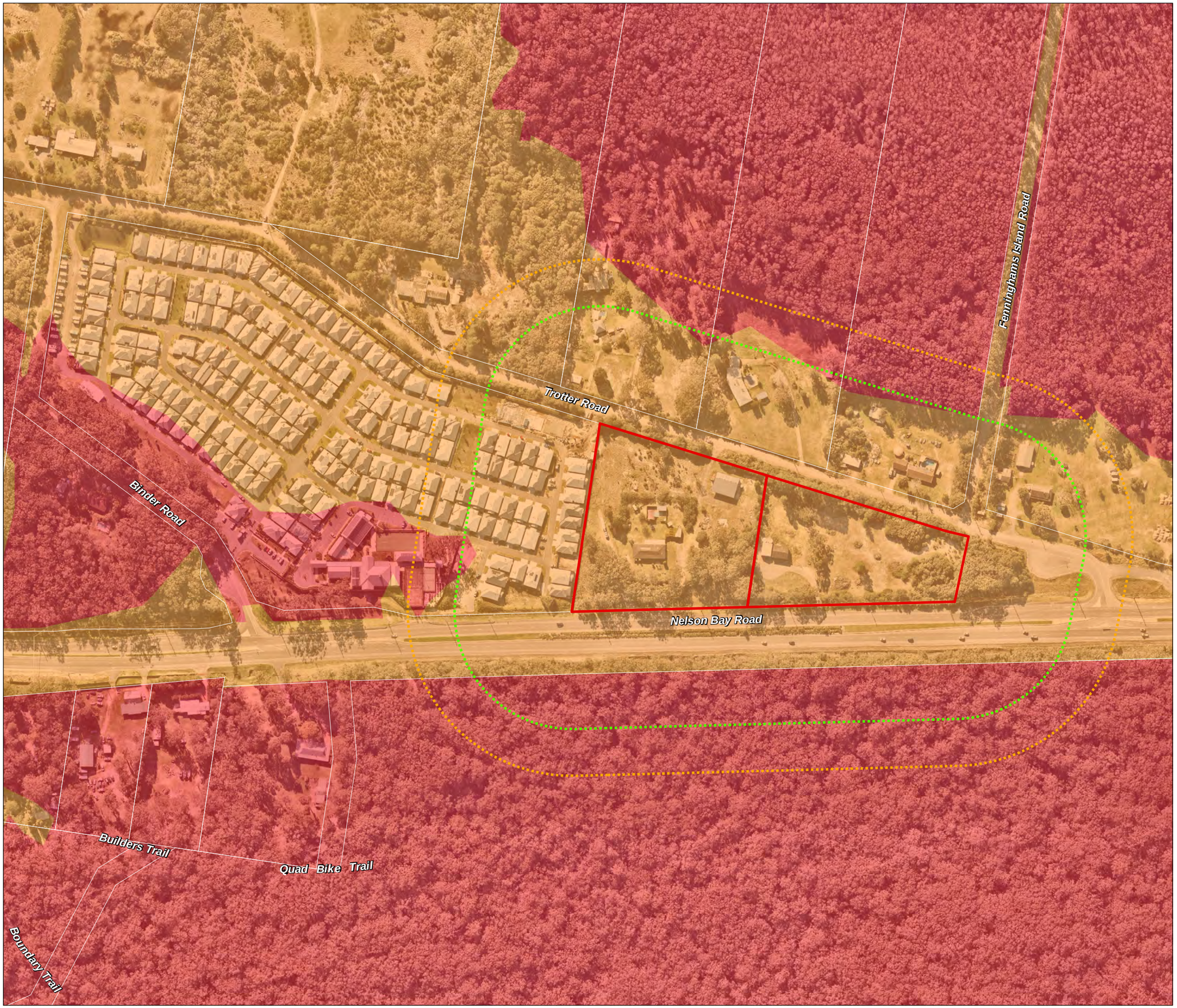
This map is not guaranteed to be free from error or omission. GEOVIEW hereby disclaims liability for any act done or omission made on the basis of the information in this plan, and any consequences of such acts or omissions

GEOVIEW
GIS & mapping solutions for infrastructure, town planning & environmental management

2.1. Bushfire Prone Land

Bushfire activity is prevalent in landscapes that carry fuel and the two predominant bushfire types are grassland and forest fires. Factors such as topographic characteristics and quantity of fuel loads influence the intensity and spread of fire. The scale of a bushfire hazard is tailored to the characteristics of the hazard, the size and characteristics of the affected population, types of land use exposed to bushfire, predicted development growth pressures and other factors affecting bushfire risk.

Figure 3 demonstrates the entire site is mapped as Vegetation Category 3 bushfire prone land. Vegetation Category 1 bushfire prone land exists within and beyond 140m north of the proposed site. Additionally, Vegetation Category 1 bushfire prone land exists to the south within and beyond 140m of the site and identified as the closest and primary bushfire hazard.



Project: 4029 & 4045 Nelson Bay Road, Bobs Farm
Job No: 2280

Figure 3

NSW Bush Fire Prone Land

BUSHFIRE PLANNING AUSTRALIA

- Subject Site
- 140m Buffer
- 100m Buffer

Bushfire Prone Land

- Vegetation Category 1
- Vegetation Category 3
- Buffer

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2022
Aerial photo: NearMap 08/07/2022
NSW Bush Fire Prone Land: NSW Rural Fire Service 2021

N
W E
S

0 25 50 75 100 125 150
Meters

A3 Scale: 1:3,000

File:2280-BobsFarm-Fig2-BFPL-221102 Date: 2/11/2022

The information shown on this plan may be insufficient for some types of design. GEOVIEW should be consulted as to the suitability of the information shown herein prior to the commencement of any works based on this plan.

This map is not guaranteed to be free from error or omission. GEOVIEW hereby disclaims liability for any act done or omission made on the basis of the information in this plan, and any consequences of such acts or omissions

GEOVIEW
GIS & mapping solutions for infrastructure, town planning & environmental management

2.2. Background - Approved Development

Development consent was issued by Port Stephens Council on 26 August 2014 for a *caravan park* (DA-16-2013-790-4) on Lot 51; 4011 Nelson Bay Road, Bob's Farm. The approved development was subsequently modified on several occasions and the most recent consent permits 193 sites on which manufactured homes are currently located or being installed.

The most recent Bush Fire Safety Authority (RFS Ref: D19/1433) was issued by the RFS on 7 August 2019; subject to a combination of bushfire mitigation measures including APZs and construction standards for the manufactured homes.



Plate 1: Existing internal road network within Sunrise Village



Plate 2: Multiple visitor parking spaces provided outside carriageway of non-perimeter roads

2.3. Proposed Development

The Planning Proposal seeks to facilitate the extension of this adjoining use to the two parcels of land east of Lot 51 DP 1175028, being Lot 3622 DP 622485 and Lot 2 DP 622229. Subject to development consent and further approvals, an additional 62 manufactured homes could potentially be accommodated on the Subject Land. In addition, the LEP amendment has the potential to support an expansion of the existing community facilities on the Subject Land.

The proposed development is accessed by Trotter Road. The construction of new non-perimeter roads will connect to the existing Sunrise Lifestyle Village and provide direct access to each site.

Plans of the proposed development are contained in **Appendix A** and shown in **Figure 4**.

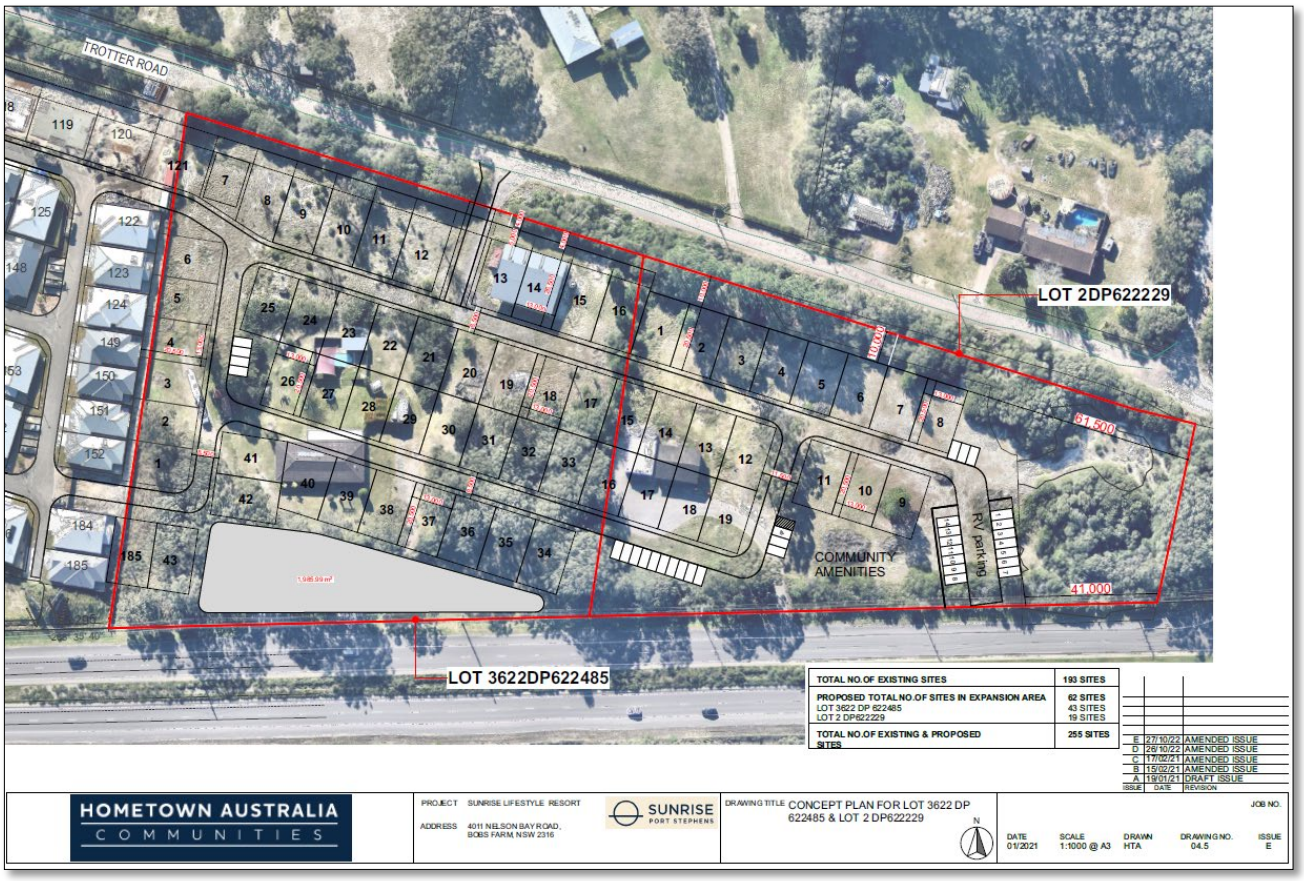


Figure 4: Proposed Development

3. Strategic Bushfire Study

3.1. Establishing Risk and Applying Treatment

The Strategic Bushfire Study (SBS) was introduced in NSW by Planning for Bush Fire Protection 2019 (PBP 2019). The SBS follows the principles of strategic planning generally in taking a long-term approach to land use planning and development expectations. The SBS aims to minimise or avoid the impact of natural hazards by taking a risk-based approach to the assessment of strategic planning policies and proposals. The SBS uses a macro-scale assessment, creates a risk profile and seeks treatment strategies to respond to the risk.

There are a number of national level guidance documents which provide helpful guidance in preparing strategic studies for natural hazard resilience. At a high level, the stage is set for consideration for natural hazards in strategic planning by the *Sendai Framework for Disaster Risk Reduction 2015 - 2030* (UNDRR, 2015), *The National Disaster Risk Reduction Framework* (Australian Government Department of Home Affairs, 2018), *Profiling Australia's Vulnerability: The interconnected causes and cascading effects of systemic disaster risk* (Australian Government Department of Home Affairs, 2018) and the *National Strategy for Disaster Resilience* (COAG 2011).

The *Land Use Planning for Disaster Resilient Communities* (the Handbook) published in 2020 by the Australian Institute for Disaster Resilience (AIDR) focuses on reducing disaster risk by improving strategic planning processes. The handbook aims to reduce both vulnerability and exposure of communities to natural hazard scenarios.

By considering natural hazards early and through its processes, land use planning can evaluate and select land use mechanisms to treat disaster risk.

The actions proposed by the Handbook are to understand disaster risk, make accountable decisions, establish governance, ownership and responsibility and ultimately, attract enhanced investment to reduce the risk. Ultimately, the goal is to make decisions which avoid risk. However, accepting that some level of risk is inevitable, the concept of risk tolerance and acceptable risk is highlighted. The Handbook uses a key principle introduced by the Planning Institute of Australia *National Land Use Planning Guidelines for Disaster Resilient Communities* (2015) which is the ALARP principle (As Low As Reasonably Practicable). This revolves around identifying risks that are broadly acceptable, tolerable, or generally intolerable and requires the identification of risk treatment options to move more towards the tolerable or broadly acceptable categories.

The Handbook also highlights the role that land use planning can play in climate change mitigation and adaptation. Future climate change models should be identified and utilised in the process of data gathering and analysis, whilst also acknowledging the uncertainties associated with those models.

The relationship with emergency management principles is highlighted by the Handbook. The integration of risk management and land use planning is recommended. The National Emergency Risk Assessment Guidelines produced by AIDR sets out the following structure for evaluating risk and applying risk treatment (taken from NERAG):

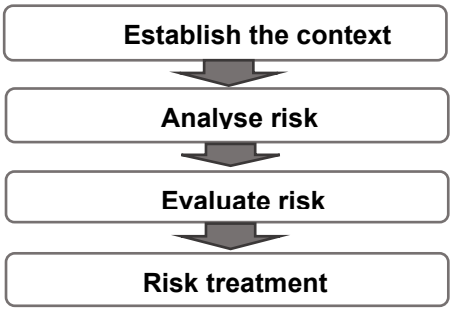


Figure 5: NERAG Risk Assessment Methodology

This process is appropriate for the SBS and will be followed to establish the risk and determine recommended risk treatments.

3.2. Ministerial Directions

Legislatively, planning proposals must follow the Ministerial Directions under Section 9.1(2) of the *Environmental Planning and Assessment Act 1979 (*EP&A Act*)*. Direction 4.3 requires a planning proposal, that is in proximity to land mapped as bushfire prone land, to have regard to PBP 2019, introduce controls that avoid placing inappropriate developments in hazardous areas and ensure that bushfire hazard reduction is not prohibited within the APZ.

A planning proposal must, where development is proposed, comply with the following provisions:

3(a) provide an Asset Protection Zone (APZ) incorporating at a minimum:

- *i. an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and*
- *ii. an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road,*

3(b) for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. If the provisions of the planning proposal permit Special Fire Protection Purposes (as defined under section 100B of the Rural Fires Act 1997), the APZ provisions must be complied with,

3(c) contain provisions for two-way access roads which link to perimeter roads and/or to fire trail networks,

3(d) contain provisions for adequate water supply for firefighting purposes,

3(e) minimise the perimeter of the area of land interfacing the hazard which may be developed,

3(f) introduce controls on the placement of combustible materials in the Inner Protection Area.

3.3. Aim of the SBS

In accordance with PBP 2019, the Stategic Bushfire Study is a high level assessment that identifies land affected by natural hazards and directs development away from inappropriate and constrained lands. In a bush fire context, strategic planning must ensure that future land uses are in appropriate locations to minimise the risk to life and property from bush fire attack. Services and infrastructure that facilitate effective suppression of bush fires also needs to be provided for at the earliest stages of planning.

The bushfire risk is considered at the macro-scale, looking at fire runs, steep slopes and any areas of isolation. The amount of proposed development interfacing vegetation will also be considered. Firefighting access and evacuation potential must be considered and an assessment of traffic volumes and evacuation routes will be required. The potential for these evacuation routes to be non-trafficable during a bush fire event will be factored into the assessment.

This SBS follows the considerations outlined within Table 4.2.1 of PBP 2019 to identify and analyse the risk profile and apply risk treatment measures.

The aim of the SBS is to meet the following principles:

- ensure land is suitable for development in the context of bush fire risk;
- ensure new development on bush fire prone land will comply with PBP 2019;
- minimise reliance on performance-based solutions;
- provide adequate infrastructure associated with emergency evacuation and firefighting operations; and
- facilitate appropriate ongoing land management practices.

3.4. Bushfire Landscape Assessment

A bushfire landscape assessment considers the likelihood of a bushfire approaching an area, its potential severity and intensity, and the resultant impact on life and property in the context of the broader surrounding landscape.

With regard to proposed site, the bushfire hazard, potential fire behaviour, history of bushfires and fire runs, and operational response was assessed with the outcomes addressed in the following sections.

3.4.1. Vegetation

An assessment of vegetation is important in determining risk as different types of vegetation burn differently across the landscape. This is largely due to location and topography, structure and arrangement and available surface, elevated and canopy fuel loads.

Grasses and heath burn more quickly and erratically with fire consuming a large proportion of the plant matter, as they are influenced by finer fuels, open air, exposed drying conditions and variations in wind speed and direction, whilst forests burn with greater intensity due to substantial amounts of taller, dense and woodier fuels. The amount of plant matter consumed by forest fires also varies due to the availability of fine fuel loads, fuel moisture and localised wind conditions.

It is these traits in vegetation that determine potential radiant heat and flame characteristics which in turn define building setback requirements in accordance with PBP 2019.

Vegetation within the proposed site area has been mapped by Department of Planning and Environment 2022, with this work supported by onsite field investigations in accordance with the site assessment methodologies within Appendix 1 of PBP 2019 (carried out by BPA on 2 November 2022).

The vegetation communities within the study area have been characterised into structural formations according to David Keith (2004) *Ocean Shores to Desert Dunes* and PBP 2019 to determine likely maximum fuel loads in accordance with the NSW RFS fact sheet *Comprehensive Vegetation Fuel Loads (2019)* (**Table 2**).

Table 2: Vegetation Communities and Corresponding Structural Formations and Fuel Loads

Vegetation Community	Structural formation (Keith 2004)	Structural formation (PBP 2019)	Overall fuel load (including surface, elevated, bark and canopy) tonnes/ha
Coastal Dune Dry Sclerophyll Forest	Dry Sclerophyll Forest (Shrubby)	Forest	31.1
Coastal Headland Heaths	Tall Heath	Tall Heath	36.9
Coastal Swamp Forest	Forested Wetland	Forest	34.1

Vegetation located along the southern site boundary was identified as a *Forest*, namely *Coastal Dune Dry Sclerophyll Forest,* whilst *Coastal Headland Heaths* were identified along the north / north-eastern site boundary.

Vegetation surrounding the site was identified as *Forests*, namely *Coastal Dune Dry Sclerophyll Forest* and *Coastal Swamp Forest*. The *Coastal Swamp Forest* extends north of Trotter Road and rural properties, also located north of the site. Within and beyond 140m south of the site, separated by Nelson Bay Road, *Coastal Dune Dry Sclerophyll Forest* is present and confirmed as the primary bushfire hazard (**Figure 6**).



Project: 4029 & 4045 Nelson Bay Road, Bobs Farm
Job No: 2280

Figure 6

NSW State Vegetation Type (Class)

BUSHFIRE PLANNING AUSTRALIA

Subject Site
140m Buffer
100m Buffer

Vegetation Class

- Coastal Headland Heaths
- Coastal Floodplain Wetlands
- Coastal Swamp Forests
- Coastal Dune Dry Sclerophyll Forests
- Not native vegetation

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2022
Aerial photo: NearMap 08/07/2022
Vegetation: © State Government of NSW and Department of Planning and Environment 2022

N W E S

0 25 50 75 100 125 150
Meters

A3 Scale: 1:3,000

File:2280-BobsFarm-Fig3-Vegetation-SV-Class-221102 Date: 2/11/2022

The information shown on this plan may be insufficient for some types of design. GEOVIEW should be consulted as to the suitability of the information shown herein prior to the commencement of any works based on this plan.

This map is not guaranteed to be free from error or omission. GEOVIEW hereby disclaims liability for any act done or omission made on the basis of the information in this plan, and any consequences of such acts or omissions

GEOVIEW
GIS & mapping solutions for infrastructure, town planning & environmental management

3.4.2. Topography

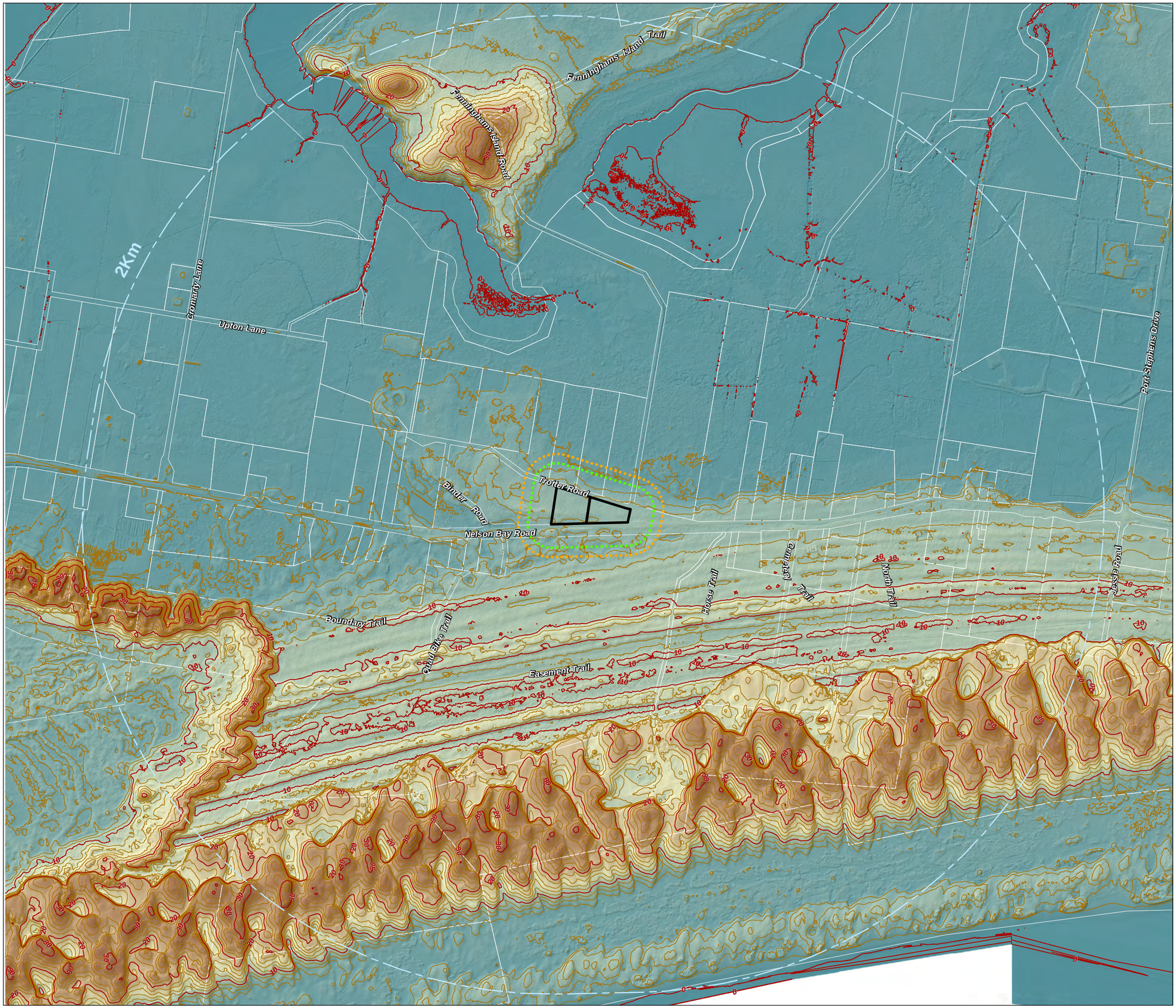
Topography and slope play a significant role in influencing the rate of fire spread and fire behaviour in relation to the potential for canopy involvement.

Research shows that the speed of an advancing bushfire front will double with every 10 degree increase in slope, so that on a 20 degree slope, its speed of advancement is four times greater than on flat ground. This is because the radiation and convection a fire creates preheats the unburned fuel ahead of the fire front causing it to combust at a quicker rate. This is done more effectively upslope than down. Fuel distributed across every layer of the vegetation community, in effect creating a ladder, also contributes to the likelihood of fire transfer to the canopy. This transfer is also more effective on steeper slopes.

Digital Elevation Modelling (DEM) shows us the topography within the locality of Bobs Farm ranges from peaks at 42 metres above sea level in parts of the Worimi National Park, approximately 3.7kms south-west of the site, to the bottom of Tilligerry Nature Reserve at 1 metre above sea level, within 1 km north of the site (**Figure 7**).

An assessment of the effective slope (that which sits underneath the bushfire hazardous vegetation) impacting the study area was undertaken using LIDAR point cloud data, DEM (NSW LPI) and results from field investigations carried out in October 2022. An assessment of the slope over a distance of 100m in the hazard direction, as is required within Appendix 1 of PBP 2019, was undertaken. Results revealed slopes within the study area to be mostly flat with a slight downslope of less than 2 degrees north of the site and a slight upslope of less than 1 degree south of the site (**Figure 8**).

In accordance with PBP 2019, development on steeper slopes, where the bushfire threat is downhill and has the potential to increase the rate of spread and intensity of bushfire, requires larger setbacks. Section 4 of this report addresses Asset Protection Zones and building setbacks commensurate with slope surveyed within the study area to achieve radiant heat levels ≤29kW/m^2.



Project: 4029 & 4045 Nelson Bay Road, Bobs Farm
Job No: 2280

Figure 7

Digital Elevation Model - 2Km

BUSHFIRE PLANNING AUSTRALIA

- Subject Site
- 140m Buffer
- 100m Buffer
- Contour (10m)
- Contour (2m)

Elevation (AHD)
High : 38m
Low : 0m

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2022
Surface analysis based on Port Stephens1 metre Resolution LiDAR © Department Finance, Services and Innovation 2012

N W E S

0 250 500 750
Meters

A3 Scale: 1:15,000

File:2280-BobsFarm-Fig8-DEM-2Km-221102 Date: 2/11/2022

The information shown on this plan may be insufficient for some types of design. GEOVIEW should be consulted as to the suitability of the information shown herein prior to the commencement of any works based on this plan.

This map is not guaranteed to be free from error or omission. GEOVIEW hereby disclaims liability for any act done or omission made on the basis of the information in this plan, and any consequences of such acts or omissions

GEOVIEW
GIS & mapping solutions for infrastructure, town planning & environmental management

Project: 4029 & 4045 Nelson Bay Road, Bobs Farm
Job No: 2280

Figure 8

Slope Analysis: LiDAR - 2Km

BUSHFIRE PLANNING AUSTRALIA

Subject Site
140m Buffer
100m Buffer

Slope

0° - 5°
5° - 10°
10° - 15°
15° - 20°
>20°

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2022
Aerial photo: Maxar 2021
Surface analysis based on Port Stephens1 metre Resolution LiDAR © Department Finance, Services and Innovation 2012

N
W E
S

0 250 500 750
Meters

A3 Scale: 1:15,000

File:2280-BobsFarm-Fig9-SlopeLiDAR-2Km-221102 Date: 2/11/2022

The information shown on this plan may be insufficient for some types of design. GEOVIEW should be consulted as to the suitability of the information shown herein prior to the commencement of any works based on this plan.

This map is not guaranteed to be free from error or omission. GEOVIEW hereby disclaims liability for any act done or omission made on the basis of the information in this plan, and any consequences of such acts or omissions

GEOVIEW
GIS & mapping solutions for infrastructure, town planning & environmental management

3.4.3. Weather and Climate

The typical/average climate varies across the Port Stephens LGA from warm subtropical with the high altitude areas tending toward warm temperature. According to the *Lower Hunter Bush Fire Management Committee Bush Fire Risk Management Plan (2009)* (BFRMP), which includes the Port Stephens LGA, the official bushfire danger period ordinarily begins on 1 September and ends on 31 March.

Strong north-west to south-west winds often prevail within this time of year. Longer bush fire seasons occur when summer rainfall is lower than normal, with the bush fire season extending through Summer to early Autumn. Serious fires have occurred late in the season under dry summer conditions.

Prevailing weather conditions associated with the bushfire season in the Lower Hunter BFMC areas are north-westerly winds accompanied by high daytime temperatures and low relative humidity. There are also frequently dry lightning storms in the western areas occurring during the bushfire season.

The Forest Fire Danger Index (FFDI) given to the Port Stephens region is 100. The index is calculated from weather station data and is based on representative values of wind speed, temperature, humidity and fuel conditions.

The index represents a 1:50 year fire weather scenario and is applied to methodologies in calculating anticipated bushfire attack levels. It is possible that due to local variations in elevation, slope, and aspect, FFDI values at any point location may reflect values which are higher or lower than 100 resulting in different rates of fire spread across a landscape. **Table 3** provides a brief overview of point location weather data recorded at Bobs Farm (closest weather station with climate statistics to Williamtown RAAF BOM Site Number: 061078).

Table 3: Climate Statistics Recorded at Williamtown RAAF Weather Station (BOM Climate Statistics for Australian Locations, October 2022)

Weather Station	Williamtown RAAF
Mean maximum temp (degrees)	Highest 28.3 (January), Lowest 6.5 (July)
Highest temp (degrees)	45.5 (4 Jan 2020)
Mean number of days ≥ 30 degrees	9.4 (January)
Mean rainfall (mm)	Highest 128.3 (March), Lowest 60.6 (September)
Mean 3pm relative humidity (%)	Highest 62 (February), Lowest 50 (August September)
Mean 3pm windspeed (km/h)	Highest 23.5 (November/ December), Lowest 15.8 (May)
Lowest temp (degrees)	-3.9 (18 July 1970)
Mean minimum temp (degrees)	Highest 18.2 (January), Lowest 6.5 (July)

Climate change is influencing the frequency and severity of dangerous bushfire conditions in Australia. Fire risk is affected by four main factors, fuel load, fuel dryness, weather and ignition. Understanding the impacts of climate change on bushfires in NSW, relies on how climate change might affect these factors.

- Vegetation (ie fuel) growth will be affected by global increases in greenhouse gas emissions such as carbon dioxide as well as changes to rainfall patterns.
- Climate models have predicted that NSW will experience warmer drier periods of weather, drying vegetation and increasing bushfire risk. The 2019/2020 Black Summer bushfire season was predeeded by three years of increasing drought conditions.
- The risk of fire is increased by low rainfall and humidity and high temperature and wind speeds. There have been significant changes observed in recent decades towards more dangerous bushfire weather conditions for various regions of Australia. Observed changes in southern and eastern Australia include an earlier start to the bushfire season with dangerous weather conditions occurring significantly earlier in spring than they ever used to.
- In relation to fire ignition, there is some indication that climate change could influence the risk of ignitions from dry-lightning storms. Additionally, there has recently been a number of devastating fire events in Australia associated with extreme pyroconvection (including thunderstorm development in a fire plume), with recent research indicating a long-term trend towards increased risk factors associated with pyroconvection in southeast Australia.

According to the BFRMP, temperatures have been increasing in the Lower Hunter Region in recent decades. This warming trend is expected to continue, with anticipated considerable rainfall variability across seasons and from year to year. These projected changes include increasing maximum and minimum temperatures, increasing number of hot days, decreasing number of cold nights together with winter rainfall and increasing Autumn and Spring rainfall. Average fire weather and severe fire weather days are projected to increase in Summer and Spring.

In addition to the changing weather conditions, it is anticipated that the potential for wildfire ignition will increase and fuels may also change. There is increased capacity for lightning strikes within the landscape due to potentially more volatile weather conditions, increased ignition potential could lead to more challenging firefighting conditions. Over the longer term, fuels can become drier, areas of forested wetland or forest could become drier with a higher propensity to burn. The increased risk of hotter fires occurring on a more regular basis can also increase the risk of vegetation communities, such as forest, being impacted more frequently by fire and taking hundreds of years to recover (environment.nsw.gov.au).

In planning for a climate change future, the following mechanisms are recommended:

- Required setbacks from bushfire hazardous vegetation commensurate with an FFDI 100;
- Mechanical fuel reduction, where achievable, as opposed to controlled burning;
- Alternative landscaping initiatives and garden design that relies more on non combustible elements and use of succulent and drought resistant plantings; and
- Improved emergency management planning and procedures.

3.4.4. Bushfire Behaviour and Fire History

Information on fire history is a useful factor in understanding fire frequency and bushfire risk. Review of available fire history data within and surrounding the Port Stephens LGA indicates two (2) fires have been recorded over the last 10 years.

The largest and closest fire to the subject site was recorded in 2017, approximately 400m north-east of the site, across multiple rural properties whilst the other fire occurred in 2012, approximately 1.5km north-west of the site, north of Bobs Farm Creek (**Figure 9**).

Project: 4029 & 4045 Nelson Bay Road, Bobs Farm
Job No: 2280

Figure 9

NSW Fire History

BUSHFIRE PLANNING AUSTRALIA

Subject site
100m Buffer
140m Buffer

Year of Fire

2012
2017

SOURCE:
Base Map © Department of Customer Service 2020
Fire History: NSW Rural Fire Service 2022

N
W E
S

0 250 500 750
Meters

A3 Scale: 1:15,000

File:2280-BobsFarm-Fig7-FireHistory-221027 Date: 27/10/2022

The information shown on this plan may be insufficient for some types of design. GEOVIEW should be consulted as to the suitability of the information shown herein prior to the commencement of any works based on this plan.

This map is not guaranteed to be free from error or omission. GEOVIEW hereby disclaims liability for any act done or omission made on the basis of the information in this plan, and any consequences of such acts or omissions

GEOVIEW
GIS & mapping solutions for infrastructure, town planning & environmental management

3.4.4.1. Lower Hunter Bush Fire Risk Management Plan

According to the Bush Fire Risk Management Plan (BFRMP) the Port Stephens LGA has on average 200 bushfires per year, of which 3 on average can be considered to be major fires. The main sources of ignition include:

- Escapes from legal burning off;
- Incendiarism / arson; and
- Arcing power lines.

The BFRMP confirms there are no assets, except for an endangered flora, at risk of bushfire impact within the Bobs Farm area. **Figure 10** provides a snapshot of the study areas assets at risk (indicated as red and orange hatching and icons) as identified within the Lower Hunter BFRMP and specifically for the Bobs Farm area.

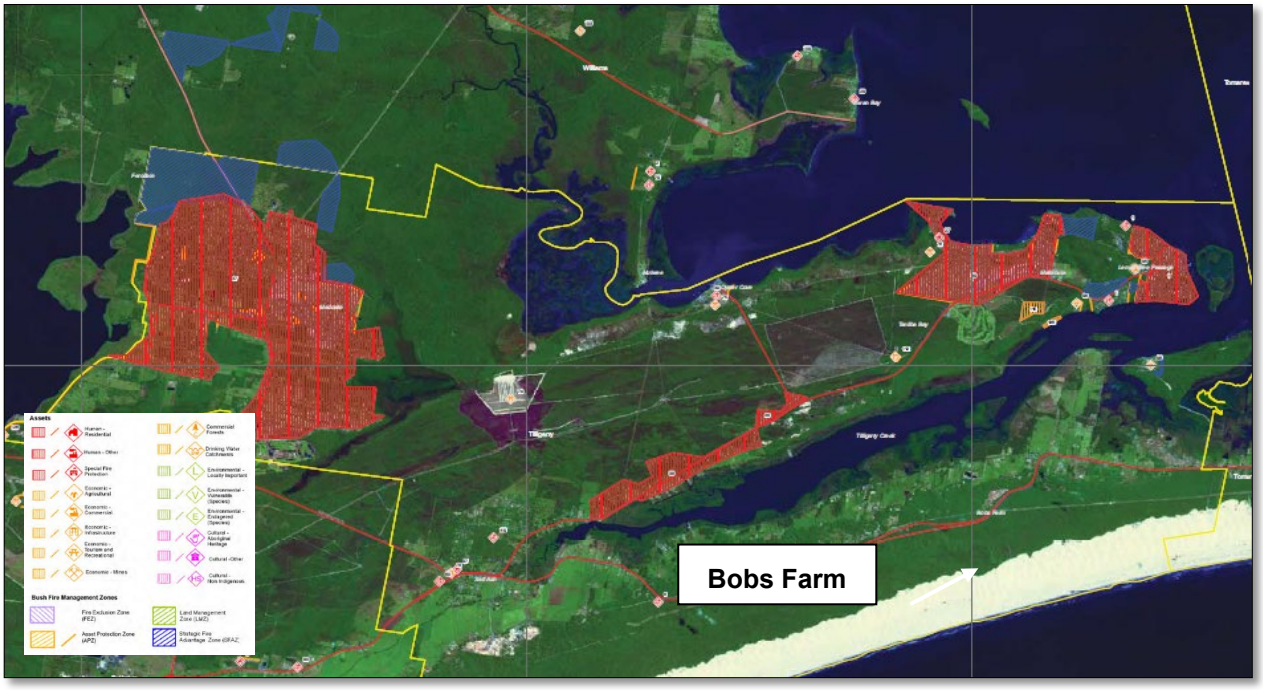


Figure 10: Human Settlement Assets Within Lower Hunter BFRMP

3.5. Land Use Assessment

A land use assessment identifies the appropriateness of siting different land uses in particular locations based on risk profiles.

Under the *Rural Fires Act 1997* and PBP 2019 the proposed land uses fall mostly into the category of residential infill and other development. PBP provides performance criteria for the proposed uses.

Using an FFDI of 100 and the vegetation formations and effective slope described in Section 4.8 of this report, APZ setback requirements were calculated in accordance with Section 6.8 and Table A1.12.2 of PBP 2019.

3.6. Access and Egress

PBP requires sufficient access with design objectives that enable safe evacuation away from an area whilst facilitating adequate emergency and operational response. All areas affected by bushfire prone land should have an alternate access or egress option dependant on bushfire risk, density of development, population and the chances of roads being cut-off by fire, smoke and accidents for prolonged periods of time.

Current access/egress within the study area allows distribution of local traffic in and around the coastal township. Access routes in and out of Bobs Farm is limited to Nelson Bay Road.

Minor access roads between the more major transport routes allows for emergency response and traffic flow of the current population in and out of the area. An increase in density, however, as is experienced during the seasonal summer periods and with potential additional development, may see congestion of roads at any one period of time.

Due to the location of the main access/egress routes currently dissecting vegetated corridors into Bobs Farm there is a high probability that impedance by smoke and fire could occur which may also hinder evacuation timeframes and impose implications from a safety perspective with roads being cut off.

The proposed development must also ensure there is adequate access/egress. Section 6.8 of PBP requires a development to provide safe operational access to structures and water supply for emergency services while residents are seeking to evacuate.

All new roads would need to comply with the following requirements, in accordance with Table 6.8b of PBP:

- ❑ All roads are two-wheel drive, sealed, all-weather roads;
- ❑ A secondary access is provided to the development;
- ❑ Traffic management devices do no prohibit access by emergency services vehicles;
- ❑ Maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees;
- ❑ Carriageway width kerb to kerb shall be a minimum of 5.5 metres and have a minimum vertical clearance of 4 metres to overhanging obstructions and tree branches;
- ❑ All parking shall be provided outside of the carriageway width;
- ❑ Curves of roads shall have a minimum inner radius of 6 metres and crossfall shall not exceed 3 degrees;
- ❑ Dead end roads incorporate a minimum 12 metres outer radius turning circle and are clearly sign posted as a dead end;
- ❑ One way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water;
- ❑ The capacity of roads/bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes) with bridges/causeways clearly indicating load rating;
- ❑ Perimeter roads are two-way with a minimum carriageway width of 8 metres kerb to kerb;
- ❑ Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road.

There is no impediment to these standards being achieved. The existing Sunrise Village is directly accessible from Binder Road and a second emergency egress is provided at the northern end of the village to Trotter Road. The proposed extension provides a third exit point from the site to Trotter

Road. All three access routes provide immediate access to Nelson Bay Road, in both directions (east and west) which is a separated dual lane carriegway. The increased population on the subject site is unlikely to affect the capacity of Nelson Bay Road. Furthermore, the existing MHE operates a community bus which is available to evacuate residents who do not have access to private vehicles.



Plate 3: Access to Sunrise Village from Nelson Bay Road is via Binder Road



Plate 4: Emergency egress from existing Sunrise Village to Trotter Road

3.7. Emergency Services

With an increase in population comes a growing demand on emergency services and it is prudent that consideration be given to the future impact on firefighter numbers, appliances, infrastructure, training and response time. Currently within a 30-kilometre radius of the study area there are three Rural Fire Brigades, and two Fire and Rescue NSW fire stations (**Table 4**).

Their locations are spaced kilometres apart which may impact quick response to bushfire and building fire emergencies and has in previous times often relied upon attendance from out of area brigades to assist with larger bushfire emergencies.

Table 4: Fire Brigades within 30kms of the Study Area

Rural Fire Brigades	Address	Distance to Subject Site
Salt Ash Rural Fire Station	2 Michael Drive, Salt Ash	14km or 12 minutes
Tilligerry Rural Fire Brigade	1 Success Street, Tanilba Bay	24.3km or 19 minutes
Medowie Fire Station	47B Ferodale Road, Medowie	22.7km or 18 minutes

Fire & Rescue NSW Stations	Address	Distance to Subject Site
Fire & Rescue Salamander Bay	194 Salamander Way, Salamander Bay	9.3km or 7 minutes
Raymond Terrace	5 Leisure Way, Raymond Terrace	27.8km or 22 minutes

Due to the small number of Rural Fire Brigades and FRNSW stations there is a significant requirement for the community to understand their risk and ensure they have a bushfire survival plan that outlines their emergency arrangements and course of action, particularly where there is tourist accommodation. Discussions with NSW RFS confirmed that education of both the existing and proposed community would be a significant benefit in undertaking safe evacuation of the area. It was clear from our discussions that an informed community is easier to evacuate. Providing the community with information regarding potential evacuation routes and timing of evacuation, in line with the BTS, would significantly assist a safe evacuation process.

Potential growth in population should also prompt the Port Stephens Council and RFS District Office to assess the implications on resource capabilities and the need for extra bushfire management and community advisory roles, stations, firefighting volunteers, equipment and/or increased training opportunities (ie Breathing Apparatus and village training) to cater for future development and capacity, particularly in those areas adjacent to substantial areas of bushland.

3.8. Infrastructure

An assessment of the issues associated with infrastructure and utilities considers the life safety issues of fire in proximity to high voltage power lines and natural gas supply lines and the pressures a major bushfire event puts on flow rates of reticulated water systems and telecommunications infrastructure.

Above ground low and high voltage power lines exist in the Bobs Farm region. Generally, the energy authority's vegetation management policies and procedures assist with managing fire risks associated with existing vegetation within close proximity to powerlines to prevent ignitions.

Any new development as a result of rezoning can site electricity, and communication cables underground so as to both reduce the bushfire risk from sparking power lines and protect the infrastructure supply in a bushfire event.

The extent of the existing water supply is such that an increase in demand should not detrimentally impact water pressure and flow to the study area. Additional static water supply systems can be recommended with new development to lessen dependence on reticulated systems.

In accordance with Section 5.3.3 of PBP, any new development shall provide adequate services of water for the protection of buildings during and after the passage of a bushfire and will locate gas and electricity so as not to contribute to the risk of fire to any building.

- Fire hydrant spacing, sizing, flows and pressure will comply with AS 2419.1 – 2005. Hydrants will be located outside of parking reserves and road carriageways.
- All sites within proposed developments will be connected to the internal reticulated water supply.
- All electricity services will be located underground.
- Any reticulated or bottled gas should be installed and maintained according to the requirements of the relevant authorities and AS 1596-2014.

3.9. Adjoining Land

Consideration of the implications of a change in land use on adjoining land, including increased pressure on bushfire protection measures, should also be undertaken.

The anticipated impact on adjoining land would be:

- An increase in traffic to the local area and added dependence on reticulated water supply, both of which have been addressed in the sections above; and
- Pressures on landowners and management agencies to more frequently manage bushfire hazardous vegetation on their properties.

With regards to the latter, although Asset Protection Zones are expected to be provided for wholly within the boundary of developable sites, there may be increased pressures for prescribed burning to complement bushfire protection measures, particularly in the larger tracts of vegetation leading into Bobs Farm. Given the biodiversity values of the study area, fire frequencies will need to be directed by already known and established fire regimes and seasonality so as to maintain plant growth cycles, habitat and breeding opportunities of fauna species.

4. Bushfire Hazard Assessment

4.1. Aims and Objectives

The assessment aims to consider and assess the bushfire hazard and associated potential bushfire threat relevant to the proposed development, and to outline the minimum mitigative measures which would be required in accordance with the provisions of the New South Wales Rural Fire Service (RFS) publication *Planning for Bushfire Protection 2019* (PBP 2019) and the *Rural Fires Regulation 2013.*

This assessment has been undertaken in accordance with clause 44 of the Rural Fires Regulation 2013. This BAR also addresses the aims and objectives of PBP 2019, being:

- Afford buildings and their occupants protection from exposure to a bushfire;
- Provide for a defendable space to be located around buildings;
- Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;
- Ensure that appropriate operational access and egress for emergency service personnel and occupants is available;
- Provide for ongoing management and maintenance of bushfire protection measures (BPMs); and
- Ensure that utility services are adequate to meet the needs of firefighters.

A compliance table demonstrating compliance with PBP 2019 is provided in **Appendix D**.

4.2. Specific Objectives for Special Fire Protection Purposes

The aims and objectives listed in section 1.1 of PBP 2019 remain applicable to SFPP developments, however further consideration has been given to SFPP developments due to the nature of these environments and the occupants they accommodate. Occupants of SFPP developments are generally more vulnerable to bushfire attack therefore specific objectives have been put in place to ensure greater protection is provided (section 6.2 PBP 2019). Specific objectives include:

- Minimise levels of radiant heat, localised smoke and ember attach through increased APZ, building design and siting;
- Provide for an appropriate operational environment for emergency service personnel during firefighting and emergency management;
- Ensure the capacity of existing infrastructure (such as roads and utilities) can accommodate the increase in demand during emergencies as a result of the development; and
- Ensure emergency evacuation procedures and management which provides for the special characteristics and needs of occupants.

As a caravan park is classified as a SFPP development, the specific objectives and acceptable solutions for a SFPP development have been considered.

However, all sites within Sunrise Estate (and any additional sites) are restricted to long-term occupation only. Each dwelling is occupied by a long-term resident/s who have signed a land lease agreement with the Operator. A land lease agreement grants the resident the right to occupy the residential site within the caravan park.

Unlike people that stay at a typical tourist focused caravan park occupied on a short-term basis, the RFS acknowledge that long-term occupants (exceeding six weeks) will be familiar with their

surrounds, safe refuge areas and evacuation routes; thus present a risk profile commensurate with a standard residential development.

4.2.1. Specific Residential-Based SFPP

Whilst caravan parks can be built to achieve all levels of construction required under the NCC, manufactured homes installed in caravan parks are not required to obtain separate development consent for each dwelling. Instead, dwellings must comply with the design, construction and installation requirements of Part 2, Division 4 of the *Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation* 2005 ('the Regulation'). A Notice of Completion of Installation is required by Clause 68 of the Regulation and can be used to require evidence of construction standards, including BAL and AS3959-2018.

The acceptable solution for manufactured housing is the provision of an APZ which achieves 10kW/m^2; being commensurate with the SFPP development (Table A1.12.1).

However, where evidence can be provided with the Notice of Completion of Installation, which confirms that all dwellings used for long-term occupation have been constructed to the appropriate construction standards under AS3959-2018 or NASH standard, the dwelling shall be provided with an APZ which meets 29kW/m^2 in line with Tables A1.12.2 of PBP 2019; being for a standard residential dwelling. With this in mind, APZs of 16m-24m may be required, as compared to a 67m APZ which would be required for a SFPP (short term site) exposed to the identical bushfire hazard.

4.3. Vegetation Assessment

Vegetation classification over the site and surrounding area has been carried out as follows:

- Aerial Photograph Interpretation to map the vegetation classification
- Reference to NSW State Vegetation Type Mapping, Department of Planning and Environment 2022 (**Figure 11**); and
- Site inspection completed by Stuart Greville on 1 November 2022 (**Plates 5-10**).

In accordance with PBP 2019, an assessment of the vegetation over a distance of 100m in all directions from the site was undertaken. Vegetation that may be considered a bushfire hazard was identified in all directions from the development footprint. The vegetation classification is based on the revised Table 2.3 in AS3959-2018 and Appendix 1 of PBP 2019. The unmanaged fuel loads detailed in the *RFS Comprehensive Fuel Loads Fact Sheet* (March 2019) have been adopted for the purpose of assessing the bushfire hazard. The findings of the site inspection were compared to the available vegetation mapping. The inconsistencies between the mapping sources and hazardous vegetation mapped on the NSW RFS Bushfire Prone Land maps were quantified during the site inspection.

4.3.1. Reliability Assessment

Although the bushfire prone land mapping is intended to be regularly updated, land use and vegetation cover that contribute to bushfire hazards are subject to change. A reliability assessment was undertaken for the subject site and all land within 140m. In this instance the bushfire prone land mapping is mostly consistent with existing vegetation present within the site.



Project: 4029 & 4045 Nelson Bay Road, Bobs Farm
Job No: 2280

Figure 11

NSW State Vegetation Type (Class)

BUSHFIRE PLANNING AUSTRALIA

- Subject Site
- 140m Buffer
- 100m Buffer

Vegetation Class

- Coastal Headland Heaths
- Coastal Floodplain Wetlands
- Coastal Swamp Forests
- Coastal Dune Dry Sclerophyll Forests
- Not native vegetation

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2022
Aerial photo: NearMap 08/07/2022
Vegetation: © State Government of NSW and Department of Planning and Environment 2022

N
W E
S

0 25 50 75 100 125 150
Meters

A3 Scale: 1:3,000

File:2280-BobsFarm-Fig3-Vegetation-SV-Class-221102 Date: 2/11/2022

The information shown on this plan may be insufficient for some types of design. GEOVIEW should be consulted as to the suitability of the information shown herein prior to the commencement of any works based on this plan.

This map is not guaranteed to be free from error or omission. GEOVIEW hereby disclaims liability for any act done or omission made on the basis of the information in this plan, and any consequences of such acts or omissions

GEOVIEW
GIS & mapping solutions for infrastructure, town planning & environmental management



Plate 5: Looking west along 10m wide fauna corridor between site and Trotter Road – *Tall Heath*



Plate 6: T3 – Northern side of Trotter Road indicating *forest* vegetation setback from road

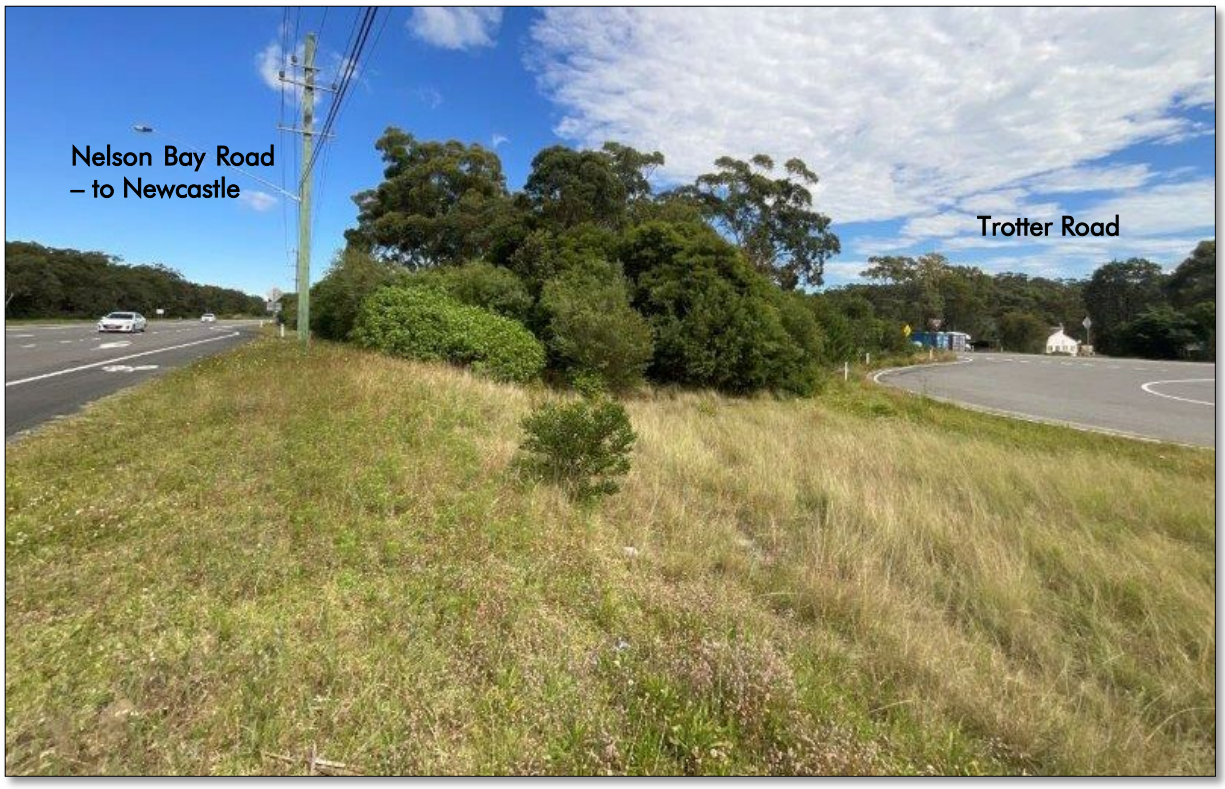


Plate 7: T4 – looking west towards narrow and isolated pocket of forest vegetation to be retained



Plate 8: Vegetation (*forest* transitions to *heath*) corridor between Trotter Road and subject site to be retained (<50m wide)



Plate 9: T8 – looking south west from Sunrise Village across Nelson Bay Road to *forest* hazard



Plate 10: Fenninghams Island Road looking north towards *Coastal Swamp Forest*

4.4. Slope Assessment

The slope assessment was undertaken as follows:

- Review of LiDAR point cloud data – including DEM (NSW LPI);
- Detail survey of existing and design contours; and
- Site inspection completed on 1 November 2022.

An assessment of the slope over a distance of 140m in the hazard direction from the site boundary was undertaken. The effective slope was then calculated under the classified vegetation where there was a fire run greater than 50m. The topography of the site has been evaluated to identify both the average slope and by identifying the maximum slope present. These values help determine the level of gradient which will most significantly influence the fire behaviour of the site.

The effective slope in all directions is shown in **Figure 12, Figure 13** and **Table 5.**

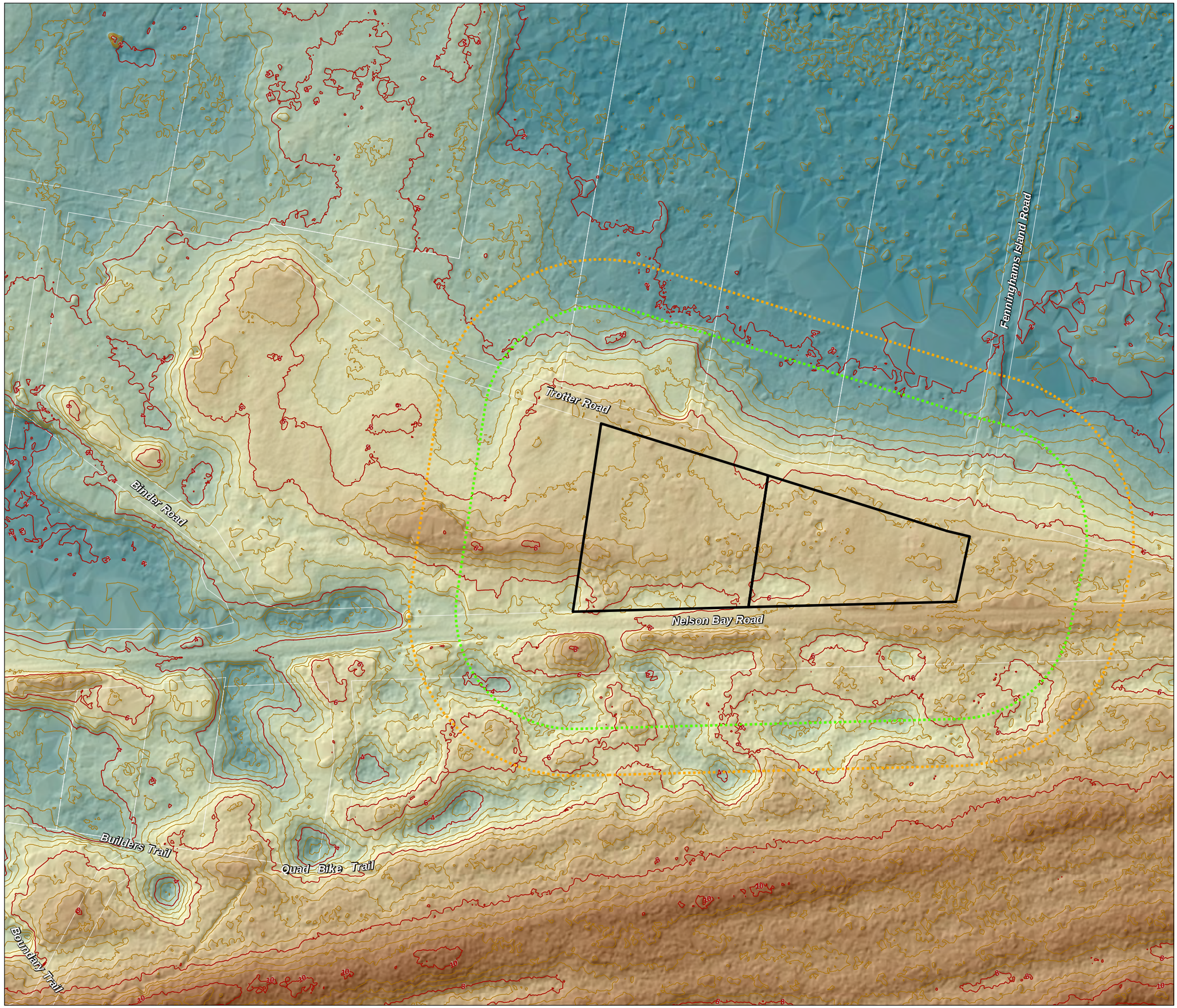
The final bushfire hazard assessment defining vegetation classifications and effective slope is shown in **Figure 14.**

Project: 4029 & 4045 Nelson Bay Road, Bobs Farm
Job No: 2280

Figure 12

Digital Elevation Model

BUSHFIRE PLANNING AUSTRALIA



- Subject Site
- 140m Buffer
- 100m Buffer
- Contour (2m)
- Contour (0.5m)

Value

- High : 11m
- Low : 1m

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2022
Surface analysis based on Port Stephens1 metre Resolution LiDAR © Department Finance, Services and Innovation 2012

N W E S

0 25 50 75 100 125 150
Meters

A3 Scale: 1:3,000

File:2280-BobsFarm-Fig4-DEM-221102 Date: 2/11/2022

The information shown on this plan may be insufficient for some types of design. GEOVIEW should be consulted as to the suitability of the information shown herein prior to the commencement of any works based on this plan.

This map is not guaranteed to be free from error or omission. GEOVIEW hereby disclaims liability for any act done or omission made on the basis of the information in this plan, and any consequences of such acts or omissions

GEOVIEW
GIS & mapping solutions for infrastructure, town planning & environmental management

Project: 4029 & 4045 Nelson Bay Road, Bobs Farm
Job No: 2280

Figure 13

Slope Analysis: LiDAR

BUSHFIRE PLANNING AUSTRALIA

Subject Site
140m Buffer
100m Buffer
Contour (2m)

Slope

0° - 5°
5° - 10°
10° - 15°
15° - 20°
>20°

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2022
Aerial photo: NearMap 08/07/2022
Surface analysis based on Port Stephens1 metre Resolution LiDAR © Department Finance, Services and Innovation 2012

N
W E
S

0 25 50 75 100 125 150
Meters

A3 Scale: 1:3,000

File:2280-BobsFarm-Fig5-SlopeLiDAR-221102 Date: 2/11/2022

The information shown on this plan may be insufficient for some types of design. GEOVIEW should be consulted as to the suitability of the information shown herein prior to the commencement of any works based on this plan.

This map is not guaranteed to be free from error or omission. GEOVIEW hereby disclaims liability for any act done or omission made on the basis of the information in this plan, and any consequences of such acts or omissions

GEOVIEW
GIS & mapping solutions for infrastructure, town planning & environmental management

4.5. Significant Environmental Features

A Streamlined Biodiversity Development Assessment Report (BDAR) has been prepared by AEP which resulted in a number of Ecosystem credits being required to offset the residue impact of the proposed development.

4.6. Threatened Species, populations or ecological communities

All bushfire mitigation measures; including APZs have considered the existing and potential biodiversity values to avoid impact where possible.

4.7. Aboriginal Objects

An Aboriginal Due Diligence Assessment has been prepared by McCardle Heritage which concludes that the site does not contain any sites or potential archaeological deposits (PADs) of Aboriginal heritage significance, and as a result an Aboriginal Heritage Impact Permit (AHIP) would not be required for the future development.

4.8. Results

All vegetation identified within the current Bush Fire Prone Land map was confirmed during the site inspection. The majority of vegetation within the site will be removed with the exception of a small portion of remnant vegetation in the eastern part of the site that is connected to an isolated patch of vegetation identified as part of a fauna movement corridor. An additional strip of vegetation 10m wide within the site will be retained along the northern boundary. The vegetation to be retained will be protected from future clearing and zoned C2 Environmental Conservation. The combined area of unmanaged vegetation is approximately 6,000m^2 which includes the vegetation within the road verges.

The primary hazard to the south is separated by the 50m wide dual lane Nelson Bay Road. Trotter Road and the managed curtilages surrounding the exiting dwellings separates the site from the Coastal Swamp Forest to the north.

The closest hazard, being the fauna corridor less than 1 hectare is considered a low threat, but cannot be excluded as a hazard as there are areas of Category 1 vegetation within 100m to the north and south. The hazard transitions west from a shrubby *forest* (Coastal Dune DSF) into a tall heath (Coastal Headland Heath).

The results of hazard assessment are detailed in **Table 5** and shown in **Figure 14**.

Table 5: Slope and Vegetation Assessment Results

Transect	Vegetation or Other Infrastructure	Vegetation Classification (PBP 2019)	Slope
T1 North-west	Trotter Road to the edge of a Forest vegetation	Excluded Low threat vegetation	1.0° Downslope
T2 North-west	Coastal Swamp Forest north of Trotter Road	*Forest* *(Coastal Swamp Forest)*	1.9° Downslope
T3 North	Trotter Road to northern rural property boundary	Excluded Low threat vegetation	2.5° Downslope
T4 East	Isolated vegetation located immediately to the east of the site (<1 hectare)	*Forest* *(Coastal Dune DSF)*	0.1° Downslope
T5 South-east	South-eastern site boundary to the primary bushfire hazard, separated by Nelson Bay Road	Excluded Low threat vegetation	1.6° Downslope
T6 South	Southern site boundary to the primary bushfire hazard, separated by Nelson Bay Road	Excluded Low threat vegetation	0.8° Downslope
T7 South	Undisturbed forest vegetation south of Nelson Bay Road, identified as the primary bushfire hazard	*Forest* *(Coastal Dune DSF)*	-0.8° Upslope
T8 South-west	Southern site boundary to the primary bushfire hazard, separated by Nelson Bay Road	Excluded Low threat vegetation	-0.4° Upslope
T9 South-west	Undisturbed forest vegetation south of Nelson Bay Road, identified as the primary bushfire hazard	*Forest* *(Coastal Dune DSF)*	-0.1° Upslope
T10 North	10m wide band of unmanaged tall heath spreading from Trotter Road reserve into site	*Tall Heath* *(Coastal Headland Heath*	0.1° Downslope

Project: 4029 & 4045 Nelson Bay Road, Bobs Farm
Job No: 2280

Figure 14

Slope & Vegetation Assessment

BUSHFIRE PLANNING AUSTRALIA

- Subject Site
- 140m Buffer
- 100m Buffer
- Contour (2m)
- Contour (0.5m)
- RL
- Downslope transect
- Upslope transect
- Approved and under construction Ingenia MHE

Vegetation Class

- Coastal Headland Heaths
- Coastal Dune Dry Sclerophyll Forest
- Coastal Swamp Forests
- Not native vegetation

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2022
Vegetation: BPA 2022
Aerial photo: NearMap 08/07/2022
Surface analysis based on Port Stephens1 metre Resolution LiDAR © Department Finance, Services and Innovation 2012

N W E S

0 25 50 75 100 125 150
Meters

A3 Scale: 1:3,000

File:2280-BobsFarm-Fig6-SlopeVeg-221104 Date: 4/11/2022

The information shown on this plan may be insufficient for some types of design. GEOVIEW should be consulted as to the suitability of the information shown herein prior to the commencement of any works based on this plan.

This map is not guaranteed to be free from error or omission. GEOVIEW hereby disclaims liability for any act done or omission made on the basis of the information in this plan, and any consequences of such acts or omissions

GEOVIEW
GIS & mapping solutions for infrastructure, town planning & environmental management

5. Bushfire Protection Measures

This BAR has adopted the methodology to determine the appropriate Bushfire Protection Measures (BPMs) detailed in PBP 2019. As part of the BAR, the recommended BPMs demonstrate the aims and objectives of PBP 2019 have been satisified; includinig the matters considered by the RFS necessary to protect persons, property and the environment from the danger that may arise from a bushfire.

- APZs
- Access
- Water Supply and Utilities
- Building Construction and Design
- Landscaping
- Emergency Management Arrangements

5.1. Asset Protection Zones

An APZ is an area surrounding a development that is managed to reduce the bushfire hazard to an acceptable level to mitigate the risk to life and property. The required width of the APZ varies with slope and the type of hazard. An APZ can consist of both an inner protection area (IPA) and an outer protection area (OPA). In this instance the entire APZ and the balance of the development site shall be managed as an IPA.

An APZ can include the following:

- Lawns;
- Discontinuous gardens;
- Swimming pools;
- Roads, driveways and managed verges;
- Unattached non-combustible garages with suitable separation from the dwelling;
- Open space / parkland; and
- Car parking.

The presence of a few shrubs or trees in the APZ is acceptable provided that they:

- Do not touch or overhang any buildings;
- Are well spread out and do not form a continuous canopy;
- Are not species that retain dead material or deposit excessive quantities of ground fuel in a short period or in a danger period; and
- Are located far enough away from any dwelling so that they will not ignite the dwelling by direct flame contact or radiant heat emission.

Woodpiles, wooden sheds, combustible material storage areas, large areas / quantities of garden mulch, stacked flammable building materials etc. are not recommended in the APZ.

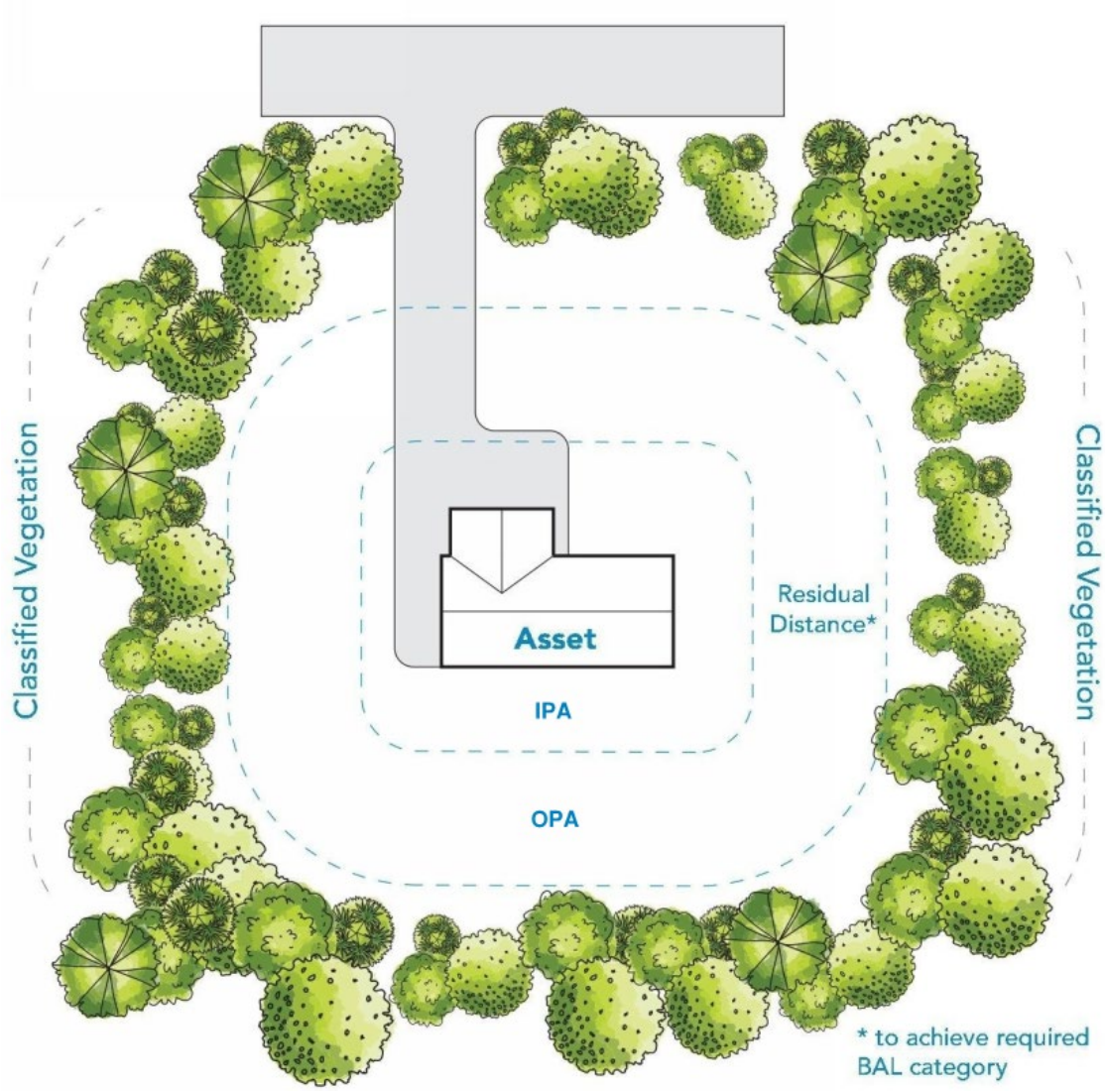


Figure 15: Asset Protection Zone – Inner & Outer Protection Areas

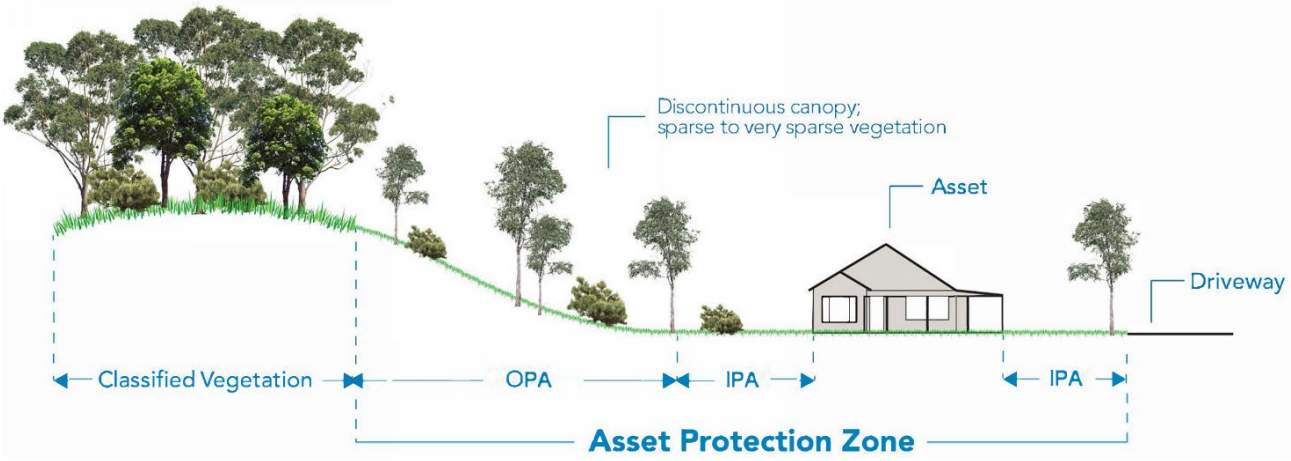


Figure 16: Asset Protection Zone profile

5.1.1. Special Fire Protection Purposes

Special Fire Protection Purpose (SFPP) developments mean the occupants of the proposed development may be more vulnerable to bush fire attack and therefore may require greater protection from such threats as well as assisted evacuation. SFPPs include schools, seniors housing, child care centres, hospitals and short-term tourist accommodation.

Section 6.8 of PBP 2019 provides protection measures for SFPP developments. In comparison to a standard residential development where radiant heat levels of no greater than 29kW/m^2 are acceptable, radiant heat levels of greater than 10kW/m^2 must not be experienced by on any part of the buildings. To achieve radiant heat levels of less than 10kW/m^2, APZs of 67m or greater are typically required (based on Table A1.12.1 of PBP 2019) for a *forest* vegetation formation.

Objectives for SFPP developments place emphasis on the space surrounding buildings (as defendable space and APZs) and less reliance on construction standards. SFPP developments are highly dependent on suitable emergency evacuation arrangements, which require greater separation from bush fire threats.

5.1.2. Determining the Appropriate Setbacks

To achieve compliance with the performance criteria for APZs (Table 6.3a), the Acceptable Solutions outlined in Table A1.12.1 of PBP 2019 may be adopted as a deemed-to-satisfy solution.

Alternatively, the appropriate APZ setback may be determined to achieve the Performance Criteria by adopting a performance-based solution. Based on the unique site characteristics identified by the BAR, the intensity of a bushfire event presented as the radiant heat exposure was calculated at several locations throughout the development site using the NBC Bushfire Attack Assessor V4.1. The nominated fuel loads for the respective vegetation classifications as published by the RFS in March 2019 have been used to determine the APZs and the effective slope obtained from the Digital Elevation Model (DEM) for each transect.

As the site lies within the Port Stephens Council LGA, it is assessed under a FDI rating of 100. The Detailed Method (Method 2) outlined in Australian Standard *AS3959-2018 Construction of buildings in bushfire prone areas* was used to calculate the potential level of radiant heat flux generated at the nominated locations (see transects T1-T9). To ensure the APZs achieve the intent of Section 6.3 of PBP 2019, the APZs have been determined to ensure all lots are able to accomomodate a dwelling (long-term occupation) that will not be exposed to radiant heat levels exceeding 29kW/m^2. The NBC Bushfire Attack Assessor report detailing the inputs used is contained in **Appendix D**.

5.1.2.1. Specific Residential-based SFPP: Manufactured Home Estates

Although the proposed development does not include the construction of any dwellings, each future dwelling shall be constructed in accordance with the relevant Bushfire Attack Level (BAL) identified in **Table 7**. The Approval to Operate shall include a BAL Contour Plan and require each dwelling to be constructed to the nominated BAL rating (maximum BAL-29). Furthermore, a suitably worded instrument(s) will be created pursuant to section 88B of the *Conveyancing Act 1917* clearly outlining the require BAL ratings for each dwelling. In this regard, each new dwelling will be sited to ensure radiant heat levels do not exceed 29kW/m^2.

Refer to **Table 6** and **Figure 18** for the required APZs.

Table 6: Required APZ setbacks

Transect	Vegetation Classification (PBP 2019)	Slope	APZ Table A1.12.1 (SFPP – short-term)	APZ Table A1.12.2 (Long-term residential)	APZ 29kW/m²	APZ Provided
T1 North-west	Excluded	1.0° Downslope	N/A	N/A	N/A	N/A
T2 North-west	*Forest (Coastal Swamp Forest)*	1.9° Downslope	79m	29m	28m	>40m
T3 North	Excluded	2.5° Downslope	N/A	N/A	N/A	N/A
T4 East	*Forest (Coastal Dune Dry Sclerophyll Forest)*	0.0° Level	67m	24m	24m	24m
T5 South-east	Excluded	1.6° Downslope	N/A	N/A	N/A	N/A
T6 South	Excluded	0.8° Downslope	N/A	N/A	N/A	N/A
T7 South	*Forest (Coastal Dune Dry Sclerophyll Forest)*	0.0° Level	67m	24m	24m	24m
T8 South-west	Excluded	0.0° Level	N/A	N/A	N/A	N/A
T9 South-west	*Forest (Coastal Dune Dry Sclerophyll Forest)*	0.0° Level	67m	24m	24m	24m
T10	*Tall Heath (Coastal Headland Heaths)*	0.0° Level	50m	16m	16m	16m

5.3. Landscaping and Vegetation Management

In APZs and IPAs, the design and management of the landscaped areas in the vicinity of buildings have the potential to improve the chances of survival of people and buildings. Reduction of fuel does not require the removal of all vegetation. Trees and plants can provide some bushfire protection from strong winds, intense heat and flying embers (by filtering embers) and changing wind patterns.

Generally landscaping in and around a bushfire hazard should consider the following:

- Priority given to retaining species that have a low flammability;
- Priority given to retaining species which do not drop much litter in the bushfire season and which do not drop litter that persists as ground fuel in the bush fire season;
- Priority given to retaining smooth barked species over stringy bark; and
- Create discontinuous or gaps in the vegetation to slow down or break the progress of fire towards the dwellings.

Landscaping within APZs and IPAs should give due regard to fire retardant plants and ensure that fuel loads do not accumulate as a result of the selected plant varieties.

The principles of landscaping for bushfire protection aim to:

- Prevent flame impingement on dwellings;
- Provide a defendable space for property protection;
- Reduce fire spread;
- Deflect and filter embers;
- Provide shelter from radiant heat; and
- Reduce wind speed.

Plants that are less flammable have the following features;

- High moisture content;
- High levels of salt;
- Low volatile oil content of leaves;
- Smooth barks without ‘ribbons’ hanging from branches or trunks; and
- Dense crown and elevated branches.

Avoiding understorey planting and regular trimming of the lower limbs of trees also assists in reducing fire penetration into the canopy. Rainforest species such as Syzygium and figs are preferred to species with high fine fuel and/or oil content.

Trees with loose, fibrous or stringy bark should be avoided. These trees can easily ignite and encourage ground fire to spread up to, and then through the crown of trees.

Consideration should be given to vegetation fuel loads present on site with particular attention to APZs.

Careful thought must be given to the type and physical location of any proposed site landscaping. Inappropriately selected and positioned vegetation has the potential to ‘replace’ any previously removed fuel load.

Bearing in mind the desired aesthetic and environment sought by site landscaping, some basic principles have been recommended to help minimise the chance of such works contributing to the potential hazard on site.

Whilst it is recognised that fire-retardant plant species are not always the most aesthetically pleasing choice for site landscaping, the need for adequate protection of life and property requires that a suitable balance between visual and safety concerns be considered.

It is reiterated again that it is essential that any landscaped areas and surrounds are subject to ongoing fuel management and reduction to ensure that fine fuels do not build up.

5.4. Construction Standards - Bushfire Attack Level

All future buildings, including single dwellings (Class 1a buildings), constructed within the site are recommended to satisfy the Performance Requirements of the National Construction Code: Building Code of Australia (BCA).

Accordingly, all forthcoming habitable buildings shall satisfy the requirements of Part 3.7.4 of the BCA. The *Deemed-to-Satisfy* (DTS) provision of the BCA can only be achieved if dwellings in bushfire prone areas are constructed in accordance with Australian Standard *AS3959-2018 Construction of buildings in bushfire prone areas*. Alternatively, the DTS provisions can also be achieved if the habitable building is constructed in accordance with the NASH Standard 'Steel Framed Construction in Bushfire Areas'.

Building design and the materials used for construction of future dwellings should be chosen based on the information contained within AS3959-2018, and accordingly the designer/architect should be made aware of this recommendation.

The determinations of the appropriate bushfire attack level (BAL) is based on the maximum potential radiant heat exposure. BALs are based upon parameters such as weather modelling, fire-line intensity, flame length calculations, as well as vegetation and fuel load analysis. The determination of the BAL is derived by assessing the:

- Relevant FDI = *100*;
- Flame temperature = *1090K/1200K*;
- Slope = *level*;
- Vegetation classification = *forest*; and
- Building location.

The Detailed Method (Method 2) outlined in AS3959-2018 was used to calculate the Bushfire Attack Level (BAL) for the development. The NBC Bushfire Attack Assessor V4.1 was used to model the bushfire radiant heat exposure which determined the applicable BAL.

The greatest bushfire hazard was found to the south of the site being a *forest*.

The objective of the concept development layout is to demonstrate all future lots will be exposed to BAL-29 or less. It is acknowledged that some sites indicated on the concept layout are located within the prescribed APZ per Table A1.12.2; however, the layout proposed is only a concept at this stage and can be adjusted following a more detailed assessment as part of the DA. The site is; however, suitable for the intended use and proposed rezoning to allow for the extension of the Sunrise caravan park.

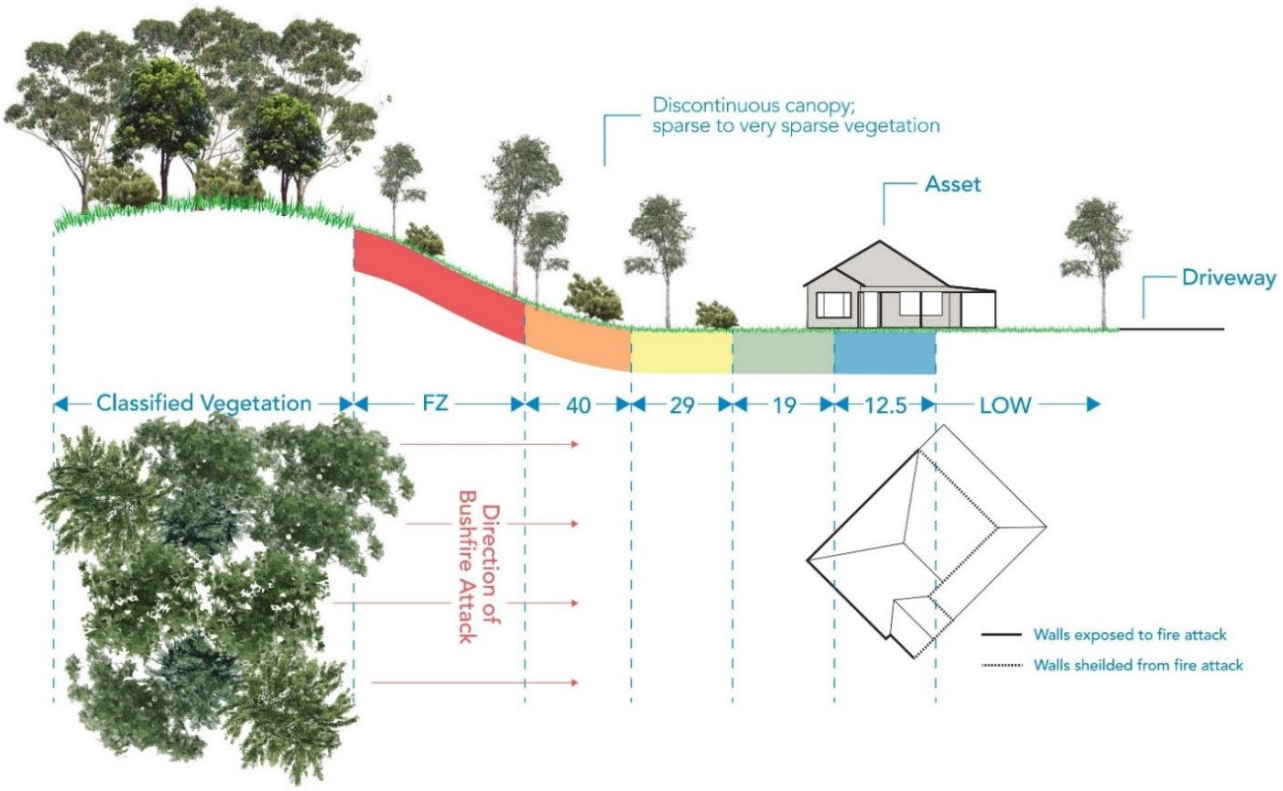


Figure 17: BAL example

Table 7: Bushfire Attack Levels

Transect	Vegetation Classification (PBP 2019)	Slope	APZ Provided	Distance from Hazard	Bushfire Attack Level (BAL)
T1, T3, T5, T6 & T8	Excluded	Downslope	N/A	N/A	BAL-LOW
T2 (North-west)	*Forest (Coastal Swamp Forest)*	1.9° Downslope	29m	0m-<22m	BAL-FZ
				22m-<29m	BAL-40
				29m-<40m	**BAL-29**
				40m-<54m	BAL-19
				54m-<100m	BAL-12.5
				67m	10kW/m^2
T4 (East)	*Forest (Coastal Dune Dry Sclerophyll Forest)*	0.0° Level	24m	0m-<18m	BAL-FZ
				18m-<24m	BAL-40
				24m-<33m	**BAL-29**
				33m-<45m	BAL-19
				45m-<100m	BAL-12.5
				67m	10kW/m^2
T7 (South)	*Forest (Coastal Dune Dry Sclerophyll Forest)*	0.0° Level	24m	0m-<18m	BAL-FZ
				18m-<24m	BAL-40
				24m-<33m	**BAL-29**
				33m-<45m	BAL-19
				45m-<100m	BAL-12.5
				67m	10kW/m^2
T9 (South-west)	*Forest (Coastal Dune Dry Sclerophyll Forest)*	0.0° Level	24m	0m-<18m	BAL-FZ
				18m-<24m	BAL-40
				24m-<33m	**BAL-29**
				33m-<45m	BAL-19
				45m-<100m	BAL-12.5
				67m	10kW/m^2
T10 (North)	Tall Heath (Coastal Headland Heaths)	0.0° Level	16m	0m-<12m	BAL-FZ
				12m-<16m	BAL-40
				16m-<23m	**BAL-29**
				23m-<32m	BAL-19
				32m-<100m	BAL-12.5
				50m	10kW/m^2



Project: 4029 & 4045 Nelson Bay Road, Bobs Farm
Job No: 2280

Figure 18

Asset Protection Zone

BUSHFIRE PLANNING AUSTRALIA

- Subject Site
- 140m Buffer
- 100m Buffer
- Approved and under construction Ingenia MHE

Vegetation Class

- Coastal Headland Heaths
- Coastal Dune Dry Sclerophyll Forest
- Coastal Swamp Forests
- Not native vegetation
- 10kW/m2
- Asset Protection Zone

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2022
Vegetation: BPA 2022
Aerial photo: NearMap 08/07/2022
Surface analysis based on Port Stephens1 metre Resolution LiDAR © Department Finance, Services and Innovation 2012

N W E S

0 25 50 75 100 125 150
Meters

A3 Scale: 1:3,000

File:2280-BobsFarm-Fig11-APZ-221104 Date: 4/11/2022

The information shown on this plan may be insufficient for some types of design. GEOVIEW should be consulted as to the suitability of the information shown herein prior to the commencement of any works based on this plan.

This map is not guaranteed to be free from error or omission. GEOVIEW hereby disclaims liability for any act done or omission made on the basis of the information in this plan, and any consequences of such acts or omissions

GEOVIEW
GIS & mapping solutions for infrastructure, town planning & environmental management

5.5. Access

Immediate access to the site will be provided through the existing Sunrise Village. An additional (third) emergency egress will be provided from the subject site to Trotter Road; north of the site.

All future internal roads are able to satisfy PBP 2019, and as indicated in Plate 2, multiple visitor parking spaces will be provided outside of the primary carriageway. It is noted that all dwellings within the existing Sunrise Village and any future development are provided within a minimum of 1 off-street parking space (internal lock-up garage). Furthermore, residents have access to a community base and the local public bus service.

5.6. Services - water, electricity and gas

5.6.1. Water

Fire hydrant spacing, sizing and pressure should comply with AS 2419.1 – 2005. Hydrants are not to be located within any road carriageway.

All lots within the proposed development will be connected to the internal reticulated water supply.

5.6.2. Electricity

All new electricity services are located underground.

5.6.3. Gas

Any reticulated or bottled gas should be installed and maintained according to the requirements of the relevant authorities and AS 159-2002. It is expected that the location of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.

6. Conclusion and Recommendations

Bushfire Planning Australia has been engaged by Hometown Australia Communities Pty Ltd to undertake a Strategic Bushfire Study to support a Planning Proposal that seeks to amend the Port Stephens Local Environmental Plan 2013 to permit *caravan parks* on the subject site.

The existing Sunrise Village currently occupies Lot 51 DP1175028 and has development consent to operate 193 long-term sites. The proposed development site, Lot 3622 DP622485 and Lot 2 DP622229, are the adjoining sites to the east and occupied by a rural residential property. The proposed development includes the addition of 62 manufactured home dwelling sites and ancillary community facilities and services.

This BAR found the site was exposed to a medium to high bushfire hazard located primarily to the south of the site separated by a 40m wide divided dual carriageway - Nelson Bay Road. A small, isolated patch of forest vegetation will be retained at the eastern end of the subject site. The existing vegetation combines with a discontinuous area of vegetation retained as a fauna movement corridor to total a combined area of approximately 6,000m^2 of unmanaged forest vegetation including existing vegetation within the road reserve (Nelson Bay Road and Trotters Road).

There is an ecotone between disturbed and remnant vegetation located along the northern and eastern boundaries of Lot 2 DP622229 which will be retained and zoned C2 as part of the Planning Proposal.

This Bushfire Assessment Report has been prepared in accordance with the submission requirements detailed in Appendix 2 of PBP 2019 and has demonstrated the proposed expansion satisfies the Aims and Objectives of PBP 2019, including the Specific Objectives for SFPP developments.

The following recommendations have been designed to enable the proposed development to achieve Performance Criteria for SFPP developments detailed in Section 6.8 of PBP 2019:

1. The areas within the site identified as an Asset Protection Zone in **Figure 18** shall be managed as an Inner Protection Area (IPA) as outlined within Appendix 4 of PBP 2019 and the RFS document *Standards for asset protection zones*;
2. All land within the site; with the exception of the land proposed to be zoned C2 Environmental Conservation, shall be maintained as an IPA as outlined in Appendix 4 of PBP 2019;
3. All future buildings to be constructed on the proposed sites shall have due regard to the specific considerations given in the National Construction Code: Building Code of Australia (BCA) which makes specific reference to Australian Standard AS3959-2018 Construction of buildings in bushfire prone areas (AS3959-2018) and the NASH Standard Steel Framed Construction in Bushfire Prone Areas;
4. Where the new dwellings are not required to be comply with the BCA, each dwelling shall be constructed in accordance with the relevant Bushfire Attack Level (BAL). An Approval to Operate (issued under Section 68 of the Local Government Act 1993) shall include a BAL Contour Plan and require each new dwelling to be constructed to the nominated BAL rating. Furthermore, a suitably worded instrument(s) must be created pursuant to section 88 of the Conveyancing Act 1917 clearly outlining the require BAL ratings for each dwelling;
5. All new sites are to be connected to a reliable water supply network and that suitable fire hydrants are located throughout the development site that are clearly marked and provided for the purposes of bushfire protection. Fire hydrant spacing, sizing and pressure shall comply with AS2419.1 2005 and section 6.8.3 of PBP 2019;
6. The internal access road is to be designed and constructed in accordance with section 6.8.2 of PBP 2019 **or** as shown in the plans contained in **Appendix A**;

7. Consideration should be given to landscaping and fuel loads on site to decrease potential fire hazards on site; and
8. A Bushfire Emergency Management and Evacuation Plan (BEMEP) shall be prepared that is consistent with the RFS Guidelines 'Development Planning – A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan December 2014'.

While it was revealed that some dwelling sites are located within the recommended APZ; the proposed layout is only a concept at this stage and can be adjusted following a more detailed assessment as part of a subsequent development application.

In conclusion the site was found to be appropriate for the intended land use that will permit the extension of the Sunrise caravan park. Development of the subject site as a caravan park occupied by long-term residents would not expose residents to an unacceptable bushfire risk.

This assessment has been made based on the bushfire hazards observed in and around the site at the time of inspection and production (November 2022).

Should the above recommendations be implemented, the future caravan park will result in a better bushfire outcome as the existing bushfire risk should be suitably mitigated to offer an acceptable level of protection to life and property for those persons and assets occupying the site but they do not and cannot guarantee that the area will not be affected by bushfire at some time.

7. References

- NSW Rural Fire Service (2005). Standards for Asset Protection Zones. NSW Rural Fire Service.
- NSW Rural Fire Service (2019). Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.
- Ramsay, GC and Dawkins, D (1993). Building in Bushfire-prone Areas – Information and Advice. CSIRO and Standards Australia.
- Rural Fires and Environmental Assessment Legislation Amendment Act 2002.
- Standards Australia (2018). AS 3959 – 2018: Construction of Buildings in Bushfire-prone Areas.

Appendix A: Indicative Layout of Expansion of Sunrise Estate



TOTAL NO.OF EXISTING SITES	**193 SITES**
PROPOSED TOTAL NO.OF SITES IN EXPANSION AREA LOT 3622 DP 622485 LOT 2 DP622229	**62 SITES** 43 SITES 19 SITES
TOTAL NO.OF EXISTING & PROPOSED SITES	**255 SITES**

ISSUE	DATE	REVISION
E	27/10/22	AMENDED ISSUE
D	26/10/22	AMENDED ISSUE
C	17/02/21	AMENDED ISSUE
B	15/02/21	AMENDED ISSUE
A	19/01/21	DRAFT ISSUE

HOMETOWN AUSTRALIA COMMUNITIES

PROJECT SUNRISE LIFESTYLE RESORT

ADDRESS 4011 NELSON BAY ROAD, BOBS FARM, NSW 2316

SUNRISE PORT STEPHENS

DRAWING TITLE CONCEPT PLAN FOR LOT 3622 DP 622485 & LOT 2 DP622229

N

JOB NO.

DATE	SCALE	DRAWN	DRAWING NO.	ISSUE
01/2021	1:1000 @ A3	HTA	04.5	E

Appendix B: Planning for Bushfire Protection 2019 Compliance Tables

Table 1: Aims and Objectives of Planning for Bushfire Protection 2019

Objectives	Satisfied	Comment
➢ Afford buildings and their occupants protection from exposure to a bush fire	✓	APZs along the interface with the vegetation within the site is provided by a combination of roads and managed land that separate the sites from the primary threat and adequate setbacks provide defendable space from areas of reduced vegetation.
➢ Provide for a defendable space to be located around buildings	✓	Where required, each site is provided with an APZ that accommodates a building footprint that will not be exposed to radiant heat levels exceeding 29kW/m^2. The APZ provides a defendable space that is capable of providing an environment in which a person can undertake property protection after the passage of bushfire with some level of safety. An APZ will also be provided to ensure all existing dwellings within the site; including along the northern boundary, have sufficient defendable space.
➢ Provide appropriate separation between a hazard and buildings, which, in combination with other measures, prevent the likely fire spread to buildings	✓	The APZs have been calculated to provide a suitable buffer between any future dwellings and the bushfire hazard; commensurate with the vegetation formation and slope.
➢ Ensure that safe operational access and egress for emergency service personnel and residents is available	✓	All future residents have direct access to multiple internal roads that lead away from the development site in the opposite direction to the bushfire hazard. Due to the proposed road widths and road layout within the development site, emergency service personnel will continue to have unobstructed access to the site whilst residents are evacuating in the opposite direction.
➢ Provide for ongoing management and maintenance of BPMs	✓	All APZs are contained with common property or within land owned by operator and will be maintained by the operator of the caravan park in accordance with Appendix 4 of the PBP 2019 and Standards for APZs.
➢ Ensure that utility services are adequate to meet the needs of firefighters	✓	The development includes all essential utility services to meet the needs of firefighters; including a reliable water supply.

Table 2: Performance Criteria and Acceptable Solutions for SFPP Developments (Chapter 6 PBP 2019)

Intent of Measure	Performance Criteria	Acceptable Solution	Complies	Comment
6.8.1 ASSET PROTECTION ZONES Table 6.8a To provide suitable building design, construction and sufficient space to ensure that radiant heat levels at buildings does not exceed critical limits for firefighters and other emergency services personnel undertaking operations, including supporting or evacuating occupants.	Radiant heat levels of greater than 10kW/m^2 (1200K) are not experienced at any part of the building.	The building is provided with an APZ in accordance with Table A1.12.1. in Appendix 1.	✓	The proposed expansion to the existing caravan park has been designed to ensure APZs are provided to achieve the Acceptable Solutions for residential infill development.
	APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is negated.	The APZ is not located on lands with a slope exceeding 18°	✓	All APZs are located on land with slopes 5° or less.
	APZs are managed and maintained to prevent the spread of a fire towards the building. The APZ is provided in perpetuity.	The APZ is managed in accordance with the requirements of Appendix 4 of PBP 2019 and is wholly within the boundaries of the development site.	✓	The APZ will be required to be maintained in accordance with Appendix 4 of the PBP 2019 and Standards for APZs by the operator of the caravan park.
		Mechanisms are in place to provide for the maintenance of the APZ over the life of the development.	✓	
		Other structures located within the APZ need to be located further than 6m from the refuge building.	✓	Any ancillary structures will be greater than 6m from the primary structure.
	VARIATIONS: Manufactured Home Estates	An APZ in accordance with Table A1.12.1 in Appendix 1 of this document is provided to all new dwellings; or	✓	The site layout has been designed to ensure all sites are able to be provided with sufficient area to provide a dwelling exposed to 29kW/m^2 or less. Whilst the proposed development does not seek consent for the construction of any new dwellings, the Community Management Statement shall require each dwelling to be constructed to the nominated BAL rating. Furthermore, a suitably worded instrument(s) must be created pursuant to section 88 of the Conveyancing Act 1917 clearly outlining the require BAL ratings for each dwelling. It is not considered reasonable for ALL new dwellings to be construction in accordance with BAL-29 (including dwellings >100m from any hazard). In this regard the dwellings have been assessed as a typical residential property.
		An APZ in accordance with Table A1.12.2 in Appendix 1 of this document is provided where it is demonstrated that all new dwellings will be constructed in accordance with BAL-29.		

Intent of Measure	Performance Criteria	Acceptable Solution	Complies	Comment
LANDSCAPING	Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	Landscaping is in accordance with APZ standards (see Appendix 4). Fencing is constructed in accordance with section 7.6.	✓	All new landscaping will be designed and planted in accordance with the guidelines relevant at the time of planting.
CONSTRUCTION	The proposed building can withstand bush fire attack in the form of wind, smoke, embers, radiant heat and flame contact.	A construction level of BAL-12.5 under AS3959 or NASH and Table 6.8a is applied	✓	Whilst the proposed development does not seek consent for the construction of any new dwellings, the Community Management Statement shall include the BAL Contour Plan (**Figure 18**) and require each dwelling to be constructed to the nominated BAL rating. Furthermore, a suitably worded instrument(s) must be created pursuant to section 88 of the Conveyancing Act 1917 clearly outlining the require BAL ratings for each dwelling. It is not considered reasonable for ALL new dwellings to be construction in accordance with BAL-29 (including dwellings >100m from any hazard). In this regard the dwellings have been assessed as a typical residential property.
	VARIATIONS: Manufactured Home Estates	Where an APZ in accordance with Table A1.12.1 in Appendix 1 of this document the construction standards for BAL-12.5 shall apply; or		
		Where an APZ in accordance with Table A1.12.2 in Appendix 1 of this document the construction standards for BAL-29 shall apply.		
6.8.2 **ACCESS** **Table 6.8b** To provide safe operational access for emergency services personnel in suppressing a bush fire, while residents are accessing or egressing an area. **FIREFIGHTING VEHICLES**	Firefighting vehicles are provided with safe all weather access to structures and hazard vegetation.	SFPP access roads are two-wheel drive, all-weather roads	✓	All roads are all-weather, sealed roads allowing safe and direct access for fire fighting vehicles to all lots.
		Access is provided to all structures and hazard vegetation.	✓	
		Traffic management devices are constructed to not prohibit access by emergency services vehicles.	✓	
		Access roads must provide suitable turning areas in accordance with Appendix 3.	✓	
ACCESS ROAD CAPACITY	The capacity of access roads is adequate for firefighting vehicles.	The capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly indicate load rating.	✓	All new roads will have sufficient capacity to carry fully loaded fire fighting vehicles.
ACCESS TO WATER	There is appropriate access to water supply.	Hydrants ae located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression.	✓	The reticulated water supply will be extended into the expanded caravan park.

Intent of Measure	Performance Criteria	Acceptable Solution	Complies	Comment
		Hydrants are provided in accordance with AS2419.1:2005	✓	
		There is suitable access for Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	✓	
PERIMETER ROADS	Perimeter access roads are designed to allow safe access and egress for medium rigid firefighting vehicles while occupants are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	There are two-way sealed roads.	✓	The proposed internal road network provides perimeter roads and a secondary egress to Trotter Road.
		8m carriageway width kerb to kerb.	✓	
		Hydrants are to be located clear of parking areas.	✓	
		There are through roads, and these are linked to the internal road system at an interval of no greater than 500m.	✓	
		Curves of roads have a minimum inner radius of 6m.	✓	
		The maximum grade road is 15° and average grade is 10°.	✓	
		The road crossfall does not exceed 3°.	✓	
		A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches; and	✓	
NON-PERIMETER ROADS	Non-perimeter access roads are designed to allow safe access and egress for medium rigid firefighting vehicles while occupants are evacuating.	Minimum 5.5m width kerb to kerb.	✓	The proposed internal roads that may be considered non-perimeter roads as they do not adjoin a property boundary (perimeter) provide safe circulation throughout the caravan park offering multiple egress routes from every site.
		Parking is provided outside of the carriageway.	✓	
		Hydrants are to be located clear of parking areas.	✓	
		There are through roads, and these are linked to the internal road system at an interval of no greater than 500m.	✓	
		Curves of roads have a minimum inner radius of 6m.	✓	
		The maximum grade road is 15° and average grade is 10°.	✓	
		The road crossfall does not exceed 3°.	✓	

Intent of Measure	Performance Criteria	Acceptable Solution	Complies	Comment
		A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches; and	✓	
6.8.3 SERVICES Table 6.8c To provide adequate services for water for the protection of buildings during and after the passage of a bushfire, and not to locate gas and electricity so as not to contribute to the risk of fire to a building. **WATER**	A water supply is provided for firefighting purposes	Reticulated water is to be provided to the development, where available	✓	A reticulated water supply is provided.
		A static water supply is provided where no reticulated water is available	**N/A**	
	Water supplies are located at regular intervals The water supply is accessible and reliable for firefighting operations	Fire hydrant spacing, design and sizing comply with AS2419.1:2005;	✓	A series of fire hydrants will be located throughout the caravan park.
		Hydrants are not located within any road carriageway;	✓	
		Reticulated water supply to SFPPs uses a ring main system for areas with perimeter roads.	✓	A new water supply ring main will be provided throughout the new component of the caravan park.
	Flows and pressures are appropriate	Fire hydrant flows and pressures comply with AS2419.1:2005.	✓	
	The integrity of the water supply is maintained	All above ground water service pipes are metal, including and up to any taps.	**N/A**	
ELECTRICITY	Location of electricity services limits the possibility of ignition of surrounding bushland or the fabric of buildings.	Where practicable, electrical transmission lines are underground.	✓	All transmission lines will be located underground.
		Where overhead electrical transmission lines are proposed as follows: - lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas; and - no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 Guideline for	**N/A**	

Intent of Measure	Performance Criteria	Acceptable Solution	Complies	Comment
		Managing Vegetation Near Power Lines		
GAS	Location of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	Reticulated or bottled gas is installed and maintained in accordance with AS 1596:2014 and the requirements of relevant authorities, metal piping is to be used.	✓ **Able to comply**	
		All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side;	✓	All tanked gas stored on site will be sited and secured with appropriate shielded from the bushfire hazard.
		Connections to and from gas cylinders are metal:	✓	
		Polymer-sheathed flexible gas supply lines are not used; and	✓	
		Above-ground gas service pipes are metal, including and up to any outlets.	✓	
6.8.4 EMERGENCY MANAGEMENT PLANNING **Table 6.8d** To provide suitable emergency and evacuation arrangements for occupants of SFPP developments	A bush fire emergency and evacuation management plan is prepared.	Bush fire emergency management and evacuation plan is prepared consistent with the: ❑ the NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan; and ❑ AS3745:2010 Planning for emergencies in facilities.	✓ **Able to comply**	A Bushfire Management Plan is recommended to be prepared for the caravan park.
		The emergency and evacuation management plan should include a mechanism for the early relocation of occupants.	✓ **Able to comply**	
	Appropriate and adequate management arrangements are established for consultation and implementation of the bush fire emergency and evacuation management plan.	An Emergency Planning Committee is established to consult with residents and staff in developing and implementing an Emergency Procedures Manual.	✓ **Able to comply**	Where required, consultation with staff and residents will be undertaken during the preparation of the Bushfire Management Plan.
		Detailed plans of all emergency assembly areas including 'on-site' and 'off-site' arrangements as started in AS3745 are clearly displayed, and an annual (as a minimum) trial	✓ **Able to comply**	

Intent of Measure	Performance Criteria	Acceptable Solution	Complies	Comment
		emergency evacuation is conducted.		

Appendix C: AHIMS Report

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : 2280 Bobs Farm

Client Service ID : 729416

Katrina Greville

21 Costata Crescent
Adamstown New South Wales 2289

Attention: Katrina Greville

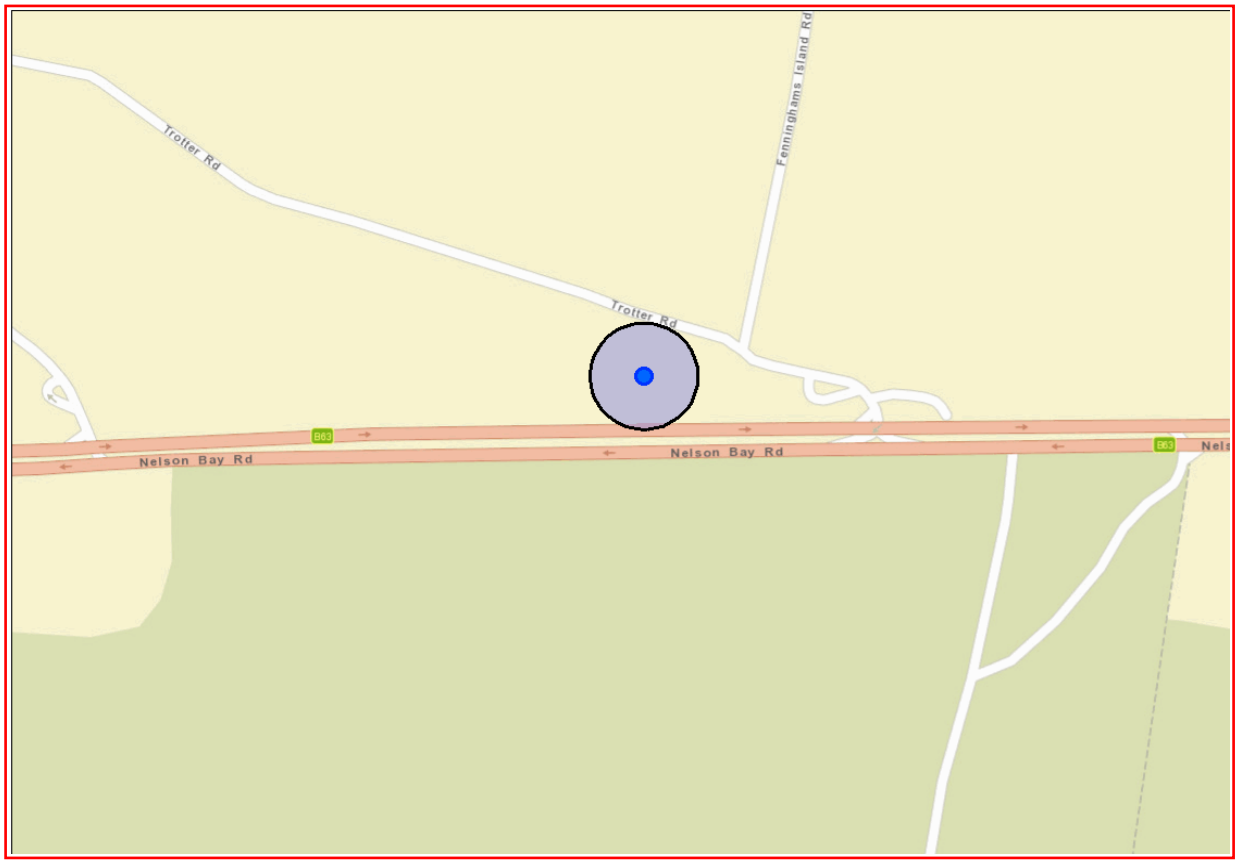
Email: klmukevski@bigpond.com

Date: 03 November 2022

Dear Sir or Madam:

AHIMS Web Service search for the following area at Address : 4045 NELSON BAY ROAD BOBS FARM 2316 with a Buffer of 50 meters, conducted by Katrina Greville on 03 November 2022.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

Appendix D: NBC Bushfire Attack Assessor V4.1 Report

NBC Bushfire Attack Assessment Report V4.1

AS3959 (2018) Appendix B - Detailed Method 2

Print Date: 3/11/2022 **Assessment Date:** 2/11/2022

Site Street Address: 2280 4029 & 4045 Nelson Bay Road, Bobs Farm

Assessor: Stuart Greville; Bushfire Planning Australia

Local Government Area: Port Stephens **Alpine Area:** No

Equations Used

Transmissivity: Fuss and Hammins, 2002
Flame Length: RFS PBP, 2001/Vesta/Catchpole
Rate of Fire Spread: Noble et al., 1980
Radiant Heat: Drysdale, 1985; Sullivan et al., 2003; Tan et al., 2005
Peak Elevation of Receiver: Tan et al., 2005
Peak Flame Angle: Tan et al., 2005

Run Description: Forest - Acceptable Solutions

Vegetation Information

Vegetation Type: Forest (including Coastal Swamp Forest)

Vegetation Group: Forest and Woodland

Vegetation Slope: 0 Degrees **Vegetation Slope Type:** Downslope

Surface Fuel Load(t/ha): 22 **Overall Fuel Load(t/ha):** 36.1

Vegetation Height(m): 2 Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees **Site Slope Type:** Downslope

Elevation of Receiver(m): Default **APZ/Separation(m):** 24

Fire Inputs

Veg./Flame Width(m): 100 **Flame Temp(K):** 1090

Calculation Parameters

Flame Emissivity: 95 **Relative Humidity(%):** 25

Heat of Combustion(kJ/kg 18600 **Ambient Temp(K):** 308

Moisture Factor: 5 **FDI:** 100

Program Outputs

Level of Construction: BAL 29 **Peak Elevation of Receiver(m):** 9.4

Radiant Heat(kW/m2): 29 **Flame Angle (degrees):** 61

Flame Length(m): 21.49 **Maximum View Factor:** 0.456

Rate Of Spread (km/h): 2.64 **Inner Protection Area(m):** 0

Transmissivity: 0.837 **Outer Protection Area(m):** 0

Fire Intensity(kW/m): 49240

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	18	23	33	43	67	6

Run Description:	North - Performance Solution		
Vegetation Information			
Vegetation Type:	Coastal Swamp Forests		
Vegetation Group:	Forested Wetlands		
Vegetation Slope:	0 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	22.6	**Overall Fuel Load(t/ha):**	34.1
Vegetation Height(m):	1.4	Only Applicable to Shrub/Scrub and Vesta	
Site Information			
Site Slope:	0 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m):	Default	**APZ/Separation(m):**	24
Fire Inputs			
Veg./Flame Width(m):	100	**Flame Temp(K):**	1090
Calculation Parameters			
Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	100
Program Outputs			
Level of Construction:	BAL 29	**Peak Elevation of Receiver(m):**	9.5
Radiant Heat(kW/m2):	28.1	**Flame Angle (degrees):**	61
Flame Length(m):	21.72	**Maximum View Factor:**	0.443
Rate Of Spread (km/h):	2.71	**Inner Protection Area(m):**	12
Transmissivity:	0.835	**Outer Protection Area(m):**	12
Fire Intensity(kW/m):	47781		

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	18	23	33	45	67	6

Run Description:	South - Performance Solution

Vegetation Information

Vegetation Type:	Coastal Dune DSF		
Vegetation Group:	Dry Sclerophyll Forests (Shrubby)		
Vegetation Slope:	0 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	20.5	**Overall Fuel Load(t/ha):**	31.1
Vegetation Height(m):	2	Only Applicable to Shrub/Scrub and Vesta	

Site Information

Site Slope:	0 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m):	Default	**APZ/Separation(m):**	22

Fire Inputs

Veg./Flame Width(m):	100	**Flame Temp(K):**	1090

Calculation Parameters

Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	100

Program Outputs

Level of Construction:	BAL 29	**Peak Elevation of Receiver(m):**	8.62
Radiant Heat(kW/m2):	29	**Flame Angle (degrees):**	61
Flame Length(m):	19.72	**Maximum View Factor:**	0.453
Rate Of Spread (km/h):	2.46	**Inner Protection Area(m):**	0
Transmissivity:	0.841	**Outer Protection Area(m):**	0
Fire Intensity(kW/m):	39528		

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	16	22	40	42	63	6

Attachment 5 – Traffic and Parking Assessment



TRAFFIC AND PARKING ASSESSMENT

EXTENSION TO CARAVAN PARK LIFESTYLE VILLAGE
SUNRISE VILLAGE

LOT 3622 DP 622485 AND LOT 2 DP 622229
4029 & 4045 NELSON BAY ROAD, BOBS FARM

PREPARED FOR: HOMETOWN (AUSTRALIA) PTY LTD

NOVEMBER 2021

REF:21/196

TRAFFIC AND PARKING ASSESSMENT
EXTENSION TO EXISTING LIFESTYLE VILLAGE
SUNRISE VILLAGE

HOMETOWN (AUSTRALIA) PTY LTD

LOT 3622 DP 622485 AND LOT 2 DP 622229
4029 & 4045 NELSON BAY ROAD, BOBS FARM

Intersect Traffic Pty Ltd (ABN: 43 112 606 952)

Address:
16 Mount Harris Drive Maitland Vale
PO Box 268
East Maitland NSW 2323

Contact:
(Mob) 0423 324 188
Email: jeff@intersecttraffic.com.au

QUALITY ASSURANCE

This document has been prepared, checked and released in accordance with the Quality Control Standards established by Intersect Traffic Pty Ltd.

Issue	Date	Description	By
A	19/11/21	Draft	JG
B	21/11/21	Edit	JG
C	22/11/21	Final Proof / Planner Amendments	JG
D	22/11/21	Approved	JG

Copyright © Intersect Traffic Pty Ltd

This document has been authorised by



Date 22nd November 2021

Disclaimer

This report has been prepared based on the information supplied by the client and investigation undertaken by Intersect Traffic Pty Ltd & other consultants. Recommendations are based on Intersect Traffic's professional judgement only and whilst every effort has been taken to provide accurate advice, Council and any other regulatory authorities may not concur with the recommendations expressed within this report. This document and the information are solely for the use of the authorised recipient and this document may not be used, copied or reproduced in whole or part for any purpose other than that for which it was supplied by Intersect Traffic Pty Ltd. Intersect Traffic makes no representation, undertakes no duty and accepts no responsibility to any third party who may use or rely upon this document or the information.

Confidentiality Statement

All information, concepts, ideas, strategies, commercial data and all other information whatsoever contained within this document as well as any and all ideas and concepts described during the presentation are provided on a commercial in confidence basis and remain the intellectual property and Copyright of Intersect Traffic Pty Ltd and affiliated entities.

CONTENTS

1. INTRODUCTION 1
2. SITE DESCRIPTION 2
3. EXISTING ROAD NETWORK 4
   - 3.1 NELSON BAY ROAD 4
   - 3.2 TROTTER ROAD 4
   - 3.2 BINDER ROAD 5
4. ROAD NETWORK IMPROVEMENTS 6
5. TRAFFIC VOLUMES 6
6. ROAD CAPACITIES 7
7. ALTERNATE TRANSPORT MODES 8
8. PROPOSED DEVELOPMENT 10
9. TRAFFIC GENERATION 11
10. TRAFFIC IMPACT ASSESSMENT 12
    - 10.1 ROAD NETWORK CAPACITY 12
    - 10.2 INTERSECTION CAPACITY 12
    - 10.3 ON-SITE CAR PARKING 14
    - 10.4 ACCESS 15
    - 10.5 SERVICING 16
    - 10.6 ALTERNATE TRANSPORT MODES 16
11. CONCLUSIONS 17
12. RECOMMENDATION 18

APPENDICES

APPENDIX 1 DEVELOPMENT PLANS

APPENDIX 2 MANUAL TRAFFIC COUNT SHEETS

APPENDIX 3 SIDRA SUMMARY TABLES

TABLES

Table 1 – Existing and Future Peak Hour Traffic Volumes no development 7

Table 2 – Two-way mid-block road capacity check 12

Table 3 – Nelson Bay Road / Binder Road intersection – Sidra results summary 13

Table 4 – Nelson Bay Road / Trotter Road intersection – Sidra results summary 14

FIGURES

Figure 1 – Site Location Plan 2

Figure 2 – Bus Route Map Extract 8

Figure 3 – Development Traffic Trip Distribution 12

PHOTOGRAPHS

Photograph 1 – Development site from Nelson Bay Road 3

Photograph 2 – Existing site access off Trotter Road 3

Photograph 3 – Nelson Bay Road along site frontage 4

Photograph 4 – Trotter Road – adjacent to the site. 5

Photograph 5 – Binder Road near Sunrise Village access 5

Photograph 6 – Bus Stop on Nelson Bay Road near site 9

Photograph 7 – Cycleway markings and sealed shoulders on Nelson Bay Road 10



1. INTRODUCTION

Intersect Traffic Pty Ltd (Intersect Traffic) was engaged by Hometown (Australia) Pty Ltd to prepare a traffic and parking assessment for the proposed extension to an existing caravan park lifestyle village known as Sunrise Village. The proposed extension is located to the east of Sunrise Village on Lot 3622 in DP 6222485 and Lot 2 in DP 622229, 4029 & 4045 Nelson Bay Road, Bobs Farm. The proposal is to provide for approximately 67 additional sites; a new community facility; and drainage basins.

The assessment has been undertaken to support a rezoning for the project to Port Stephens Council. The proposed development plan is provided within ***Appendix 1***.

The aim of this assessment is to determine the likely impact of the development on the adjacent local road network due to the traffic generated by the development. This report presents the findings of the traffic impact assessment and includes the following:

1. An outline of the existing road network in the vicinity of the proposed development.
2. An assessment of the likely peak traffic generation from the development and the caravan park approved over 16 Trotters Road, Bobs Farm (119 long term sites).
3. An assessment of the likely traffic impacts of the proposal and the caravan park approved over 16 Trotters Road, Bobs Farm (119 long term sites) on the adjacent road network in particular in terms of the capacity of the existing road network linking to the sub-arterial road network.
4. An assessment of the proposed development access and on-site parking.
5. Presentation of conclusions and any recommendations.

This assessment has been carried out with reference to the *RTA's Guide to Traffic Generating Developments*, Austroads *Guide to Road Design Guidelines* (2019), Austroads *Guide to Traffic Management Guidelines (2020)*. Port Stephens Council's DCP and the NSW Local Government Manufactured Home Village / Caravan Park Regulations as well as utilising information provided by ADW Johnson Pty Ltd.

2. SITE DESCRIPTION

The subject site is located on the northern side of Nelson Bay Road, Bobs Farm immediately south of Trotters Road between Fenningham Island Road and Binders Road, approximately 4.2 kilometres west of the Anna Bay post office and 11 kilometres south-west from the Nelson Bay CBD. To its northern boundary the property has a road frontage to Trotters Road and to its southern boundary it has a road frontage to Nelson Bay Road. The western boundary of the site adjoins the existing Sunrise caravan park lifestyle village. To the north of the existing Sunrise Village, a 119 long term site caravan park has also been approved. The development site is mainly flat, partially vegetated land containing two dwellings and associated structures. The subject site is shown in ***Figure 1*** in context with the surrounding properties, developments and roads.



Figure 1 – Site Location Plan

The site has the following property descriptors:

- Formal title of Lot 3622 in DP 6222485 and Lot 2 in DP 622229,
- Address of 4029 & 4045 Nelson Bay Road, Bobs Farm,
- Area of approximately 4.2 ha, and
- Zoning of RU2 – Rural Landscape pursuant to Port Stephens Local Environmental Plan 2013.

The site is currently served by two existing residential accesses one via Nelson Bay Road, and another via Trotter Road. ***Photographs 1 & 2*** below show the site, and the access at Trotter Road



Photograph 1 – Development site from Nelson Bay Road



Photograph 2 – Existing site access off Trotter Road

3. EXISTING ROAD NETWORK

3.1 Nelson Bay Road

Nelson Bay Road is a designated B-Double route. It is a sub-arterial road and a classified main road (MR 108) and is therefore under the care and control of Transport for NSW (TfNSW). It commences at Nelson Bay at its eastern end and runs through to Industrial Drive at Mayfield near Newcastle. Near the site, Nelson Bay Road is a rural style construction with no hard stand footpaths and limited street lighting along its edges. It is a four lane two way divided sealed road with separate carriageways for each direction of travel and a raised concrete or vegetated central median with grassed verges and table drains on both sides of the road. Lane widths are between 3.2 metres and 3.5 metres with a sealed shoulder / breakdown lane / cycleway approximately 3.5 metres in width on both sides of the road. An 80 km/h speed limit applies to this section of Nelson Bay Road and at the time of inspection it was observed to be in good condition. There are a number of U-turn bays provided along this section of road including at both the Trotter Road intersection (for eastbound and westbound traffic) and Binder Road (for westbound traffic). Near the site, Nelson Bay Road intersects with Trotter Road via a give way priority controlled rural seagull intersection with dedicated turning bays while the Nelson Bay Road / Binder Road intersection near the existing Sunrise Village access is constructed as a give way priority controlled left out only intersection with a right turn in dedicated turn bay. ***Photograph 3*** shows Nelson Bay Road along the side frontage.



Photograph 3 – Nelson Bay Road along site frontage

3.2 Trotter Road

Trotter Road is a local road that runs west from Nelson Bay Road. Its primary function is to provide vehicular access to properties along its length. As a local road, Trotter Road is under the care and control of Port Stephens Council and is a two lane two way rural unsealed road with grassed verges and table drains on both sides of the road. The carriageway width is

approximately 6 metres wide. A 50 km/h speed limit would apply to this section of road and at the time of inspection it was observed to be in fair condition as shown in ***Photograph 4***.



Photograph 4 – Trotter Road – adjacent to the site.

3.2 Binder Road

Binder Road is a local road that runs north from Nelson Bay Road. Its primary function is to provide vehicular access to properties along its length including the existing Sunrise Lifestyle Village. As a local road, Binder Road is under the care and control of Port Stephens Council and to the Sunrise Village access is a two lane two way rural sealed road with grassed verges and table drains on both sides of the road. The carriageway width is approximately 6.5 metres wide. A 50 km/h speed limit would apply to this section of road and at the time of inspection it was observed to be in good condition as shown in ***Photograph 5***.



Photograph 5 – Binder Road near Sunrise Village access

4. ROAD NETWORK IMPROVEMENTS

There are no known further road network improvements currently programmed that will increase the capacity of the local road network with the recently completed duplication of Nelson Bay Road near the site doubling the capacity of the local road network. Maintenance and reconstruction work in the area would be carried out in line with Port Stephens Council's and TfNSW Annual Works Programmes.

Further to the above, Trotters Road is conditioned to be upgraded as part of a Caravan Park approval at 16 Trotters Road, Bobs Farm, opposite the existing Sunrise Village to the north. Condition 124 of the consent for this development (DA16-2007-15-4) states:

Prior to the commencement of use, Trotter Road is to be upgraded to Council's Rural access class road (currently 6 metre sealed carriageway 1 x 106 ESAs) across the frontage of the development to the intersection of Trotter Road and Nelson Bay Road.

5. TRAFFIC VOLUMES

Northern Transport Planning and Engineering undertook manual intersection counts at the Nelson Bay Road / Trotter Road and Nelson Bay Road / Binder Road intersections on Thursday 11th November 2021 (PM) and Friday 12th November 2021 (AM). These counts determined the peak hour traffic periods for the local road network as 7.30 am to 8.30 am and 3 pm to 4 pm. The tally sheets for the manual traffic counts are provided within ***Appendix 2.***

The maximum 2021 two-way mid-block peak hour traffic volumes calculated from the counts are as shown in ***Table 1*** below. These figures for the purpose of this assessment have been extrapolated to 2031 values by applying a background traffic growth of 1.5 % per annum for a period of 10 years. The likely 2021 and 2031 peak traffic volumes are as shown in ***Table 1*** below.

Table 1 – Existing and Future Peak Hour Traffic Volumes no development

Road	Section	2021		2031	
		AM (vtph)	PM (vtph)	AM (vtph)	PM (vtph)
Nelson Bay Road	west of Binder Road	1533	1671	1779	1939
Nelson Bay Road	east of Binder Road	1549	1697	1798	1969
Nelson Bay Road	west of Trotter Road	1549	1697	1798	1969
Nelson Bay Road	east of Trotter Road	1591	1741	1846	2021
Binder Road	north of Nelson Bay Road	20	34	23	39
Trotter Road	north of Nelson Bay Road	67	57	78	66

6. ROAD CAPACITIES

The capacity of the road network is generally determined by the capacity of intersections. However, for urban roads Table 4.3 of the RTA's Guide to Traffic Generating Developments, reproduced below, provides some guidance on mid-block capacities for a level of service (LoS) C.

Table 4.3
Typical mid-block capacities for urban roads with interrupted flow

Type of Road	One-Way Mid-block Lane Capacity (pcu/hr)	
Median or inner lane:	Divided Road	1,000
	Undivided Road	900
Outer or kerb lane:	With Adjacent Parking Lane	900
	Clearway Conditions	900
	Occasional Parked Cars	600
4 lane undivided:	Occasional Parked Cars	1,500
	Clearway Conditions	1,800
4 lane divided:	Clearway Conditions	1,900

Source: - RTA's Guide to Traffic Generating Developments (2002).

Based on the above, Nelson Bay Road as a 4 lane divided road in this location would have a one-way mid-block capacity of at least 1900 vtph and a two-way mid-block capacity of 3,800 vtph for a LoS C.

Trotter Road and Binder Road, as local roads would have a one-way mid-block capacity of at 900 vtph and a two-way mid-block capacity of 1,800 vtph for a LoS C. However, as they mainly provide direct access to residential dwellings the environmental capacity goals for the road network are also relevant. Table 4.6 of the *RTA Guide to Traffic Generating Developments* provides guidance on the environmental capacity goals for local streets. This table is reproduced below.

Table 4.6
Environmental capacity performance standards on residential streets

Road class	Road type	Maximum Speed (km/hr)	Maximum peak hour volume (veh/hr)
Local	Access way	25	100
	Street	40	200 environmental goal
			300 maximum
Collector	Street	50	300 environmental goal
			500 maximum

Note: Maximum speed relates to the appropriate design maximum speeds in new residential developments. In existing areas maximum speed relates to 85th percentile speed.

Source: - RTA's Guide to Traffic Generating Developments (2002).

Binder Road and Trotter Road being local roads have an environmental capacity of a maximum of 300 vtph based on the table above. Therefore, the two-way mid-block road capacities adopted within this assessment are;

- Nelson Bay Road - 3,800 vtph; and
- Trotter Road and Binder Road - 300 vtph.

As the current peak traffic volumes on Nelson Bay Road, Trotter Road and Binder Road determined in ***Section 5*** above are less than the technical mid-block or environmental capacities determined above it is concluded the local road network has spare capacity to cater for additional traffic generated by the proposal subject to satisfactory intersection performance.

7. ALTERNATE TRANSPORT MODES

Port Stephens Coaches run bus services from Newcastle to Nelson Bay and around the Tomaree Peninsula as shown in the extract of the bus route maps in ***Figure 2*** below. Whilst covering a large area of the Tomaree Peninsula the nearest bus stops to the site are on Nelson Bay Road at the existing Sunrise Village for eastbound traffic and at Trotter Road and Binder Road for westbound traffic. Route 130 (Newcastle – Fern Bay – Newcastle Airport – Salt Ash – Bobs Farm – Anna Bay – Gan Gan – Salamander Bay – Corlette – Nelson Bay – Fingal Bay), Route 135 (Raymond Terrace to Nelson Bay via Heatherbrae and Williamtown) and Route 131 (Newcastle – Fern Bay – Newcastle Airport – Salt Ash – Bobs Farm – Taylors Beach –– Salamander Bay – Corlette – Nelson Bay – Fingal Bay), access these bus stops on Nelson Bay Road. The bus stops are all within 200 metres of the site therefore are considered convenient enough to the site for residents of the lifestyle village to use these bus services.

Further Sunrise Village is trialling their own minibus shuttle service to Salamander Bay and Nelson Bay shopping centres currently once a week but with the intention of providing additional services once a demand is established and the village grows in terms of residents. It is therefore concluded the existing and future Sunrise Lifestyle Village provides good access to public transport.

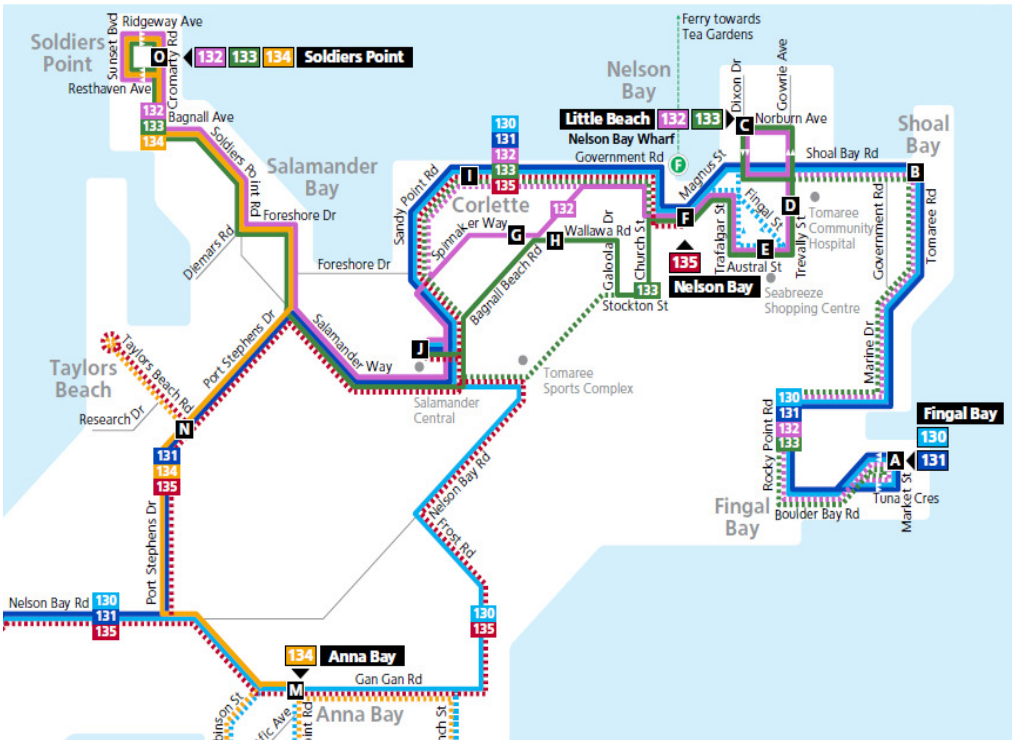


Figure 2 – Bus Route Map Extract

There is no pedestrian infrastructure in the area. There are no constructed footpaths near the site, with some grassed verges, as seen in previous photographs, that may be utilised by pedestrians. Pedestrians would generally need to utilise the existing road shoulder and verges where possible. This would be suitable for Binder Road and Trotter Road, given the low traffic numbers, however, Nelson Bay Road would not be suitable for pedestrian travel in most locations.

Cycle lane markings are present on Nelson Bay Road near the site within the sealed shoulders and these on-road cycleways can be utilised by cyclists for site access. No cycle way markings are present on Binder Road or Trotter Road. Cyclists would therefore need to share the travel lanes on these roads however this would be suitable for cyclists given the low speed and low traffic volumes. During site inspections and traffic counts little cycle traffic was observed on Nelson Bay Road

Photograph 6 below shows the bus stop in front of the existing Sunrise Lifestyle Village while ***Photograph 7*** below shows the cycleway markings and sealed shoulders on Nelson Bay Road near the site.



Photograph 6 – Bus Stop on Nelson Bay Road near site



Photograph 7 – Cycleway markings and sealed shoulders on Nelson Bay Road

8. PROPOSED DEVELOPMENT

The proposal involves an extension to the existing Sunrise Lifestyle Village long term caravan park, through development of existing vacant land on two lots east of the existing development, to provide approximately 67 additional sites.

Specifically, the development will include the provision of:

- Demolition of existing structure on the site and earthworks
- Provision of an additional 67 long term sites,
- Additional community facility,
- Extension of existing Sunrise Lifestyle Village internal roads to provide connection to the existing village and its facilities and provided internal road for access to new sites.
- New vehicular access to Trotter Road approximately at the location of the existing access to Trotter Road,
- On-site residence and visitor parking (14 spaces within 2 car parking areas); and
- Drainage and landscaping including provision of two on-site detention basins.

The development concept plans are shown in ***Appendix 1***.

9. TRAFFIC GENERATION

The existing long term caravan park that is currently operating in Sunrise Village has approximately 110 long term sites currently occupied with approval for 193 lots. The existing site is responsible for all the traffic currently generated on Binder Road with the peak two-way mid-block traffic volumes of 20 vtph AM and 34 vtph PM. The AM and PM traffic generation rates for the existing Village is therefore determined from this data as:

AM rate = 20 / 110
= 0.19 vehicle trips per dwelling.

PM rate = 34 / 110
= 0.31 vehicle trips per dwelling.

This data corresponds well with other survey work undertaken by Intersect Traffic and Barry Bradley & Associates at similar developments at Anna Bay (Latitude One), Neath (Hunter Valley Van Village) and Chain Valley Bay (Valhalla Lifestyle Village) therefore is considered relevant for this assessment. It has been used to estimate future traffic from the expanded Sunrise Lifestyle Village.

Utilising the existing traffic generation rates from the village, the subject development with 67 new sites will generate the following additional traffic in the AM and PM peak periods.

AM Peak hour trips = 67 x 0.19 vtph
= **13 vtph**

PM Peak hour trips = 67 x 0.31 vtph
= **21 vtph**

However, the real impact on the intersection will be an additional 269 sites; being the additional 67 sites within the subject development plus the 83 (193 - 110) undeveloped sites of the existing approved Sunrise caravan park lifestyle village; and 119 sites at the approved caravan park at 16 Trotters Road, and can be calculated as follows:

AM Peak hour trips = 269 x 0.19 vtph
= **51 vtph**

PM Peak hour trips = 269 x 0.31 vtph
= **83 vtph**

Therefore, the additional AM and PM peak hour traffic to be distributed on the road network, 51 vtph AM and 83 vtph PM, is to be distributed as follows based on the existing traffic counts.

- 50 % of new traffic will use the Binder Road access while 50 % will use the new Trotter Road access;
- AM traffic is split 65% outbound and 35% inbound which is mirrored in the PM,
- AM inbound and outbound traffic being split 60/40 Nelson Bay Road east/west and is opposite in the PM period, and
- Westbound outbound traffic from Binder Road undertakes a U-turn movement within the U-turn bay on Trotter Road.

There may be some variations to the distributions however their impact is considered insignificant. The resulting trip distribution is presented diagrammatically in ***Figure 3*** below.

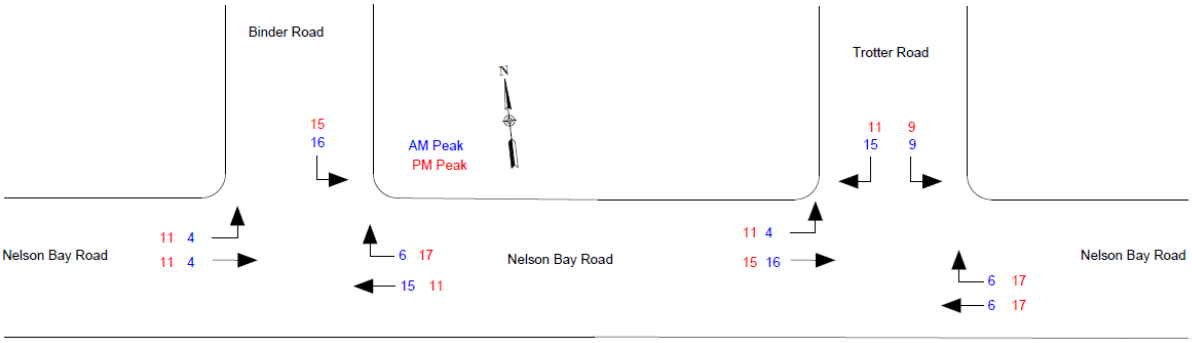


Figure 3 – Development Traffic Trip Distribution

10. TRAFFIC IMPACT ASSESSMENT

10.1 Road Network Capacity

This assessment has determined (***Section 6***) that the existing road network around the site is currently operating below its technical or environmental mid-block two way capacity and has spare capacity to cater for additional traffic from the proposed development. ***Section 9*** of this report determined that the subject development is likely to generate 13 AM and 21 PM additional vehicle trips per hour during the road network peaks, and with the unoccupied sites of the existing Sunrise Lifestyle Village development, the overall impact will be 51 AM and 83 PM additional vehicle trips per hour during the road network peaks. The resulting additional traffic distributed as shown in ***Figure 3*** is not sufficient for Nelson Bay Road or Binder Road and Trotter Road to reach their respective two-way mid-block capacities as shown in ***Table 2*** below.

Table 2 – Two-way mid-block road capacity check

Road	Section	Capacity	2021		2031		Development traffic	
		vtph	AM (vtph)	PM (vtph)	AM (vtph)	PM (vtph)	AM	PM
Nelson Bay Road	west of Binder Road	3800	1556	1704	1802	1972	23	33
Nelson Bay Road	east of Binder Road	3800	1590	1751	1839	2023	41	54
Nelson Bay Road	west of Trotter Road	3800	1590	1751	1839	2023	41	54
Nelson Bay Road	east of Trotter Road	3800	1629	1799	1884	2079	38	58
Binder Road	north of Nelson Bay Road	200	46	77	49	82	26	43
Trotter Road	north of Nelson Bay Road	200	101	105	112	114	34	48

Therefore, it is reasonable to conclude the development will not adversely impact on the levels of service experienced on the state and local road network.

10.2 Intersection Capacity

The intersections that are most likely to be impacted by this development are the Nelson Bay Road / Binder Road give way controlled T-intersection and the Nelson Bay Road / Trotter Road give way priority controlled seagull T-intersection.

The impact of this development on the operation of these intersections can be determined by using the SIDRA INTERSECTION modelling software. The SIDRA INTERSECTION software package predicts likely delays, queue lengths and thus levels of service that will occur at intersections. Assessment is then based on the level of service requirements of the TfNSW shown below.

Table 4.2
Level of service criteria for intersections

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	< 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode

Source: - RTA's Guide to Traffic Generating Developments (2002).

This software package predicts likely delays, queue lengths and thus levels of service that will occur at intersections. The assumptions made in the modelling were:

- Post development AM and PM peak hours were modelled in the peak AM and PM peak period for 2021 and 2031,
- 2031 AM and PM traffic volumes post development were determined using a background traffic growth rate of 1.5% per annum on Nelson Bay Road,
- Critical gap acceptance based on minimum recommended values by Austroads.
- Development traffic was distributed onto the road network as per ***Figure 3***, and
- The intersection was modelled as per its current configuration.

Summaries of the results of the relevant AM and PM modelling for the 'worst' case for the Nelson Bay Road / Binder Road give way controlled T-intersection and the Nelson Bay Road / Trotter Road give way controlled T-intersection are shown below in ***Tables 3 & 4***, while the Sidra Movement Summary Tables for the models are provided in ***Appendix 3***.

Table 3 – Nelson Bay Road / Binder Road intersection – Sidra results summary

Modelled Peak	Degree of Saturation (v/c)	Worst Average Delay (s)	Worst Level of Service	95% back of queue length (cars)
2021 AM	0.226	15.3	B	0.1
2021 AM + developments	0.227	15.6	B	0.1
2031 AM	0.262	18.4	B	0.1
2031 AM + developments	0.264	18.8	B	0.1
2021 PM	0.254	17.8	B	0.3
2021 PM + developments	0.255	18.8	B	0.3
2031 PM	0.293	22.3	B	0.3
2031 PM + developments	0.296	23.7	B	0.4

This modelling shows that the Nelson Bay Road / Binder Road give way controlled T-intersection will continue to operate satisfactorily with the additional traffic generated by the subject development, including the yet to be developed sites of the existing Sunrise Village development, and the yet to be developed sites approved at 16 Trotters Road, and with background traffic growth through to 2031. The average delay, levels of service and queue lengths for all movements remain

within the thresholds determined by TfNSW as representing satisfactory operation. All worst case LoS results were for the right turn into Binder Road, while all other movements in all models were a LoS A.

Table 4 – Nelson Bay Road / Trotter Road intersection – Sidra results summary

Modelled Peak	Degree of Saturation (v/c)	Worst Average Delay (s)	Worst Level of Service	95% back of queue length (cars)
2021 AM	0.224	22.7	B	0.2
2021 AM + developments	0.229	20.9	B	0.2
2031 AM	0.260	29.9	C	0.2
2031 AM + developments	0.265	26.6	B	0.3
2021 PM	0.256	28.3	B	0.2
2021 PM + developments	0.260	27.4	B	0.3
2031 PM	0.297	39.3	C	0.3
2031 PM + developments	0.302	39.3	C	0.4

This modelling shows that the Nelson Bay Road / Trotter Road give way controlled seagull T-intersection will continue to operate satisfactorily with the additional traffic generated by the subject development, including the yet to be developed sites of the existing Sunrise Village development, and the yet to be developed sites approved at 16 Trotters Road, and with background traffic growth through to 2031. The average delay, levels of service and queue lengths for all movements remain within the thresholds determined by TfNSW as representing satisfactory operation. All worst case LoS results were for the right turn out of Trotter Road, while all other movements in all models were a LoS A or LoS B.

It is therefore concluded the proposed development will not adversely impact on the efficiency of Nelson Bay Road / Binder Road give way controlled T-intersection or the Nelson Bay Road / Trotter Road give way controlled seagull T-intersection, both of which have sufficient spare capacity to cater for the development without a requirement for any intersection upgrading works.

10.3 On-Site Car Parking

The proposed development will generate an on-site parking demand. Therefore, on-site parking in accordance with the *Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2005* will need to be provided. The relevant requirements within the Regulation are:

Resident Parking

1 resident parking space per dwelling site

Visitor Parking

1 visitor parking space for each 10 (and any remaining fraction of 10) of long-term sites

Accessible Parking

1 visitor accessible parking space per 100 sites or fraction of 100 sites

Resident and visitor parking is to be 6.1 metres x 2.5 metres while the accessible visitor car parks are to comply with Australian Standard AS2890.6-2009 Parking facilities Part 6: Off-street parking for people with disabilities.

Noting that on completion of the proposed expansion a total of 67 additional long term sites would exist within the park the following additional on-site parking, to that already approved in the Sunrise Lifestyle Village, is required to be provided:

- Resident Parking – 67 car parks
- Visitor Car Parking – 67 / 10 = 7 car parks
- Accessible Visitor Car Parking 67 / 100 = 1 accessible car park (within the 18 visitor car parks to be provided).

On examination of the plans it was found that:

- As each site has an area in excess of 150 m^2 it is considered there is sufficient room on each site to provide an on-site resident car park; and
- 14 visitor car parking spaces are shown.

Therefore the plans are required to show 1 accessible space within the visitor car park near the community facility which will result in the number of visitor car parks being reduced to 13 spaces which is still compliant with the caravan park regulations. Whilst not dimensioned there is adequate space for the visitor (including access) car parking spaces to be provide on-site to the dimensioned requirements.

It is therefore concluded that in regard to on-site car parking the proposal would meet the requirements of the *Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2005.*

10.4 Access

The proposed extension would utilise the existing combined entry / exit access at Binder Road through internal road connections however a new combined entry / exit access near the existing property access to Trotter Road is proposed in the extension. Access to the site and individual sites would be required to meet the requirements of the *Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2005* as well as Australian Standard *AS2890.1-2004 Parking facilities Part 1: Off-street car parking.*

In regard to the regulation the important requirements and an assessment of compliance are:

- A dwelling site must have access to an access road – Proposal is compliant.
- In the case of a divided entrance and exit road the width of the sealed road on either side of the median must be at least 5 metres. – It is not proposed to have a divided access road within the development and therefore the proposed site access is compliant with this requirement.
- A forecourt 4 metres x 20 metres needs to be provided for incoming vehicles – Existing access arrangements to Binder Road comply with this requirement.
- The width of an access road (internal) must be 6 metres for two way flow or 4 metres for one way flow and one way flow needs to be indicated by a conspicuous sign. The proposal complies with this requirement.

Overall, it is therefore considered reasonable to conclude the existing and proposed internal roads access roads are suitable for two way flow of vehicles.

Trotter Road adjoining the site will be sealed by the developers of 16 Trotter Road, as part of their recently approved caravan park. Noting the existing 6m width and the future sealing of this road, no further upgrades would be required as this treatment is compliant with Austroad guidelines for two way traffic flows less than 500 vtph. Sight distance along Trotter Road at the proposed new access should comply with Figure 3.2 of Australian Standard *AS 2890.1-2004 Parking facilities Part 1: Off street car parking.* For a 50 km/h speed environment (Trotter Road) the standard

recommends a minimum sight distance of 45 metres. By observation on site the sight distance at both these accesses are in excess of 200 metres and thus compliant with the Standard.

10.5 Servicing

The proposed extension will not alter current servicing of the site though more frequent service vehicle movements may be required. As the existing servicing conditions are not changing it is reasonable to conclude servicing of the extended village will not adversely impact on the local road network.

10.6 Alternate Transport Modes

The development site is currently suitably serviced by public transport bus service provided by Port Stephens Coaches as well as a limited on trial private minibus shuttle operated by the park which may be expanded in the future. The proposal is not expected to generate enough public transport demand to require any change to the existing public transport services or require additional infrastructure. Therefore, the provision of additional public transport infrastructure within or adjacent to the proposed development is not considered warranted.

The sealed shoulder on both sides of Nelson Bay Road along the site frontage is marked as an on-road bicycle lane. This is the only bicycle specific infrastructure in the area however it passes the development site. The additional bicycle traffic generated by this development would not be significant enough to warrant the extension of this on road cycleway.

The proposal may generate some pedestrian traffic looking to utilise the public transport services around the site. However, without any existing external pedestrian infrastructure (paths) in the area to connect to it would not seem reasonable to require this development to provide this infrastructure external to the site. Internal pedestrian linkages will be provided within the development to direct pedestrian traffic to the various components of the development.



11. CONCLUSIONS

This traffic impact assessment for the proposed extension to the existing Sunrise caravan park lifestyle village on Lot 3622 in DP 6222485 and Lot 2 in DP 622229, 4029 & 4045 Nelson Bay Road, Bobs Farm has determined the following:

- As existing traffic volumes on the local road network are less than the technical and environmental mid-block two way capacities of the roads there is spare capacity to cater for the additional traffic generated by this development.
- The site is currently serviced by public transport operated by Port Stephens coaches and an on trial private minibus shuttle for residents operated by the Village whilst other alternate transport mode infrastructure is generally not available in the immediate vicinity of the site.
- The proposed development is predicted to generate approximately an additional 13 vtph AM and 21 vtph PM in the peak periods on the local road network.
- The additional traffic generated by the development, including the occupation of the unoccupied sites of the existing Sunrise development, and the recent caravan park approval at 16 Trotters Road, will not cause Nelson Bay Road, Binder Road or Trotter Road to reach their relevant mid-block two way capacities therefore subject to satisfactory intersection operation the local road network has sufficient spare capacity to cater for the development.
- Sidra Intersection modelling has shown that the likely additional traffic from the full development of the proposed expansion of the park will not have an adverse impact on the operation / capacity of the Nelson Bay Road / Binder Road T- intersection and the Nelson Bay Road / Trotter Road seagull intersection post development in 2021 and in 2031 with ten years traffic growth at 1.5 % per annum. Therefore the development's impact, including the occupation of the unoccupied sites of the existing Sunrise development, and the recent caravan park approval at 16 Trotters Road, will be unnoticeable at any other intersection on the road network.
- The proposed development provides sufficient on-site parking provision to meet the likely peak parking demand generated by the development and satisfy the requirements of the *Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) regulation 2005.*
- The proposed extension will not alter current servicing of the site though more frequent service vehicle movements may be required. As the existing servicing conditions are not changing it is reasonable to conclude servicing of the extended village will not adversely impact on the local road network.
- The existing access to the site and the proposed new access to the site of Trotter Road is compliant with the requirements of the *Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2005* and the proposed internal access roads would also comply with the regulation for two way traffic flow on the internal access roads.
- Trotter Road is currently wide enough to cater for two way traffic flow and is therefore suitable for use by the development, noting that this is conditioned to be sealed under the consent for 16 Trotters Road.
- Suitable sight distance in accordance with Australian Standard AS 2890.1-2004 *Parking facilities Part 1: Off street car parking* is available at the proposed new Trotter Road access to be utilised by the development.
- The additional demand generated by the development for alternate transport modes such as public transport, walking and cycling will be low. Therefore, no nexus exists for the provision of external facilities to encourage the use of these alternate transport modes.

12. RECOMMENDATION

Having undertaken this traffic and parking assessment of the proposed extension to the existing Sunrise caravan park lifestyle village on Lot 3622 in DP 6222485 and Lot 2 in DP 622229, 4029 & 4045 Nelson Bay Road, Bobs Farm it is recommended that the proposal can be supported from a traffic impact perspective as the development will not have an adverse impact on the local road network and will comply with all the requirements of Port Stephens Council, Australian Standards, TfNSW and the Caravan Park Regulations.

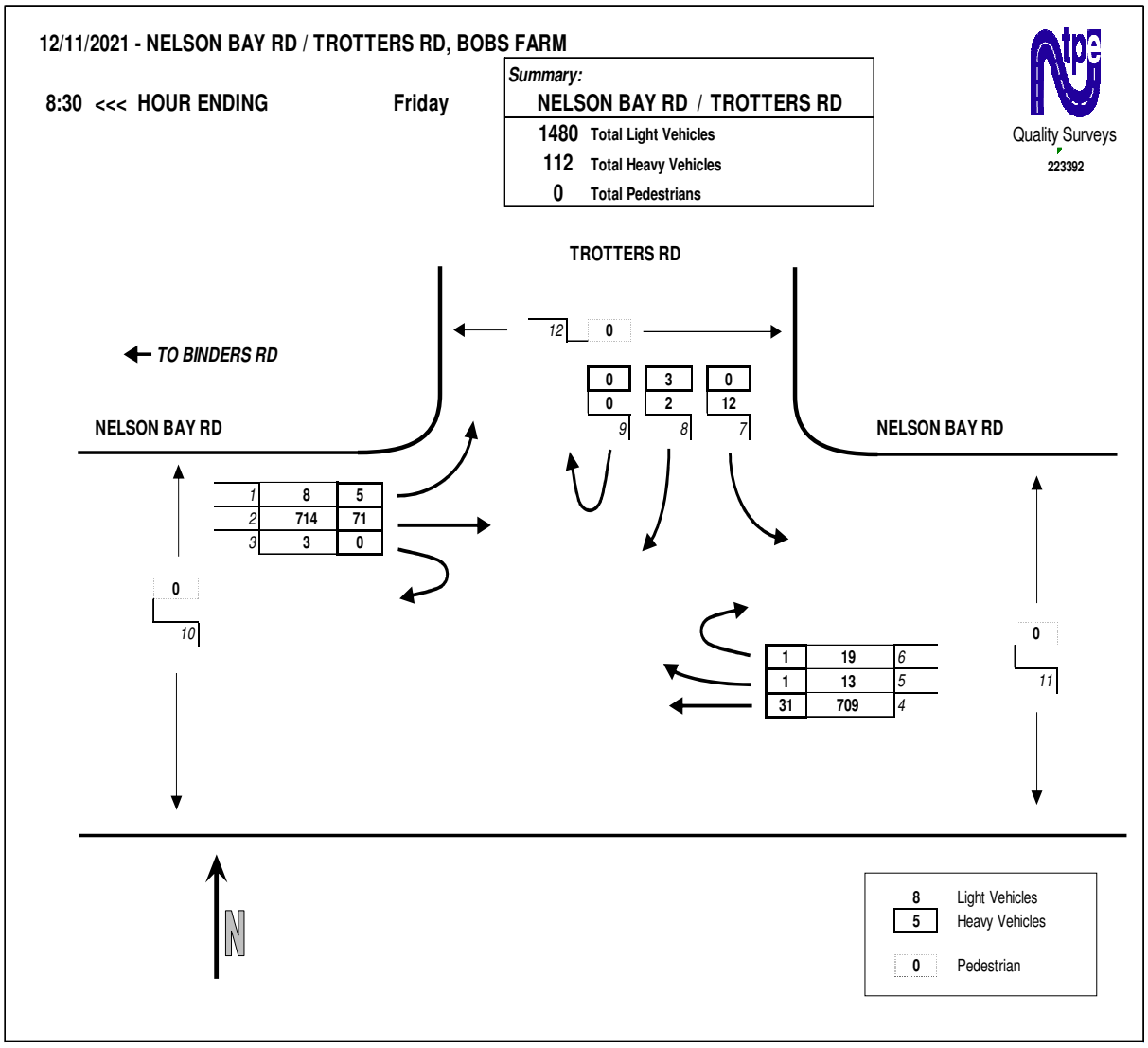
JR Garry BE (Civil), Masters of Traffic
Director
Intersect Traffic Pty Ltd

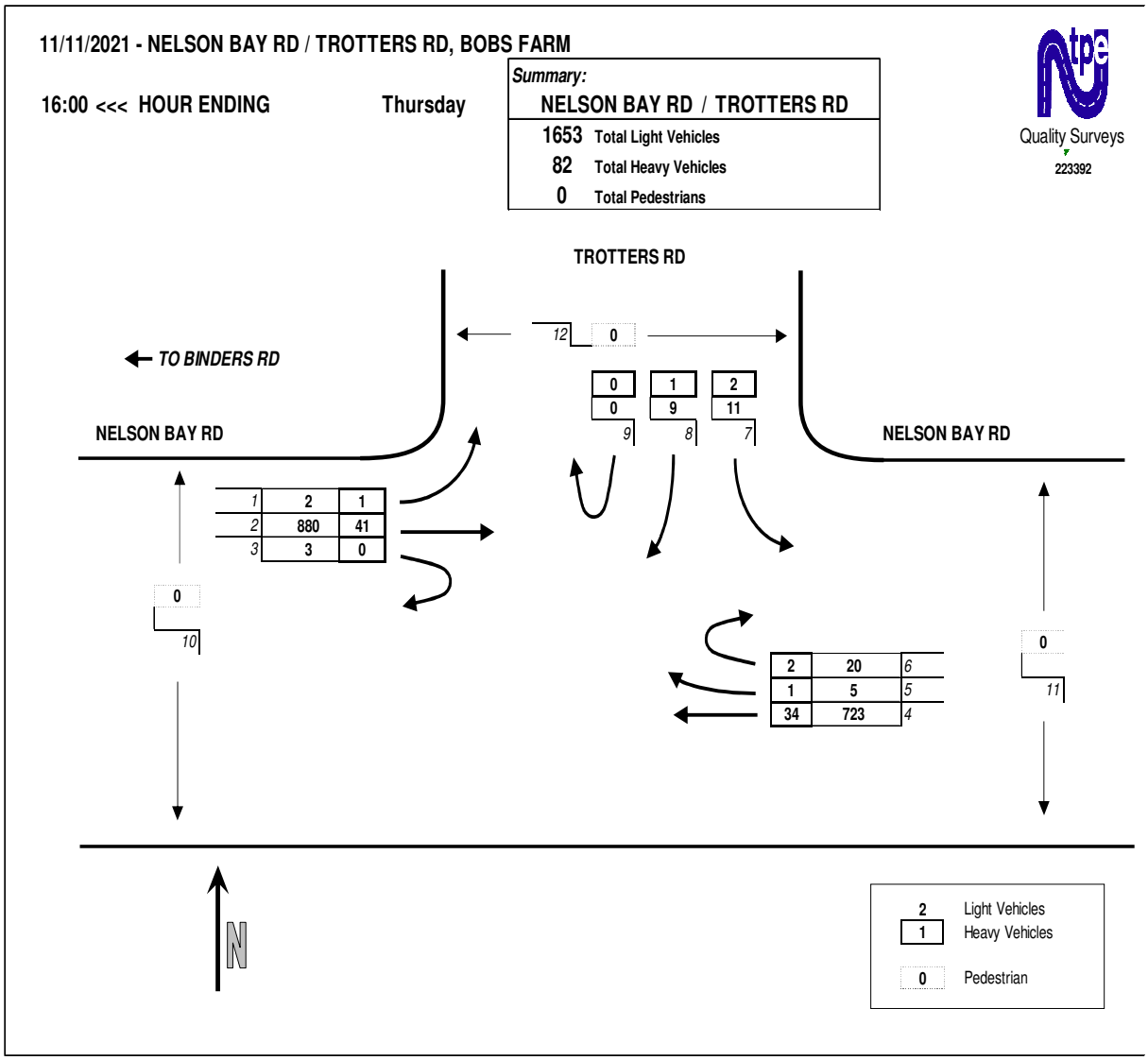


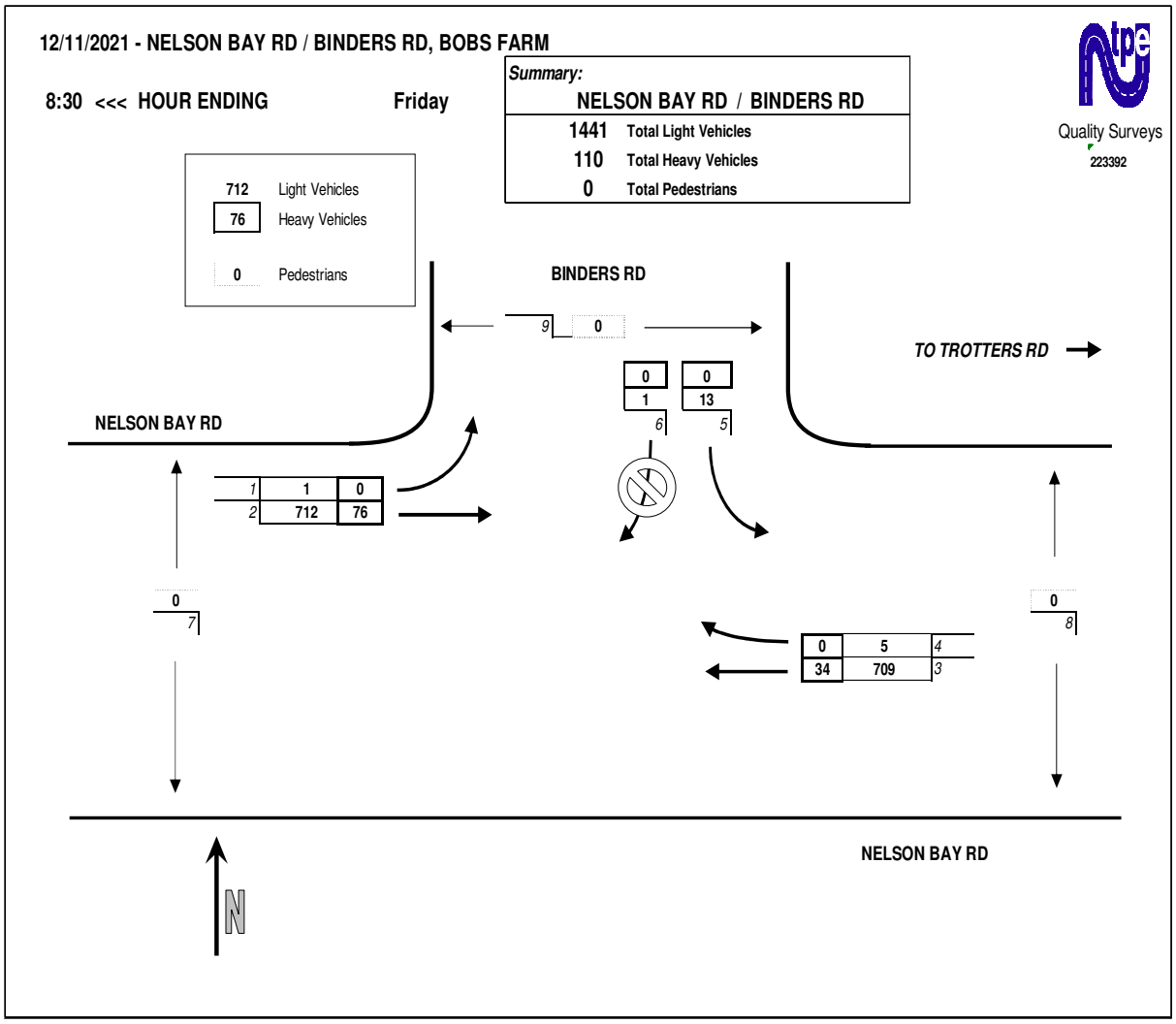
APPENDIX 1
DEVELOPMENT PLANS

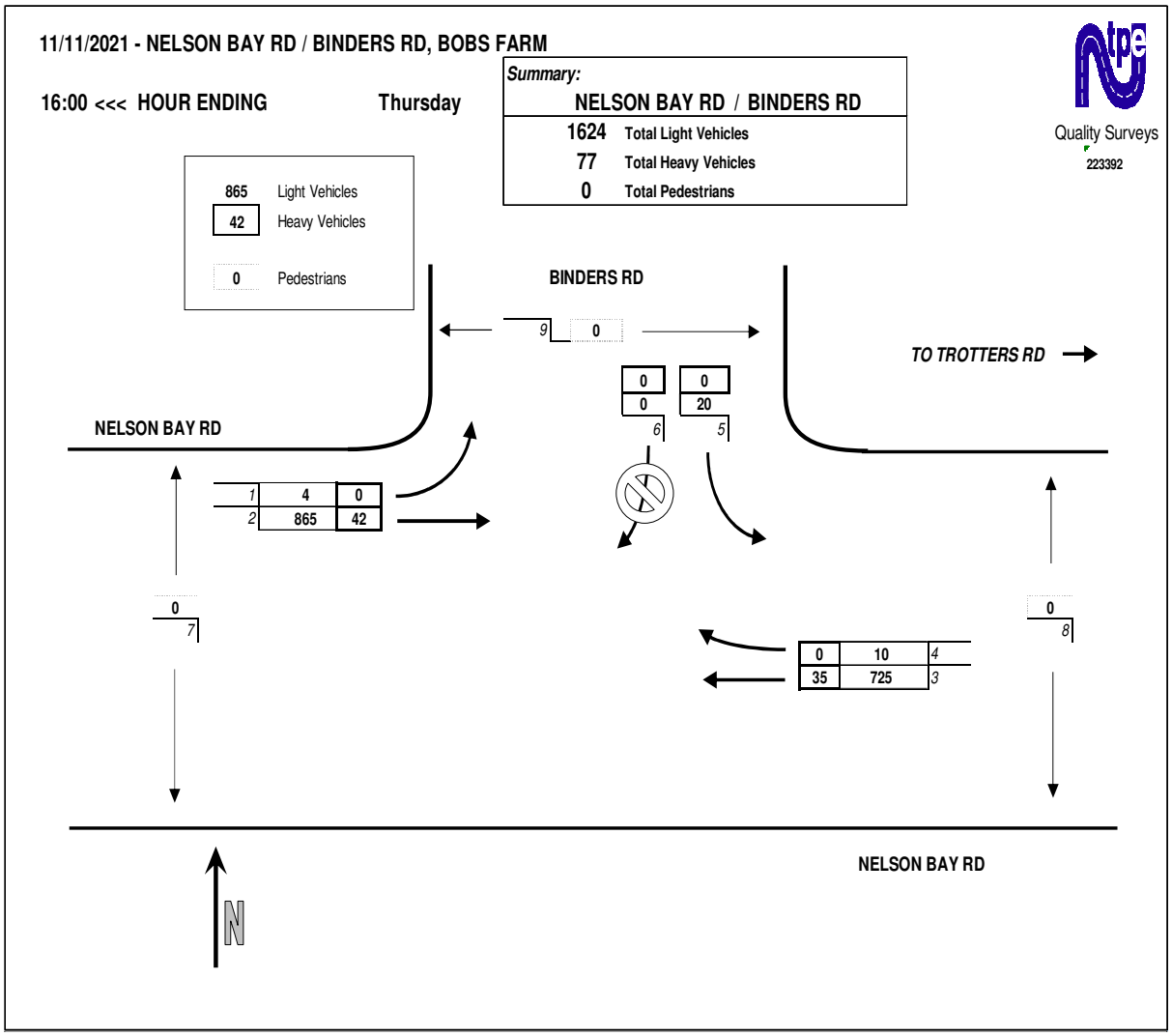

Trotter Road
Entry Avenue 16m reserve
Local Street 8.5m reserve
Community Facility
Basin
Basin
Nelson Bay Road
STAGE 4
HOMETOWN AUSTRALIA
COMMUNITIES
project Sunrise
address 4011 Nelson Bay Rd, Bobs Farm NSW 2316
drawing title Draft Concept Plan
date 11/21
scale 1:1500 @ A3
drawn HTA
drawing no.
issue A
A 16/11/21 Preliminary issue
issue date revision

APPENDIX 2
MANUAL TRAFFIC COUNT SHEETS


12/11/2021 - NELSON BAY RD / TROTTERS RD, BOBS FARM
8:30 <<< HOUR ENDING
Friday
Summary:
NELSON BAY RD / TROTTERS RD
1480 Total Light Vehicles
112 Total Heavy Vehicles
0 Total Pedestrians
Quality Surveys
223392
TROTTERS RD
TO BINDERS RD
NELSON BAY RD
NELSON BAY RD
12 0
0 3 0
0 2 12
9 8 7
1 8 5
2 714 71
3 3 0
0
10
1 19 6
1 13 5
31 709 4
0
11
N
8 Light Vehicles
5 Heavy Vehicles
0 Pedestrian


11/11/2021 - NELSON BAY RD / TROTTERS RD, BOBS FARM
16:00 <<< HOUR ENDING
Thursday
Summary:
NELSON BAY RD / TROTTERS RD
1653 Total Light Vehicles
82 Total Heavy Vehicles
0 Total Pedestrians
Quality Surveys
223392
TROTTERS RD
TO BINDERS RD
NELSON BAY RD
NELSON BAY RD
12
0
0
1
2
0
9
11
9
8
7
1
2
1
2
880
41
3
3
0
0
10
2
20
6
1
5
5
34
723
4
0
11
N
2 Light Vehicles
1 Heavy Vehicles
0 Pedestrian


12/11/2021 - NELSON BAY RD / BINDERS RD, BOBS FARM
8:30 <<< HOUR ENDING
Friday
Summary:
NELSON BAY RD / BINDERS RD
1441 Total Light Vehicles
110 Total Heavy Vehicles
0 Total Pedestrians
Quality Surveys
223392
712 Light Vehicles
76 Heavy Vehicles
0 Pedestrians
BINDERS RD
TO TROTTERS RD
NELSON BAY RD
NELSON BAY RD
N


11/11/2021 - NELSON BAY RD / BINDERS RD, BOBS FARM
16:00 <<< HOUR ENDING
Thursday
Summary:
NELSON BAY RD / BINDERS RD
1624 Total Light Vehicles
77 Total Heavy Vehicles
0 Total Pedestrians
Quality Surveys
223392
865 Light Vehicles
42 Heavy Vehicles
0 Pedestrians
BINDERS RD
TO TROTTERS RD
NELSON BAY RD
NELSON BAY RD
N

APPENDIX 3
SIDRA SUMMARY TABLES

MOVEMENT SUMMARY

Site: 101 [NBR_Binder Rd 2021AM (Site Folder: General)]

Nelson Bay Road / Binder Road Bobs Farm
November 2021
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Nelson Bay Road														
5	T1	743	34	782	4.6	0.207	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
6	R2	5	0	5	0.0	0.016	15.3	LOS B	0.0	0.3	0.69	0.84	0.69	51.8
Approach		748	34	787	4.5	0.207	0.1	NA	0.0	0.3	0.00	0.01	0.00	79.6
North: Binder Road														
7	L2	14	0	15	0.0	0.017	7.5	LOS A	0.1	0.4	0.43	0.63	0.43	56.9
Approach		14	0	15	0.0	0.017	7.5	LOS A	0.1	0.4	0.43	0.63	0.43	56.9
West: Nelson Bay Road														
10	L2	1	0	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	65.4
11	T1	788	76	829	9.6	0.226	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
Approach		789	76	831	9.6	0.226	0.1	NA	0.0	0.0	0.00	0.00	0.00	79.8
All Vehicles		1551	110	1633	7.1	0.226	0.2	NA	0.1	0.4	0.01	0.01	0.01	79.4

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: INTERSECT TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Sunday, 21 November 2021 6:06:24 AM
Project: C:\Work Documents\Projects\2021\2021.196 - Bobs Farm Caravan Park\Sidra\NBR_Binder_Trotter.sip9

MOVEMENT SUMMARY

Site: 101 [NBR_Binder Rd 2021PM (Site Folder: General)]

Nelson Bay Road / Binder Road Bobs Farm
November 2021
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Nelson Bay Road														
5	T1	760	35	800	4.6	0.211	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
6	R2	10	0	11	0.0	0.039	17.8	LOS B	0.1	0.8	0.74	0.91	0.74	50.0
Approach		770	35	811	4.5	0.211	0.3	NA	0.1	0.8	0.01	0.01	0.01	79.3
North: Binder Road														
7	L2	20	0	21	0.0	0.027	7.9	LOS A	0.1	0.6	0.46	0.66	0.46	56.6
Approach		20	0	21	0.0	0.027	7.9	LOS A	0.1	0.6	0.46	0.66	0.46	56.6
West: Nelson Bay Road														
10	L2	4	0	4	0.0	0.002	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	65.4
11	T1	907	42	955	4.6	0.252	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		911	42	959	4.6	0.252	0.1	NA	0.0	0.0	0.00	0.00	0.00	79.8
All Vehicles		1701	77	1791	4.5	0.252	0.3	NA	0.1	0.8	0.01	0.01	0.01	79.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: INTERSECT TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Sunday, 21 November 2021 6:06:29 AM
Project: C:\Work Documents\Projects\2021\2021.196 - Bobs Farm Caravan Park\Sidra\NBR_Binder_Trotter.sip9

MOVEMENT SUMMARY

▽ Site: 101 [NBR_Binder Rd 2021AM + development (Site Folder: General)]

Nelson Bay Road / Binder Road Bobs Farm
November 2021
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Nelson Bay Road														
5	T1	758	34	798	4.5	0.211	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
6	R2	11	0	12	0.0	0.036	15.6	LOS B	0.1	0.8	0.70	0.89	0.70	51.6
Approach		769	34	809	4.4	0.211	0.3	NA	0.1	0.8	0.01	0.01	0.01	79.2
North: Binder Road														
7	L2	30	0	32	0.0	0.037	7.6	LOS A	0.1	0.9	0.44	0.66	0.44	56.9
Approach		30	0	32	0.0	0.037	7.6	LOS A	0.1	0.9	0.44	0.66	0.44	56.9
West: Nelson Bay Road														
10	L2	5	0	5	0.0	0.003	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	65.4
11	T1	792	76	834	9.6	0.227	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		797	76	839	9.5	0.227	0.1	NA	0.0	0.0	0.00	0.00	0.00	79.7
All Vehicles		1596	110	1680	6.9	0.227	0.3	NA	0.1	0.9	0.01	0.02	0.01	78.9

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: INTERSECT TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Monday, 22 November 2021 1:28:18 PM
Project: C:\Work Documents\Projects\2021\2021.196 - Bobs Farm Caravan Park\Sidra\NBR_Binder_Trotter.sip9

MOVEMENT SUMMARY

▽ Site: 101 [NBR_Binder Rd 2021PM + development (Site Folder: General)]

Nelson Bay Road / Binder Road Bobs Farm
November 2021
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Nelson Bay Road														
5	T1	771	35	812	4.5	0.215	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
6	R2	27	0	28	0.0	0.109	18.8	LOS B	0.3	2.4	0.77	0.92	0.77	49.3
Approach		798	35	840	4.4	0.215	0.7	NA	0.3	2.4	0.03	0.03	0.03	78.2
North: Binder Road														
7	L2	35	0	37	0.0	0.047	8.0	LOS A	0.2	1.1	0.47	0.69	0.47	56.5
Approach		35	0	37	0.0	0.047	8.0	LOS A	0.2	1.1	0.47	0.69	0.47	56.5
West: Nelson Bay Road														
10	L2	15	0	16	0.0	0.009	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	65.4
11	T1	918	42	966	4.6	0.255	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		933	42	982	4.5	0.255	0.2	NA	0.0	0.0	0.00	0.01	0.00	79.5
All Vehicles		1766	77	1859	4.4	0.255	0.5	NA	0.3	2.4	0.02	0.03	0.02	78.3

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: INTERSECT TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Monday, 22 November 2021 1:28:20 PM
Project: C:\Work Documents\Projects\2021\2021.196 - Bobs Farm Caravan Park\Sidra\NBR_Binder_Trotter.sip9

MOVEMENT SUMMARY

Site: 101 [NBR_Binder Rd 2031AM (Site Folder: General)]

Nelson Bay Road / Binder Road Bobs Farm
November 2021
Site Category: (None)
Give-Way (Two-Way)
Design Life Analysis (Final Year): Results for 10 years

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Nelson Bay Road														
5	T1	743	34	908	4.6	0.240	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
6	R2	5	0	5	0.0	0.021	18.4	LOS B	0.1	0.4	0.75	0.91	0.75	49.6
Approach		748	34	913	4.5	0.240	0.2	NA	0.1	0.4	0.00	0.01	0.00	79.6
North: Binder Road														
7	L2	14	0	15	0.0	0.019	8.0	LOS A	0.1	0.5	0.47	0.66	0.47	56.5
Approach		14	0	15	0.0	0.019	8.0	LOS A	0.1	0.5	0.47	0.66	0.47	56.5
West: Nelson Bay Road														
10	L2	1	0	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	65.4
11	T1	788	76	963	9.6	0.262	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		789	76	964	9.6	0.262	0.1	NA	0.0	0.0	0.00	0.00	0.00	79.8
All Vehicles		1551	110	1891	7.1	0.262	0.2	NA	0.1	0.5	0.01	0.01	0.01	79.4

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: INTERSECT TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Sunday, 21 November 2021 6:06:27 AM
Project: C:\Work Documents\Projects\2021\2021.196 - Bobs Farm Caravan Park\Sidra\NBR_Binder_Trotter.sip9

MOVEMENT SUMMARY

Site: 101 [NBR_Binder Rd 2031PM (Site Folder: General)]

Nelson Bay Road / Binder Road Bobs Farm
November 2021
Site Category: (None)
Give-Way (Two-Way)
Design Life Analysis (Final Year): Results for 10 years

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Nelson Bay Road														
5	T1	760	35	928	4.6	0.245	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
6	R2	10	0	11	0.0	0.052	22.3	LOS B	0.2	1.1	0.81	0.93	0.81	47.1
Approach		770	35	939	4.6	0.245	0.3	NA	0.2	1.1	0.01	0.01	0.01	79.2
North: Binder Road														
7	L2	20	0	21	0.0	0.030	8.5	LOS A	0.1	0.7	0.50	0.70	0.50	56.1
Approach		20	0	21	0.0	0.030	8.5	LOS A	0.1	0.7	0.50	0.70	0.50	56.1
West: Nelson Bay Road														
10	L2	4	0	4	0.0	0.002	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	65.4
11	T1	907	42	1108	4.6	0.293	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		911	42	1112	4.6	0.293	0.1	NA	0.0	0.0	0.00	0.00	0.00	79.7
All Vehicles		1701	77	2072	4.5	0.293	0.3	NA	0.2	1.1	0.01	0.01	0.01	79.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: INTERSECT TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Sunday, 21 November 2021 6:06:32 AM
Project: C:\Work Documents\Projects\2021\2021.196 - Bobs Farm Caravan Park\Sidra\NBR_Binder_Trotter.sip9

MOVEMENT SUMMARY

Site: 101 [NBR_Binder Rd 2031AM + development (Site Folder: General)]

Nelson Bay Road / Binder Road Bobs Farm
November 2021
Site Category: (None)
Give-Way (Two-Way)
Design Life Analysis (Final Year): Results for 10 years

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Nelson Bay Road														
5	T1	758	34	926	4.5	0.244	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
6	R2	11	0	12	0.0	0.046	18.8	LOS B	0.1	1.0	0.76	0.91	0.76	49.3
Approach		769	34	938	4.4	0.244	0.3	NA	0.1	1.0	0.01	0.01	0.01	79.2
North: Binder Road														
7	L2	30	0	32	0.0	0.041	8.1	LOS A	0.1	1.0	0.48	0.69	0.48	56.4
Approach		30	0	32	0.0	0.041	8.1	LOS A	0.1	1.0	0.48	0.69	0.48	56.4
West: Nelson Bay Road														
10	L2	5	0	5	0.0	0.003	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	65.4
11	T1	792	76	968	9.6	0.264	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		797	76	973	9.5	0.264	0.1	NA	0.0	0.0	0.00	0.00	0.00	79.7
All Vehicles		1596	110	1942	6.9	0.264	0.3	NA	0.1	1.0	0.01	0.02	0.01	79.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: INTERSECT TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Monday, 22 November 2021 1:28:18 PM
Project: C:\Work Documents\Projects\2021\2021.196 - Bobs Farm Caravan Park\Sidra\NBR_Binder_Trotter.sip9

MOVEMENT SUMMARY

▽ Site: 101 [NBR_Binder Rd 2031PM + development (Site Folder: General)]

Nelson Bay Road / Binder Road Bobs Farm
November 2021
Site Category: (None)
Give-Way (Two-Way)
Design Life Analysis (Final Year): Results for 10 years

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Nelson Bay Road														
5	T1	771	35	942	4.5	0.250	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
6	R2	27	0	28	0.0	0.146	23.7	LOS B	0.4	3.1	0.83	0.94	0.83	46.3
Approach		798	35	970	4.4	0.250	0.7	NA	0.4	3.1	0.02	0.03	0.02	78.2
North: Binder Road														
7	L2	35	0	37	0.0	0.052	8.6	LOS A	0.2	1.2	0.51	0.73	0.51	56.0
Approach		35	0	37	0.0	0.052	8.6	LOS A	0.2	1.2	0.51	0.73	0.51	56.0
West: Nelson Bay Road														
10	L2	15	0	16	0.0	0.009	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	65.4
11	T1	918	42	1121	4.6	0.296	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		933	42	1137	4.5	0.296	0.2	NA	0.0	0.0	0.00	0.01	0.00	79.5
All Vehicles		1766	77	2144	4.4	0.296	0.6	NA	0.4	3.1	0.02	0.03	0.02	78.4

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: INTERSECT TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Monday, 22 November 2021 1:28:21 PM
Project: C:\Work Documents\Projects\2021\2021.196 - Bobs Farm Caravan Park\Sidra\NBR_Binder_Trotter.sip9

MOVEMENT SUMMARY

Site: 1 [NBR_Trotter 2021 AM (Site Folder: General)]

Network: N101 [NBR_Trotter 2021 AM (Network Folder: General)]

Nelson Bay Road / Trotter Road Bobs Farm
November 2021
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Nelson Bay Road														
6	R2	36	5.9	36	5.9	0.119	15.6	LOS B	0.2	1.1	0.73	0.90	0.73	41.9
Approach		36	5.9	36	5.9	0.119	15.6	NA	0.2	1.1	0.73	0.90	0.73	41.9
North: Trotter Road														
7	L2	34	3.1	34	3.1	0.081	7.7	LOS A	0.1	0.8	0.56	0.72	0.56	44.1
8	T1	8	25.0	8	25.0	0.081	22.7	LOS B	0.1	0.8	0.56	0.72	0.56	44.6
Approach		42	7.5	42	7.5	0.081	10.7	LOS A	0.1	0.8	0.56	0.72	0.56	44.2
West: Nelson Bay Road														
10	L2	17	31.3	17	31.3	0.011	7.5	LOS A	0.0	0.0	0.00	0.63	0.00	56.1
5	T1	826	9.0	826	9.0	0.224	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
Approach		843	9.5	843	9.5	0.224	0.2	NA	0.0	0.0	0.00	0.01	0.00	78.8
All Vehicles		921	9.3	921	9.3	0.224	1.3	NA	0.2	1.1	0.05	0.08	0.05	73.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: INTERSECT TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Sunday, 21 November 2021 8:54:32 AM
Project: C:\Work Documents\Projects\2021\2021.196 - Bobs Farm Caravan Park\Sidra\NBR_Binder_Trotter.sip9

MOVEMENT SUMMARY

Site: 1 [NBR_Trotter 2021 AM + development (Site Folder: General)]

Network: N101 [NBR_Trotter 2021AM + development (Network Folder: General)]

Nelson Bay Road / Trotter Road Bobs Farm
November 2021
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Nelson Bay Road														
6	R2	42	5.0	42	5.0	0.144	16.1	LOS B	0.2	1.3	0.74	0.90	0.74	41.6
Approach		42	5.0	42	5.0	0.144	16.1	NA	0.2	1.3	0.74	0.90	0.74	41.6
North: Trotter Road														
7	L2	43	2.4	43	2.4	0.152	7.8	LOS A	0.2	1.6	0.61	0.78	0.61	42.8
8	T1	24	8.7	24	8.7	0.152	20.5	LOS B	0.2	1.6	0.61	0.78	0.61	42.9
Approach		67	4.7	67	4.7	0.152	12.4	LOS A	0.2	1.6	0.61	0.78	0.61	42.8
West: Nelson Bay Road														
10	L2	21	25.0	21	25.0	0.013	7.4	LOS A	0.0	0.0	0.00	0.63	0.00	57.8
5	T1	843	8.9	843	8.9	0.229	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		864	9.3	864	9.3	0.229	0.2	NA	0.0	0.0	0.00	0.02	0.00	78.7
All Vehicles		974	8.8	974	8.8	0.229	1.8	NA	0.2	1.6	0.07	0.11	0.07	72.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: INTERSECT TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Monday, 22 November 2021 1:29:17 PM
Project: C:\Work Documents\Projects\2021\2021.196 - Bobs Farm Caravan Park\Sidra\NBR_Binder_Trotter.sip9

MOVEMENT SUMMARY

Site: 1 [NBR_Trotter 2031 AM (Site Folder: General)]

Network: N101 [NBR_Trotter 2031 AM (Network Folder: General)]

Nelson Bay Road / Trotter Road Bobs Farm
November 2021
Site Category: (None)
Stop (Two-Way)
Design Life Analysis (Final Year): Results for 10 years

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Nelson Bay Road														
6	R2	36	5.9	36	5.9	0.152	19.3	LOS B	0.2	1.4	0.79	0.92	0.79	39.2
Approach		36	5.9	36	5.9	0.152	19.3	NA	0.2	1.4	0.79	0.92	0.79	39.2
North: Trotter Road														
7	L2	34	3.1	34	3.1	0.099	8.2	LOS A	0.1	1.0	0.61	0.77	0.61	42.6
8	T1	8	25.0	8	25.0	0.099	29.9	LOS C	0.1	1.0	0.61	0.77	0.61	42.8
Approach		42	7.5	42	7.5	0.099	12.5	LOS A	0.1	1.0	0.61	0.77	0.61	42.6
West: Nelson Bay Road														
10	L2	17	31.3	17	31.3	0.011	7.5	LOS A	0.0	0.0	0.00	0.63	0.00	56.1
5	T1	959	9.0	959	9.0	0.260	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		976	9.4	976	9.4	0.260	0.2	NA	0.0	0.0	0.00	0.01	0.00	78.9
All Vehicles		1054	9.2	1054	9.2	0.260	1.3	NA	0.2	1.4	0.05	0.07	0.05	73.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: INTERSECT TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Sunday, 21 November 2021 8:54:50 AM
Project: C:\Work Documents\Projects\2021\2021.196 - Bobs Farm Caravan Park\Sidra\NBR_Binder_Trotter.sip9

MOVEMENT SUMMARY

Site: 1 [NBR_Trotter 2031 AM + development (Site Folder: General)]

Network: N101 [NBR_Trotter 2031 AM + development (Network Folder: General)]

Nelson Bay Road / Trotter Road Bobs Farm
November 2021
Site Category: (None)
Stop (Two-Way)
Design Life Analysis (Final Year): Results for 10 years

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Nelson Bay Road														
6	R2	42	5.0	42	5.0	0.185	20.3	LOS B	0.2	1.7	0.81	0.93	0.83	38.6
Approach		42	5.0	42	5.0	0.185	20.3	NA	0.2	1.7	0.81	0.93	0.83	38.6
North: Trotter Road														
7	L2	43	2.4	43	2.4	0.191	8.4	LOS A	0.3	1.9	0.69	0.84	0.69	40.8
8	T1	24	8.7	24	8.7	0.191	26.6	LOS B	0.3	1.9	0.69	0.84	0.69	40.6
Approach		67	4.7	67	4.7	0.191	14.9	LOS B	0.3	1.9	0.69	0.84	0.69	40.7
West: Nelson Bay Road														
10	L2	21	25.0	21	25.0	0.013	7.4	LOS A	0.0	0.0	0.00	0.63	0.00	57.8
5	T1	979	8.9	979	8.9	0.265	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		1000	9.2	1000	9.2	0.265	0.2	NA	0.0	0.0	0.00	0.01	0.00	78.8
All Vehicles		1109	8.8	1109	8.8	0.265	1.9	NA	0.3	1.9	0.07	0.10	0.07	72.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: INTERSECT TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Monday, 22 November 2021 1:29:46 PM
Project: C:\Work Documents\Projects\2021\2021.196 - Bobs Farm Caravan Park\Sidra\NBR_Binder_Trotter.sip9

MOVEMENT SUMMARY

Site: 1 [NBR_Trotter 2021 PM (Site Folder: General)]

Network: N101 [NBR_Trotter 2021PM (Network Folder: General)]

Nelson Bay Road / Trotter Road Bobs Farm
November 2021
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Nelson Bay Road														
6	R2	29	10.7	29	10.7	0.128	19.4	LOS B	0.2	1.2	0.79	0.92	0.79	39.0
Approach		29	10.7	29	10.7	0.128	19.4	NA	0.2	1.2	0.79	0.92	0.79	39.0
North: Trotter Road														
7	L2	37	11.4	37	11.4	0.134	8.6	LOS A	0.2	1.5	0.64	0.80	0.64	41.3
8	T1	14	23.1	14	23.1	0.134	28.3	LOS B	0.2	1.5	0.64	0.80	0.64	41.6
Approach		51	14.6	51	14.6	0.134	13.9	LOS A	0.2	1.5	0.64	0.80	0.64	41.4
West: Nelson Bay Road														
10	L2	6	16.7	6	16.7	0.004	7.3	LOS A	0.0	0.0	0.00	0.63	0.00	60.1
5	T1	969	4.5	969	4.5	0.256	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		976	4.5	976	4.5	0.256	0.1	NA	0.0	0.0	0.00	0.00	0.00	79.6
All Vehicles		1056	5.2	1056	5.2	0.256	1.3	NA	0.2	1.5	0.05	0.07	0.05	74.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: INTERSECT TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Sunday, 21 November 2021 8:55:08 AM
Project: C:\Work Documents\Projects\2021\2021.196 - Bobs Farm Caravan Park\Sidra\NBR_Binder_Trotter.sip9

MOVEMENT SUMMARY

Site: 1 [NBR_Trotter 2021 PM+ development (Site Folder: General)]

Network: N101 [NBR_Trotter 2021PM + development (Network Folder: General)]

Nelson Bay Road / Trotter Road Bobs Farm
November 2021
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Nelson Bay Road														
6	R2	47	6.7	47	6.7	0.205	20.4	LOS B	0.3	2.0	0.81	0.94	0.85	38.5
Approach		47	6.7	47	6.7	0.205	20.4	NA	0.3	2.0	0.81	0.94	0.85	38.5
North: Trotter Road														
7	L2	46	9.1	46	9.1	0.207	8.7	LOS A	0.3	2.2	0.69	0.85	0.70	40.3
8	T1	25	12.5	25	12.5	0.207	27.4	LOS B	0.3	2.2	0.69	0.85	0.70	40.3
Approach		72	10.3	72	10.3	0.207	15.3	LOS B	0.3	2.2	0.69	0.85	0.70	40.3
West: Nelson Bay Road														
10	L2	18	5.9	18	5.9	0.010	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	63.4
5	T1	985	4.4	985	4.4	0.260	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		1003	4.4	1003	4.4	0.260	0.2	NA	0.0	0.0	0.00	0.01	0.00	79.2
All Vehicles		1122	4.9	1122	4.9	0.260	2.0	NA	0.3	2.2	0.08	0.10	0.08	71.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: INTERSECT TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Monday, 22 November 2021 1:29:52 PM
Project: C:\Work Documents\Projects\2021\2021.196 - Bobs Farm Caravan Park\Sidra\NBR_Binder_Trotter.sip9

MOVEMENT SUMMARY

Site: 1 [NBR_Trotter 2031 PM (Site Folder: General)]

Network: N101 [NBR_Trotter 2031PM (Network Folder: General)]

Nelson Bay Road / Trotter Road Bobs Farm
November 2021
Site Category: (None)
Stop (Two-Way)
Design Life Analysis (Final Year): Results for 10 years

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Nelson Bay Road														
6	R2	29	10.7	29	10.7	0.174	25.7	LOS B	0.2	1.6	0.85	0.95	0.87	35.1
Approach		29	10.7	29	10.7	0.174	25.7	NA	0.2	1.6	0.85	0.95	0.87	35.1
North: Trotter Road														
7	L2	37	11.4	37	11.4	0.177	9.3	LOS A	0.2	1.9	0.73	0.88	0.73	38.8
8	T1	14	23.1	14	23.1	0.177	39.3	LOS C	0.2	1.9	0.73	0.88	0.73	38.5
Approach		51	14.6	51	14.6	0.177	17.5	LOS B	0.2	1.9	0.73	0.88	0.73	38.7
West: Nelson Bay Road														
10	L2	6	16.7	6	16.7	0.004	7.3	LOS A	0.0	0.0	0.00	0.63	0.00	60.1
5	T1	1125	4.5	1125	4.5	0.297	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		1131	4.5	1131	4.5	0.297	0.1	NA	0.0	0.0	0.00	0.00	0.00	79.6
All Vehicles		1211	5.1	1211	5.1	0.297	1.4	NA	0.2	1.9	0.05	0.06	0.05	74.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: INTERSECT TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Sunday, 21 November 2021 8:55:25 AM
Project: C:\Work Documents\Projects\2021\2021.196 - Bobs Farm Caravan Park\Sidra\NBR_Binder_Trotter.sip9

MOVEMENT SUMMARY

Site: 1 [NBR_Trotter 2031 PM+ development (Site Folder: General)]

Network: N101 [NBR_Trotter 2031PM + development (Network Folder: General)]

Nelson Bay Road / Trotter Road Bobs Farm
November 2021
Site Category: (None)
Stop (Two-Way)
Design Life Analysis (Final Year): Results for 10 years

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Nelson Bay Road														
6	R2	47	6.7	47	6.7	0.279	28.0	LOS B	0.4	2.7	0.87	0.97	0.99	34.0
Approach		47	6.7	47	6.7	0.279	28.0	NA	0.4	2.7	0.87	0.97	0.99	34.0
North: Trotter Road														
7	L2	46	9.1	46	9.1	0.278	10.9	LOS A	0.4	3.1	0.78	0.94	0.90	36.6
8	T1	25	12.5	25	12.5	0.278	39.3	LOS C	0.4	3.1	0.78	0.94	0.90	35.9
Approach		72	10.3	72	10.3	0.278	20.9	LOS B	0.4	3.1	0.78	0.94	0.90	36.4
West: Nelson Bay Road														
10	L2	18	5.9	18	5.9	0.010	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	63.4
5	T1	1143	4.4	1143	4.4	0.302	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		1161	4.4	1161	4.4	0.302	0.2	NA	0.0	0.0	0.00	0.01	0.00	79.3
All Vehicles		1280	4.8	1280	4.8	0.302	2.4	NA	0.4	3.1	0.08	0.10	0.09	71.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: INTERSECT TRAFFIC PTY LTD | Licence: NETWORK / 1PC | Processed: Monday, 22 November 2021 1:30:22 PM
Project: C:\Work Documents\Projects\2021\2021.196 - Bobs Farm Caravan Park\Sidra\NBR_Binder_Trotter.sip9

Attachment 6 – Concept Plan



TOTAL NO.OF EXISTING SITES	**193 SITES**
PROPOSED TOTAL NO.OF SITES IN EXPANSION AREA LOT 3622 DP 622485 LOT 2 DP622229	**62 SITES** 43 SITES 19 SITES
TOTAL NO.OF EXISTING & PROPOSED SITES	**255 SITES**

ISSUE	DATE	REVISION
E	27/10/22	AMENDED ISSUE
D	26/10/22	AMENDED ISSUE
C	17/02/21	AMENDED ISSUE
B	15/02/21	AMENDED ISSUE
A	19/01/21	DRAFT ISSUE

HOMETOWN AUSTRALIA COMMUNITIES

PROJECT SUNRISE LIFESTYLE RESORT

ADDRESS 4011 NELSON BAY ROAD, BOBS FARM, NSW 2316

SUNRISE PORT STEPHENS

DRAWING TITLE CONCEPT PLAN FOR LOT 3622 DP 622485 & LOT 2 DP622229

N

JOB NO.

DATE	SCALE	DRAWN	DRAWING NO.	ISSUE
01/2021	1:1000 @ A3	HTA	04.5	E

Attachment 7 – Ausgrid Servicing Advice

Preliminary Enquiry – Response Letter

24 November 2021 Webform ref: 286537

ADW Johnson Pty Ltd
Attention: Adam Gaul
Via email: adamg@adwjohnson.com.au

Premises address: **NELSON BAY ROAD, BOBS FARM**

Ausgrid AE Reference: **700007563**

Dear Adam

I refer to your preliminary enquiry regarding the electricity connection at the above address and provide the following information.

- ❑ Ausgrid kiosk substation HS78867 feeding lot 51 DP1175028 is a 1000kVA kiosk substation with a 1200 amp low voltage supply to site. The peak load is 233 amps (23.01.2020). If the new development is the same developer/owner, the new site could be supplied from the existing site main switchboard providing compliance with AS3000 service rules can be achieved and electrician approves total load of 1200A for entire site. Site lots may need to be consolidated into 1 lot.
- ❑ Alternatively, the new site can be supplied by a new kiosk substation or street supply depending on the load required on site. The existing site and new site would remain segregated by the existing property line. Ideally lots 3622 and 2 would be consolidated.
- ❑ There is sufficient 11kV capacity for the expected new load.
- ❑ An extension/augmentation of the Ausgrid network is Contestable and requires the customer to engage accredited service providers to undertake the design and construction of the required works. Information on how to connect to the Ausgrid network can be found on our website at the following link: https://www.ausgrid.com.au/Connections
- ❑ Ausgrid is unable to provide costs or timeframes for Contestable works. However, accredited service providers may be able to provide the information.
- ❑ The electrical connection will require Ausgrid to provide auxiliary services that only Ausgrid can provide. The auxiliary services and the associated fee are detailed in the Ausgrid document ***Alternative control services fee schedule.***. The document is available on our website at the following link: https://www.ausgrid.com.au/Connections/charges
- ❑ To proceed further in obtaining a new or altered electrical connection to the property a Connection Application will need to be submitted. The various application forms are available on our website at the following link: https://www.ausgrid.com.au/Connections

It should be noted that the above advise is based on Ausgrid's polices and network status as of today and are subject to change.

Connections to the Ausgrid network are governed by a set of laws and rules referred to as the National Energy Customer Framework (NECF). Included in the NECF is the National Electricity Rules (NER). Under these rules, a binding contract may only be formed after a connection application is lodged and Ausgrid has made a connection offer in response to that application. Accordingly, to make arrangements for the electricity connection of the development to the Ausgrid network you should lodge a completed connection application.

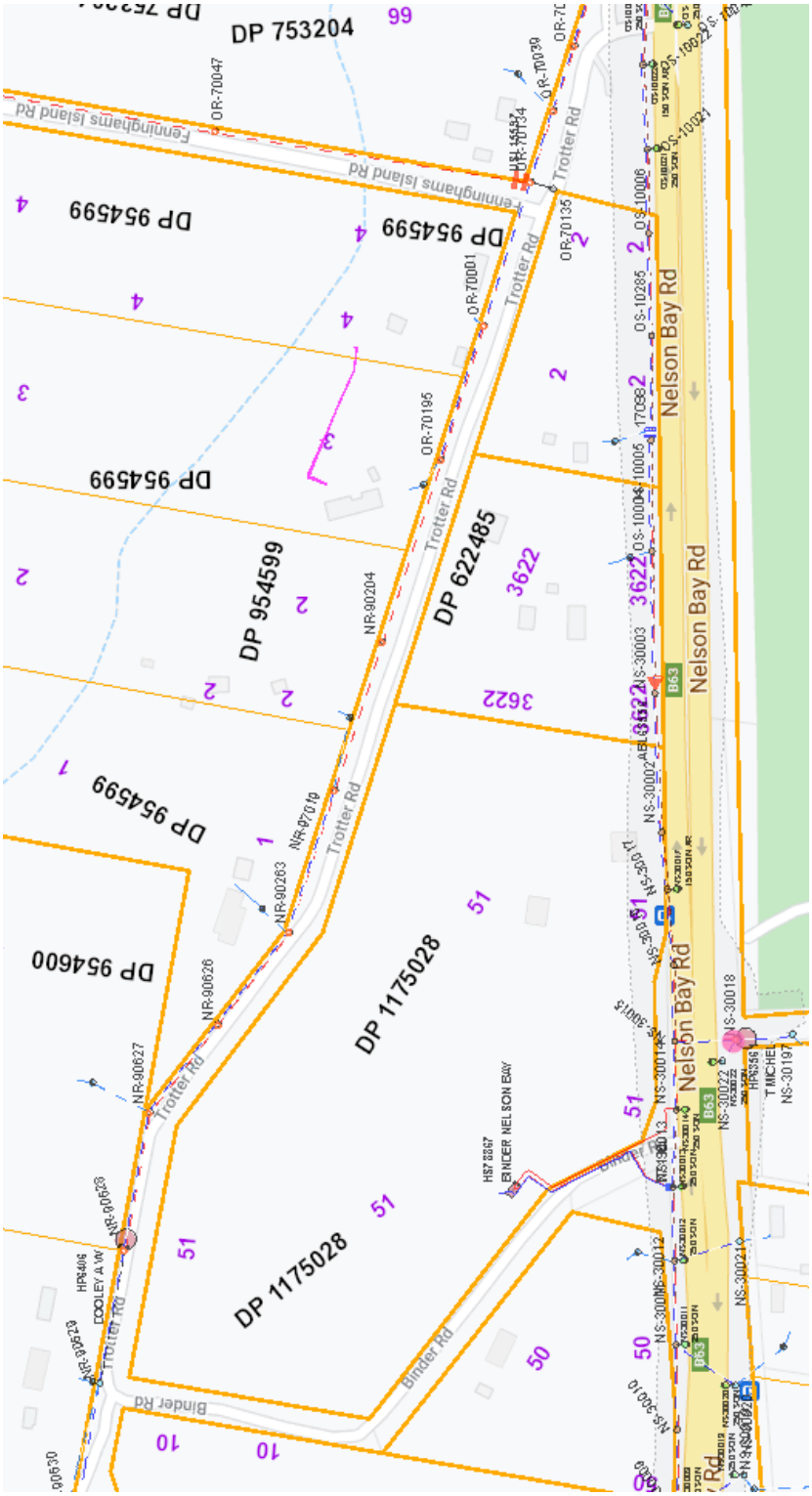
Should you require any further information please contact me.

Yours sincerely,

Brian Mottley

Ausgrid

Direct Telephone Number: 0249101411
Email: brian.mottley@ausgrid.com.au



Attachment 8 – Hunter Water Servicing Advice

Hunter Water Corporation
ABN 46 228 513 446

PO Box 5171
HRMC NSW 2310
36 Honeysuckle Drive
NEWCASTLE NSW 2300
1300 657 657
enquiries@hunterwater.com.au
hunterwater.com.au

14 Dec 2021

D J & L J SLACK
C/- ADW Johnson Pty Ltd
UNIT 7, 335 HILLSBOROUGH ROAD
WARNERS BAY NSW 2282

PRELIMINARY SERVICING ADVICE APPLICATION

Property Address:	4045 NELSON BAY RD, BOBS FARM NSW 2316
Lot & Plan number:	Lot 3622 Plan 622485, Lot 2 DP 622229
Development Description:	Preliminary Servicing Application for Development of Long term caravan park sites
Hunter Water Reference:	2021-1909

Hunter Water offers the following preliminary servicing advice for the provision of water and sewerage facilities for the development detailed above.

General information on water and sewer issues relevant to the proposal are included in this correspondence. This information is indicative only and based on Hunter Water's knowledge of its system performance and other potential developments in the area at the present time. This advice may change substantially due to a range of factors and a detailed analysis of available capacity will be undertaken upon lodgement of a Development Application to Hunter Water.

When you have development approval, you may submit this Development Application to determine the formal requirements for the development. Hunter Water will then issue a Requirements Letter including an offer for network capacity. You will need to comply with each of the requirements in this Letter for the issue of a Section 50 Compliance Certificate for the development.

Financial Requirements

A reimbursement contribution may be required towards the cost of any water and sewer infrastructure that is constructed by a third-party developer and utilised to serve this development. There are several reimbursable water and sewer assets including water mains, Pressure Reducing Valve, common pressure sewer main and downstream Wastewater Pump Station.

Reimbursements include GST and cannot be determined until the connection points are defined and a Development Application is submitted.

Water Supply
The closest water connection point is the DN150 main in Trotter Road, and the proposed development has an existing frontage to this main.

This water main is supplied by Anna Bay 1 PRV, and there is currently sufficient capacity in the local water network to cater for the proposed development. Connection cannot be made to the DN300 watermain on Nelson Bay Road.

Wastewater Transportation
The proposed development site has existing frontage to a DN140 PE pressure sewer main, which services the neighbouring sites to the west along Trotter Rd. This pressure sewer main conveys flows to the Anna Bay 9 Wastewater Pump Station (WWPS), which is within the Boulder Bay Wastewater Treatment Works (WWTW) catchment.

There is currently sufficient capacity in the local wastewater network to cater for up to 5L/s from the proposed development.

Connection to the common pressure main will require design and construction of a boundary kit under a Complex Works Deed. Internal water and sewer servicing will be covered under an Hydraulics application.

Wastewater Treatment

Wastewater discharge to Boulder Bay Waste Water Treatment Works (WWTW) is the most feasible option and there is sufficient capacity to service this development.

Delivery of Developer Works

Developer works will need to be delivered under Developer Works Deeds executed by the Developer and Hunter Water.

All developer works are to be designed by an Accredited Design Consultant and constructed by an Accredited Contractor.

Environmental Requirements

Hunter Water may require a Review of Environmental Factors (REF) to be submitted in accordance with the provisions of Environmental Planning and Assessment Act 1979 for the delivery of developer works. Hunter Water will assess the REF as a determining authority under provisions of Part 5 of the Act.

Entry Requirements

The proposed investigation works may require entry to another property. You will need to arrange for entry and have evidence of consent by way of a signed Entry Permit with the affected landowner.

These preliminary requirements are not commitments by Hunter Water and maybe subject to significant change prior to this development proceeding.

If you have any enquiries, please contact your designated assessment officer below.

Greg McHarg – Account Manager Major Development - Development Services
T: 02 4979 9545
E: greg.mcharg@hunterwater.com.au

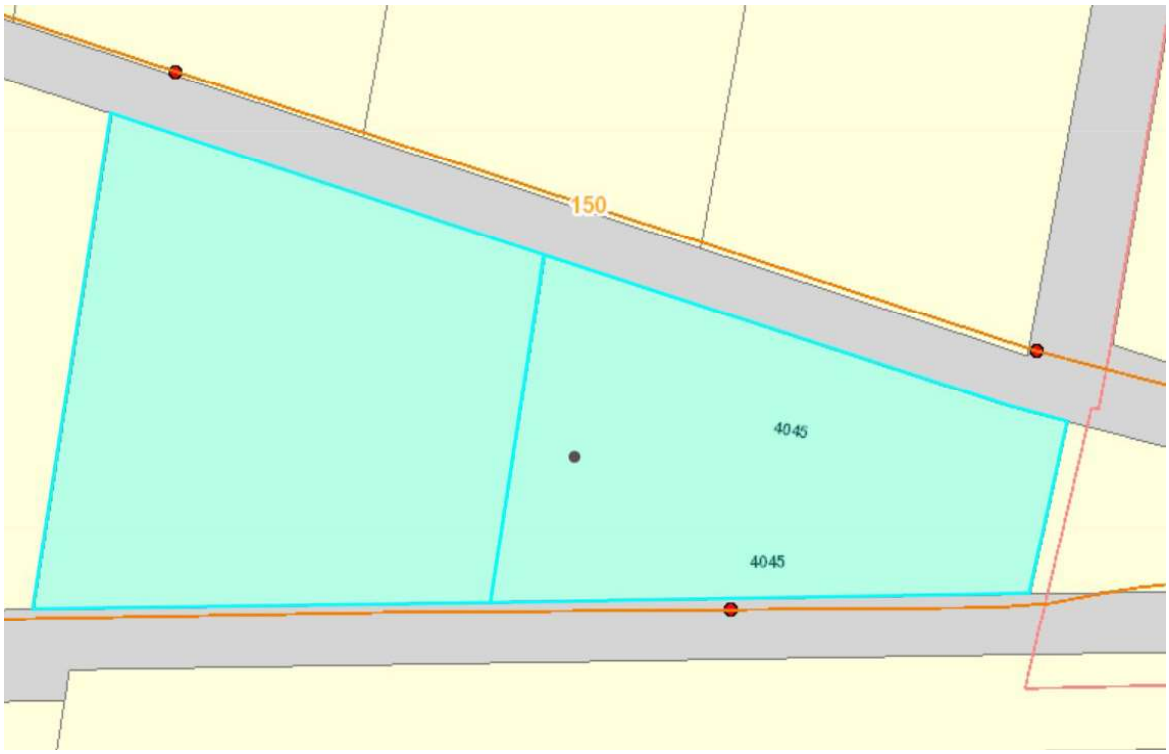


Figure 1 – Water servicing infrastructure in the vicinity of the proposed development site

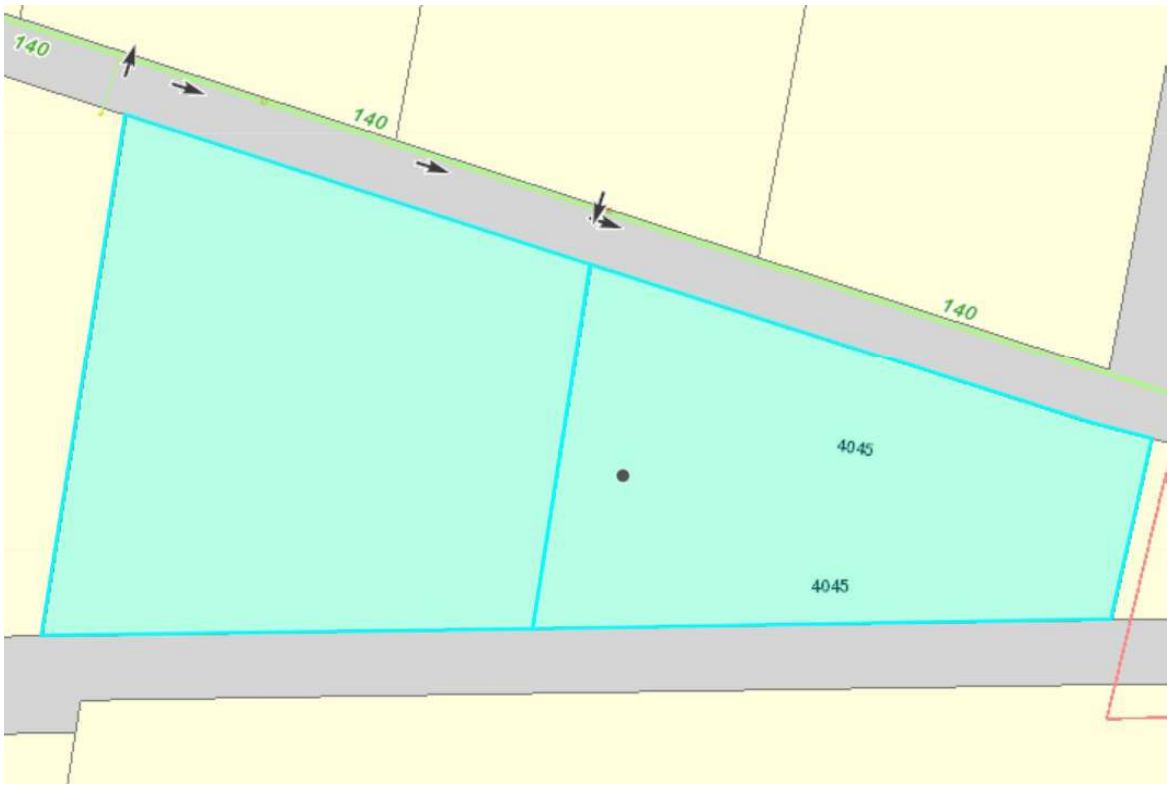


Figure 2 – Wastewater transportation infrastructure in the vicinity of the proposed development site

HUNTER WATER CORPORATION

A.B.N. 46 228 513 446
Enquiries: 1300 657 657

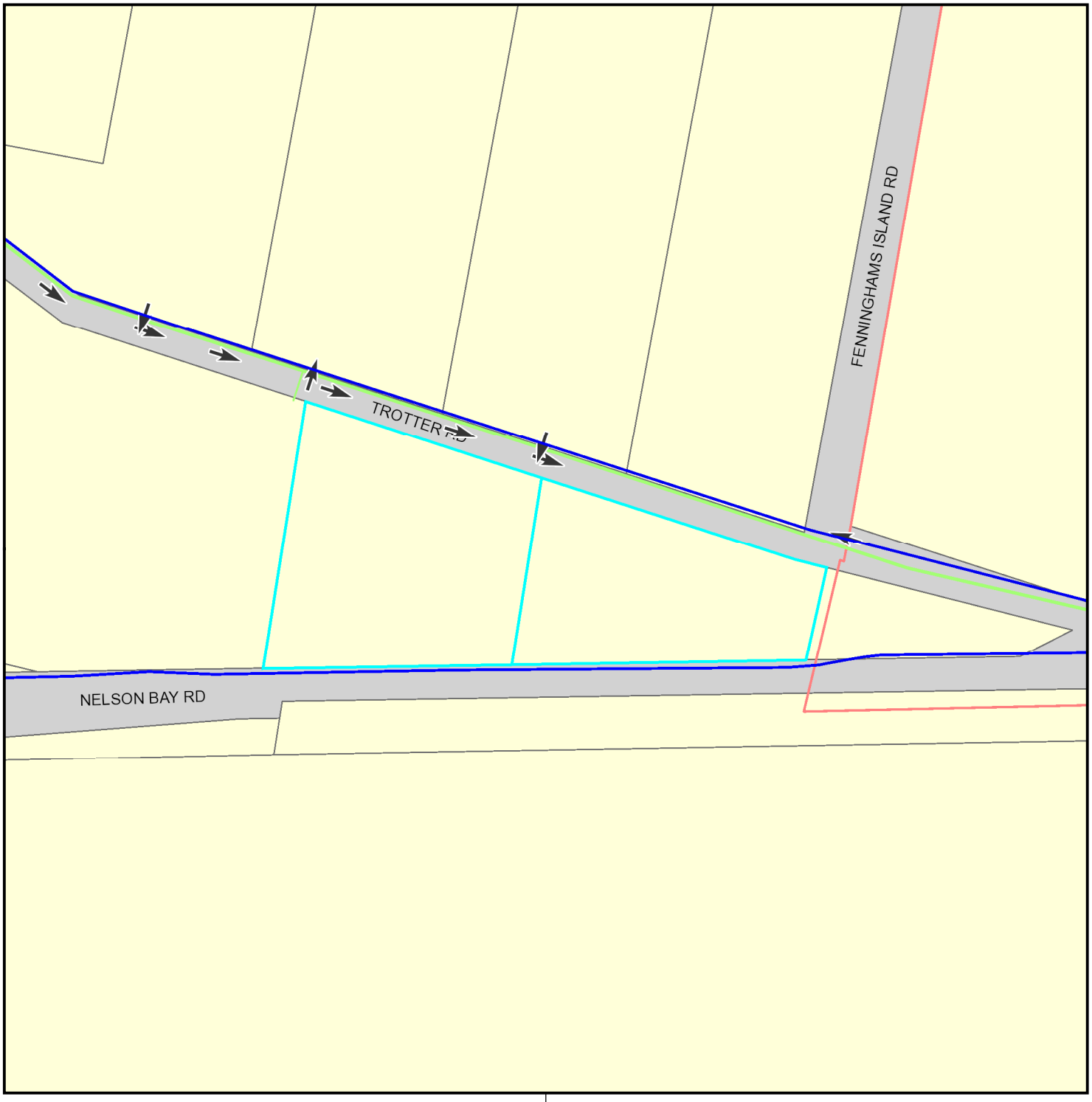
ArcGIS Web Map

N
W E
S

RATEABLE_PREMISE_NO.: [No Parcel Feature Selected]

LOT/SECTION/DP: 3622//622485

PROPERTY ADDRESS: ,



HUNTER WATER ASSETS POSITION ARE APPROXIMATE ONLY.
SUBJECT PROPERTY BOLDED.
ALL MEASUREMENTS ARE METRIC.

IMPORTANT:

ANY INFORMATION ON THIS PLAN MAY NOT BE UP TO DATE AND THE CORPORATION ACCEPTS NO RESPONSIBILITY FOR ITS ACCURACY.

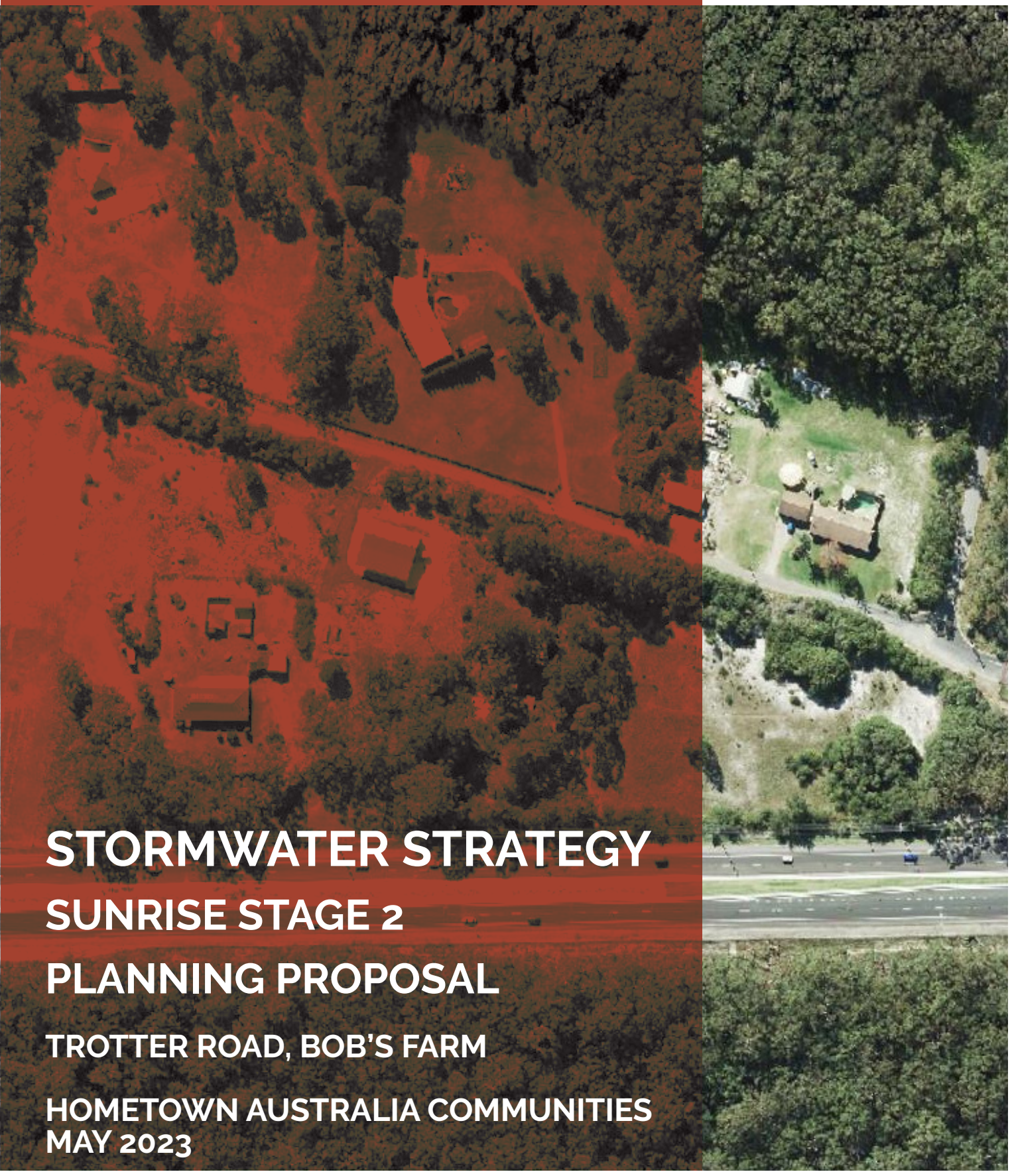
Date: 29/10/2021

Scale: at A4 1:4,000

CADASTRAL DATA © Department Finance, Services & Innovation [Nov 2017].
Modified [29/10/2021]
CONTOUR DATA © AAMHatch
© Department of Planning

SEWER/WATER/RECYCLED WATER/ ELECTRICAL UTILITY DATA
© HUNTER WATER CORPORATION

Attachment 9 – Stormwater Strategy



STORMWATER STRATEGY

SUNRISE STAGE 2

PLANNING PROPOSAL

TROTTER ROAD, BOB'S FARM

HOMETOWN AUSTRALIA COMMUNITIES
MAY 2023

adw johnson

HUNTER OFFICE
7/335 Hillsborough Road,
Warners Bay NSW 2282
(02) 4978 5100

CENTRAL COAST OFFICE
5 Pioneer Avenue,
Tuggerah NSW 2259
(02) 4305 4300

SYDNEY OFFICE
Level 35, One International Towers
100 Barangaroo Avenue,
Sydney NSW 2000
(02) 8046 7412

www.adwjohnson.com.au

Document Control Sheet

Issue No.	Amendment	Date	Prepared By	Checked By
A	Draft Issue	02/11/22	Mitchell Knox	Robert Champness
B	Address Gateway requirements	04/05/23	Mitchell Knox	Nathan Delaney
C	Council Comments	12/05/23	Mitchell Knox	-

Limitations Statement

This report has been prepared in accordance with and for the purposes outlined in the scope of services agreed between ADW Johnson Pty Ltd and the Client. It has been prepared based on the information supplied by the Client, as well as investigation undertaken by ADW Johnson and the sub-consultants engaged by the Client for the project.

Unless otherwise specified in this report, information and advice received from external parties during the course of this project was not independently verified. However, any such information was, in our opinion, deemed to be current and relevant prior to its use. Whilst all reasonable skill, diligence and care have been taken to provide accurate information and appropriate recommendations, it is not warranted or guaranteed and no responsibility or liability for any information, opinion or commentary contained herein or for any consequences of its use will be accepted by ADW Johnson or by any person involved in the preparation of this assessment and report.

This document is solely for the use of the authorised recipient. It is not to be used or copied (either in whole or in part) for any other purpose other than that for which it has been prepared. ADW Johnson accepts no responsibility to any third party who may use or rely on this document or the information contained herein.

The Client should be aware that this report does not guarantee the approval of any application by any Council, Government agency or any other regulatory authority.

Executive Summary

ADW Johnson has been engaged by Hometown Australia Holdings Pty Ltd to prepare a stormwater strategy for Lots 3622 DP 622485 and 2 DP 622229 at Bobs Farm. The strategy is required to support a Planning Proposal for the extension of an existing lifestyle village located on Lot 51 DP 1175028.

This stormwater strategy specifically addresses both stormwater quantity and quality outcomes. It addresses the conditions and constraints of the existing stormwater drainage regime and identifies appropriate stormwater infrastructure to adequately manage runoff within the site's boundaries.

Based on review of the existing site topography and geotechnical conditions, an infiltration-centric stormwater strategy is recommended. End-of-line infiltration basins are proposed to both attenuate peak flows and improve runoff quality.

DRAINS modelling was undertaken to demonstrate that the proposed stormwater management system can be sized to meet Council's requirements in relation to stormwater detention and peak site discharges.

MUSIC modelling has demonstrated that a proposed treatment train of gross pollutant traps and infiltration basins can satisfy Council's water quality stripping targets within the development footprint.

The existing site is situated above the regional Probable Maximum Flood. The proposed development provides favourable conditions for refuge-in-place subject to extreme flood events.

Commentary is provided herein which confirms that the proposed development will not adversely impact the hydrological integrity of coastal wetlands or the quality of drinking water catchments.

This strategy report has concluded that appropriate stormwater controls can be readily implemented within the proposed site footprint. The stormwater strategy presented herein is considered to be well-suited to existing site conditions and is fully compliant with Council's Development Control Plan.

Table of Contents

EXECUTIVE SUMMARY ..... **II**

1.0 INTRODUCTION **6**

2.0 SITE DESCRIPTION **7**

2.1 EXISTING SITE 7
2.2 EXISTING GEOLOGY 7
2.3 EXISTING DRAINAGE 8
2.4 EXISTING HYDROGEOLOGY 10
2.5 PREVIOUS REPORTING 10
2.6 PROPOSED DEVELOPMENT 10

3.0 COUNCIL REQUIREMENTS **12**

3.1 STORMWATER DRAINAGE PLAN 12
3.2 ON-SITE DETENTION 12
3.3 STORMWATER QUALITY 12
3.4 RIPARIAN CORRIDORS 13
3.5 FLOODING 13
3.6 COASTAL MANAGEMENT 13
3.7 DRINKING WATER CATCHMENTS 14
3.8 GATEWAY DETERMINATION 14

4.0 STORMWATER STRATEGY **15**

5.0 STORMWATER DISCHARGE **16**

5.1 MODELLING PARAMETERS 16
5.1.1 Rainfall Intensity *16*
5.1.2 Loss Parameters *16*
5.1.3 Boundary Conditions *16*
5.2 CATCHMENTS 16
5.2.1 Predeveloped Catchment *16*
5.2.2 Developed Catchment *17*
5.3 STORMWATER DISCHARGE CONTROLS 17
5.4 STORMWATER RESULTS 18
5.4.1 Northern Catchment (Trotter Road) *18*
5.4.2 Southern Catchment (Nelson Bay Road) *18*
5.5 SUMMARY OF STORMWATER DETENTION OUTCOMES 19

6.0 STORMWATER QUALITY **20**

6.1 MUSIC MODELLING 20
6.2 TREATMENT TRAIN 20
6.2.1 Gross Pollutant Traps *20*
6.2.2 Infiltration Basins *21*
6.3 WATER RESULTS 21
6.4 SUMMARY OF WATER QUALITY OUTCOMES 22

7.0 FLOODING **23**

7.1 PROBABLE MAXIMUM FLOOD 23
7.2 EMERGENCY RESPONSE PLANNING 24
7.2.1 NSW Draft Shelter-in-Place Guidelines *26*

7.2.2 Limitations *28*
7.3 SUMMARY OF FLOODING OUTCOMES 28
8.0 COASTAL WETLANDS 29
9.0 DRINKING WATER CATCHMENTS 30
10.0 EROSION AND SEDIMENT CONTROL 31
11.0 WATER SENSITIVE URBAN DESIGN 32
12.0 CONCLUSION 33
13.0 REFERENCES 34

APPENDIX A

STORMWATER STRATEGY PLANS

APPENDIX B

DRAINS MODEL

APPENDIX C

MUSIC MODEL

APPENDIX D

MUSIC-LINK REPORT

LIST OF FIGURES

Figure 1 – Existing Site.
Figure 2 – Site Locality.
Figure 3 – Hydrologic Soil Groups.
Figure 4 – Nelson Bay Road Table Drain.
Figure 5 – Existing Drainage Regime.
Figure 6 – Indicative Masterplan.
Figure 7 – Peak Site Discharges into Trotter Road.
Figure 8 – Site Contribution to Existing Gully.
Figure 9 – Flood Prone Land Mapping (PMF).
Figure 10 – PMF Flood Extents and Hazard.
Figure 11 – PMF Site Connectivity.
Figure 12 – Flood Level Hydrographs at McKinley Swamp.
Figure 13 – Coastal Wetlands and Proximity Areas.
Figure 14 – Drinking Water Catchment.

LIST OF TABLES

Table 1 - Peak Flows Received by Fenninghams Island Road
Table 2 - Water Quality Stripping Targets
Table 3 - DRAINS Modelling Parameters
Table 4 - Predeveloped Catchment Parameters
Table 5 - Developed Catchment Parameters
Table 6 - Infiltration Basin Parameters
Table 7 - Catchment Composition
Table 8 - GPT Pollutant Removal Efficiencies
Table 9 - Infiltration Basin Parameters
Table 10 - Treatment Train Effectiveness
Table 11 - Draft Shelter-in-Place Considerations

1.0 Introduction

ADW Johnson has been engaged by Hometown Australia Holdings Pty Ltd to prepare a stormwater strategy for Lot 3622 DP 622485 and Lot 2 DP 622229 at Bobs Farm. The strategy is required to address stormwater management outcomes for a Planning Proposal to permit a caravan park use over the site.

Specifically, the stormwater strategy considers peak flow management, Water Sensitive Urban Design (WSUD), flood impacts and affectation and erosion and sediment control.

The land subject to this proposal is located at Bobs Farm. It is bounded by Trotter Road to the north and Nelson Bay Road to the south. The existing 'Sunrise' lifestyle village adjoins the site's western boundary. The planning proposal will facilitate the extension of the Sunrise Village over this site. An aerial image of the subject lands is shown in ***Figure 1***.



Figure 1 – Existing Site.
Source: SIX Maps.

2.0 Site Description

2.1 EXISTING SITE

The subject site is located within Port Stephens Council LGA at Nelson Bay Road, Bobs Farm. It is situated to the west of the Anna Bay township and lies between Fenninghams Island to the north and the Anna Bay sandbeds to the south. Attention is drawn to ***Figure 2*** which shows the site in its broader context.

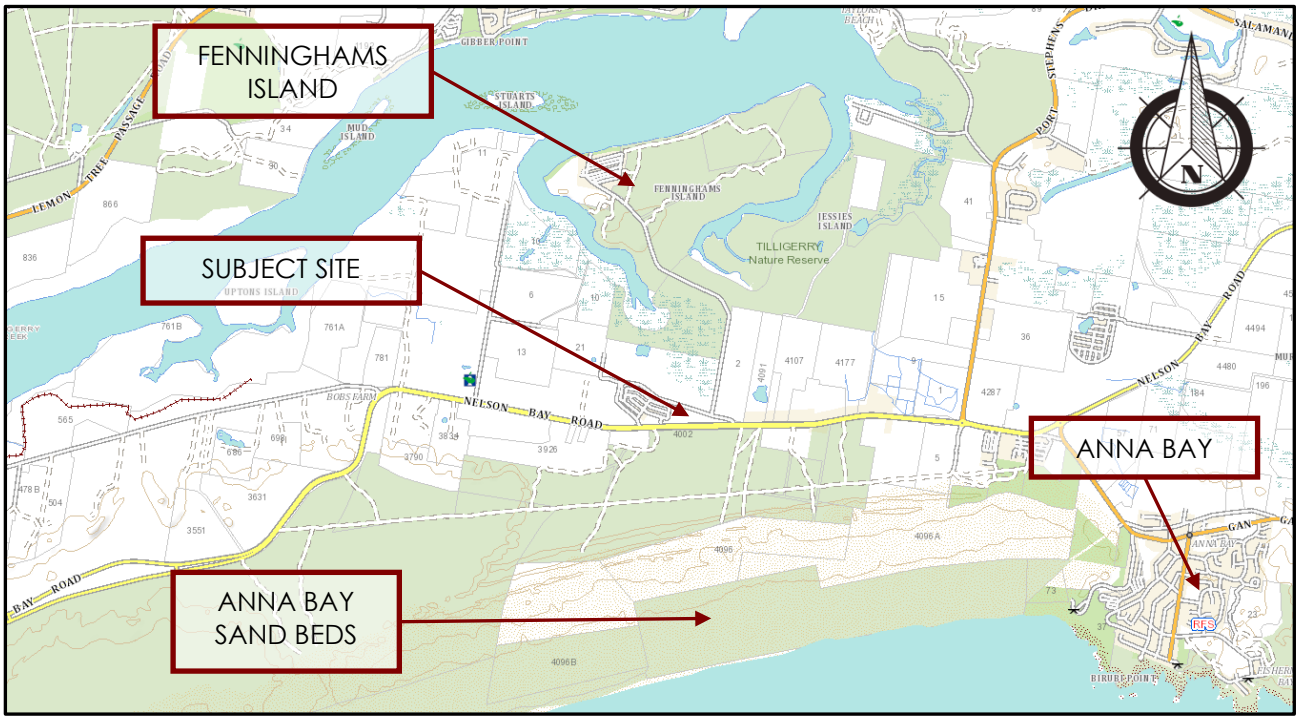


Figure 1 – Site Locality.
Source: SIX Maps.

Site levels vary generally in the order of 5.8m to 9m AHD. Existing topography is typified by gentle slopes of generally less than 3%. The site is bisected by a gentle crest creating two distinct catchments falling north to Trotter Road and south the Nelson Bay Road.

2.2 EXISTING GEOLOGY

The NSW *eSPADE* GIS confirms that the site is situated within the *Shoal Bay* landscape. Port Stephens Council's *hydrologic soil group mapping*, which is based on the NSW soil landscape maps, shows the site as being Group A (sandy/Shoal Bay) soils. An excerpt from Council's soil mapping is shown in ***Figure 3***.

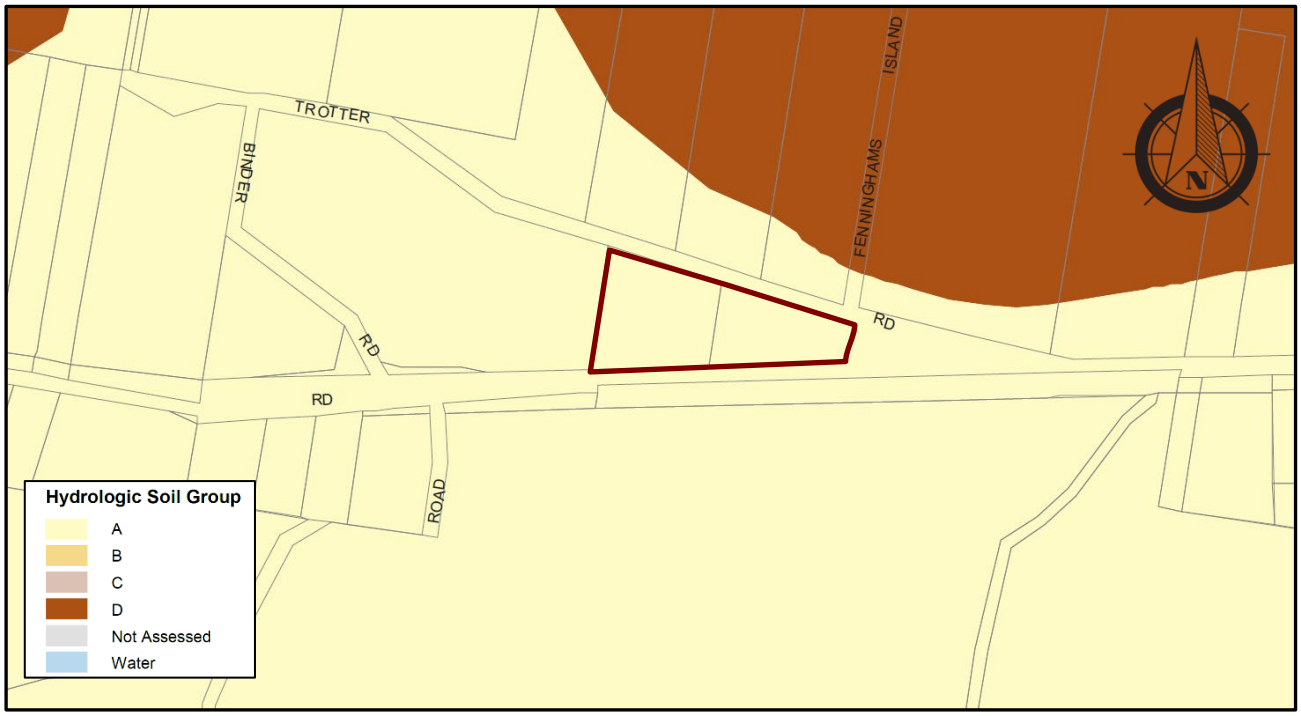


Figure 2 – Hydrologic Soil Groups.
Source: Port Stephens Council.

Previous investigations, historic use records and ground-truthing indicate that the entire site is typified by the sandy, well-drained soils of the Shoal Bay landscape.

2.3 EXISTING DRAINAGE

With reference to shallow natural grades and sandy soil profiles, it is evident that the site's hydrology is dominated by groundwater recharge. It is expected that frequent rainfall events are disposed of via infiltration to the catchment's soils, with less-frequent rainfall events generating runoff once the groundwater storage has been exhausted.

In relation to surface water runoff, the site's northern catchment drains to Trotter Road. Under existing conditions, two low points in Trotter Road report to private properties with no legal points of discharge.

It is understood that Trotter Road will be upgraded in support of DA16/2007/15/5, being a long-term caravan park located at 16 Trotter Road. The proposed roadworks will formalise the existing drainage regime by redirecting overflows to Fenninghams Island Road. From Fenninghams Island Road, flows will be conveyed northwards into an upstream tributary of Fenninghams Island Creek.

The proposed upgrades of Trotter Road have been subject to detailed hydrologic modelling and reporting (Reference 240060(1) by ADW Johnson dated 2022). Peak flows into Fenninghams Island Road following the Trotter Road upgrades are provided in ***Table 1***.

Table 1 - Peak Flows Received by Fenninghams Island Road

Recurrence	Peak Catchment Flows (m3/s)		
	1EY	10% AEP	1% AEP
Post upgrades	0.039	0.219	0.469

Source: ADW Johnson 2022

The site's southern catchment falls towards a low point in its southwestern corner. Overflows are subsequently disposed into an existing table drain in Nelson Bay Road which is shown in ***Figure 4***. The capacity of the existing table drain is not known.



Figure 3 – Nelson Bay Road Table Drain.
Image: Google.

Figure 5 presents a broad plan of the existing drainage network.

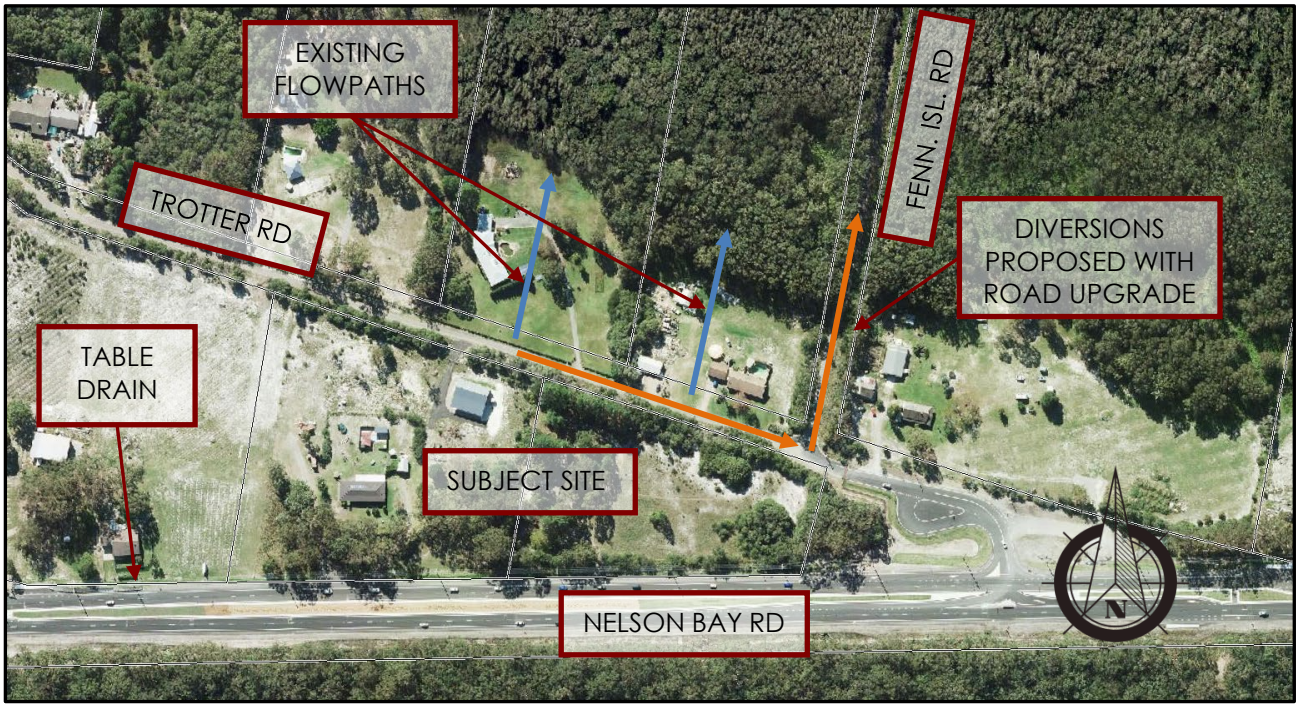


Figure 4 – Existing Drainage Regime.
Source: Six Maps.

2.4 EXISTING HYDROGEOLOGY

As noted in Qualtest's *Preliminary Contamination* Assessment (2022), groundwater is anticipated in an unconfined aquifer beneath the site at depths greater than 2m below ground surface. The proposed development is unlikely to intercept groundwater at such depths.

Groundwater is expected to flow northwards to either Bobs Farm Creek or Tilligerry Creek. Qualtest 2022 notes that groundwater conditions and flows may vary subject to climatic influences.

2.5 PREVIOUS REPORTING

The existing Sunrise Stage 1 Development has been the subject of previous stormwater reporting. MM Hyndes Baily & Co. prepared a *Drainage Strategy Report* for 4011 Nelson Bay Road in August 2017. The report updated a previous strategy assessment prepared by Northrop Engineers in 2013.

A fundamental principal of the approved drainage strategy was that infiltration basins were to wholly accommodate the 100-year ARI design storm. A network of infiltration basins was sized to ensure no discharge from the site up to the 100-year ARI design storm.

The proposed infiltration basins were central to the strategy's water quality treatment train. Though not modelled in MUSIC, online "silt traps," comprising of a perforated pipe and permeable pit sumps, were proposed to mitigate sedimentation of the proposed basins.

The Sunrise Stage 1 stormwater strategy accounted for highly infiltrative soils. Whilst the 2013 assessment adopted an exfiltration rate of 10m/day, MM Hyndes Bailey & Co. applied a factor of safety, adopting a rate of 2m/day (83.6mm/hr). Field infiltration testing indicated a much higher degree of ground permeability in the order of 15m/day (627mm/hr).

2.6 PROPOSED DEVELOPMENT

The Planning Proposal seeks to allow for the extension of an existing lifestyle village that is located on Lot 51 DP 1175028 into adjacent land described as Lots 3622 DP 622485 and 2 DP 622229. The proposed development would create:

- Approximately 62 long-term dwelling sites in addition to the existing Sunrise stage one development;
- Community facilities;
- A network of communal driveways; and
- Caravan and boat storage facilities.

A potential site layout is presented in ***Figure 6***. It is noted that ***Figure 6*** is conceptual in nature, being indicative of the site's developable capability. It is expected that the masterplan will evolve until it is confirmed by a future Development Application.

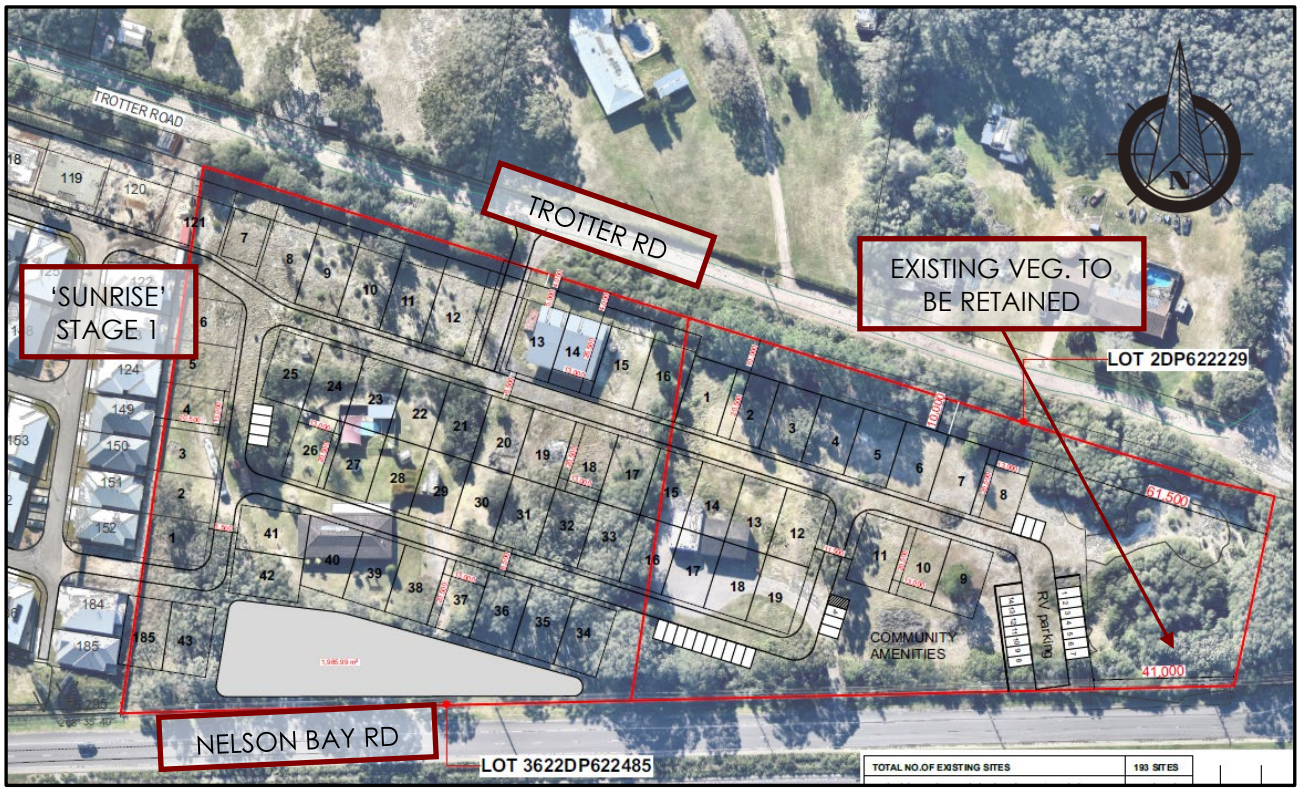


Figure 5 – Indicative Masterplan.
Source: Hometown Communities.

3.0 Council Requirements

Port Stephens City Council provides objectives and controls for developments within "Port Stephens Development Control Plan 2014" (DCP). *Part B* "General Provisions" of the DCP outline relevant controls for development.

Part B4 – *Drainage and Water Quality* of the DCP defines objectives in relation to stormwater as follows in ***Sections 3.1*** to ***3.2***.

3.1 STORMWATER DRAINAGE PLAN

The objectives of **B4.A – Stormwater Drainage Plan** are:

- To ensure a stormwater drainage plan is submitted when *development increases non-permeable surfaces* and will place significant additional flows into *public drainage;*
- To ensure the stormwater drainage plan details a legal and physical point of discharge to minimise impacts on *water balance*, *surface water* and *groundwater* flow regimes and flooding; and
- To implement sustainable mitigation systems that can be maintained using resources available to the maintainer.

A stormwater drainage plan would be provided as part of a stormwater management plan in support of any future development application over the subject lots.

3.2 ON-SITE DETENTION

The objective of **B4.B – On Site Detention** is to regulate the impacts on the capacity of the public drainage system.

Control **B4.2** states that on-site detention/on-site infiltration is required where the post-development flow rate/volume exceeds the pre-development flow rate/volume. Control **B4.3** states that the infiltration/detention system is to be:

- Sized so that the post-development flow rate and volume equals the pre-development flow rate and volume for all storm events up to and including the 1% annual exceedance probability (AEP) storm event; and
- Provided by either underground chambers, surface storage or a combination of both.

3.3 STORMWATER QUALITY

The objectives of **B4.C – Water Quality** are:

- To ensure development does not impact on water quality through use of water quality modelling, such as MUSIC Modelling and subsequent WSUD measures;
- To safeguard the environment by improving the quality of stormwater run-off; and
- To ensure water quality is protected and maintained during the construction phase through the conditioning of appropriate measures.

Control **B4.5** Requires all developments to include Stormwater Quality Improvement Devices (SQIDs). Before water is released into public drainage it must meet Council's water quality stripping targets shown in ***Table 2***.

Table 2 - Water Quality Stripping Targets

Pollutant	Targets
Total Suspended Solids (TSS)	90% post-development load
Total Phosphorus (TP)	60% retention post-development
Total Nitrogen (TN)	45% retention post-development
Gross Pollutants (GP)	90% post-development load

Source: PSC DCP Schedule E1.,

Given the site is not within a drinking water catchment (refer ***Section 9***), 'Neutral or Beneficial Effect' (NorBE) water quality assessment is not applicable.

3.4 RIPARIAN CORRIDORS

The objective of **B4.B – Riparian Corridors** is to protect and retain riparian corridors as localities of environmental important. The proposed development does not propose any works on waterfront land.

3.5 FLOODING

Part B5 – Flooding of the DCP contains compliance requirements for flood compliance for a proposed development which is situated within the flood planning area or at or below the Flood Planning Level (FPL).

Control **B5.2** requires developments to meet Council's minimum Finished Floor Levels (FFLs). For residential accommodation, Council's required FFL is the FPL. For open car parking spaces, Council's required FFL is the current day, 1% AEP flood level.

Control **B5.8** provides triggers for Flood Impact Risk Assessments, relating to the placement of fill in floodway and flood storage areas.

Control **B5.14** states that a flood refuge is required for all developments which cannot achieve flood-free access to flood-free areas.

Noting that the subject site is not flood liable, Council has advised that the proposed development should address Ministerial Direction 4.1 (Flooding), which includes consideration of the Probable Maximum Flood (PMF) and any potential affectation.

3.6 COASTAL MANAGEMENT

It is noted that a portion of the site is located within a "Coastal Environment Zone" as recognised in the State Environment Planning Policy (Resilience and Hazards) (formerly Coastal Management) 2021. Therefore, Port Stephens Council must be satisfied that the development will not significantly impact on:

a. The biophysical, hydrological, or ecological integrity of the adjacent coastal wetland; and
b. The quantity and quality of surface and ground water flows to and from the adjacent coastal wetland.

3.7 DRINKING WATER CATCHMENTS

Control **B4.10** specifies that any development which (in the opinion of Council) has the potential to significantly and adversely affect the quality of a drinking water catchment will be referred to Hunter Water under Section 51 of the *Hunter Water Act 1991*. Additionally, Figure **BE** of Council's DCP provides unique water quality targets for sites within a drinking water catchment.

3.8 GATEWAY DETERMINATION

Planning Proposal PP-2022-3959 received a Gateway Determination on May 3rd 2023. The determination is subject to the following condition relevant to this stormwater strategy:

1(a). demonstrate there are appropriate arrangements for shelter-in-place and evacuation in a probable maximum flood event in consideration of the draft shelter-in-place guideline.

The NSW *Draft Shelter-in-Place Guideline* was exhibited in January 2023. Emergency response outcomes are detailed in ***Section 7*** with specific reference to the draft guideline.

4.0 Stormwater Strategy

The Planning Proposal and concept masterplan has been planned and designed to achieve drainage, water quality and flooding objectives. A focal point of this stormwater strategy was to disconnect impervious areas from existing table drains using methods which are sympathetic to the existing geomorphic conditions.

A conventional piped drainage network will be provided throughout the site's communal driveway network. Pits and pipes shall be sized according to Council's objectives subject to detailed design. A Gross Pollutant Trap (GPT) is recommended at all piped outlets which may be proprietary (such as a screened separator) or site-specific (such as the in-road sediment traps utilised in the existing Sunrise estate).

The development will imitate the existing site's infiltration-centric drainage regime. The piped stormwater drainage network is to report to an end-of-line infiltration basin. One infiltration basin shall be provided for each of the site's catchments to infiltrate runoff from routine rainfall events, and attenuate runoff from less frequent events up to the 1% AEP design storm. Moreover, the infiltration basin will serve as end-of-line water quality improvement facility.

As noted in ***Section 2.3***, Trotter Road has no capacity to accept stormwater flows in excess of predeveloped magnitudes. Similarly, the capacity of the Nelson Bay Road table drain is not known, and intensification of flows into the table drain is not likely to be supported. Consistent with the approved Sunrise Stage 1, it is recommended that infiltration systems are sized to ensure no site discharge for design storms up to and including the 1% AEP.

Strategy modelling has assumed a single basin reporting to Nelson Bay Road, however a split catchment with multiple basins should not be precluded. Two (2) suitable Legal Points of Discharge have been identified:

1. The swale being proposed by others in conjunction with Trotter Road upgrade works; and
2. The existing table drain in Nelson Bay Road.

Though not engaged by the 1% AEP design storm, it is recommended that a spillway weir is provided on the infiltration basin to account for rare and extreme rainfall events.

Strategy outcomes in relation to peak flow management, runoff quality, flooding and erosion and sediment control are provided from ***Sections 5*** to ***11***.

5.0 Stormwater Discharge

The hydrologic routing package DRAINS was used to estimate peak discharges from the site under vacant and developed conditions. On-site detention facilities were sized to achieve the attenuation requirements of Part B4.B of Council's DCP. Whilst the concept masterplan provided a framework for this assessment, results are scalable for revised footprints and yields.

5.1 MODELLING PARAMETERS

5.1.1 Rainfall Intensity

The Rainfall Intensity Frequency Duration (IFD) data adopted was sourced from the Bureau of Meteorology website (IFD ARR19 application).

5.1.2 Loss Parameters

For stormwater strategy purposes, an ILSAX loss model was adopted within DRAINS. An ILSAX model is well suited to local conditions as it accounts for infiltration decay due to wetting of the catchment. Loss parameters were adopted from Council's *hydrologic soil maps* for a 'rather wet' Group A soil and are shown in ***Table 3***.

Table 3 - DRAINS Modelling Parameters

Parameter	Value
Pervious area depression storage	10 mm
Impervious area depression storage	1.5 mm
Horton Initial Infiltration Rate f_0	83.6 mm/hour
Horton Final Infiltration Rate f_c	25.0 mm/hour
Shape Factor k	2/hour

5.1.3 Boundary Conditions

As described in ***Section 4***, the stormwater strategy proposes a spillway weir from the proposed stormwater basin. Given that the site is not liable to regional flooding (refer ***Section 7***), no tailwater conditions were assigned to the weir.

5.2 CATCHMENTS

Catchment plans are provided as ***Appendix A*** to this report and are detailed in ***Sections 5.2.1*** and ***5.2.2***. A DRAINS network diagram, showing the connectivity of catchments is supplied as ***Appendix B***.

5.2.1 Predeveloped Catchment

Predeveloped catchments were mapped using LiDAR survey imagery and confirmed by ground-truthing. Existing site improvements such as maintenance sheds and compacted vehicle accesses were discounted. ***Table 4*** describes the predeveloped catchment parameters.

Table 4 - Predeveloped Catchment Parameters

Catchment Name	Total area (Ha)	% Impervious
PRE N	1.855	0%
PRE S	1.378	0%
TOTAL	**3.233**	**0%**

It is noted that catchment boundaries are consistent with catchment mapping undertaken in support of the adjoining Trotter Road upgrades. It is additionally noted that a small eastern portion of the subject site (being an area of retained vegetation) has been excluded from catchment mapping.

5.2.2 Developed Catchment

As noted in ***Section 4***, modelling assumed that the entire site would be regraded to a single basin; however, subject to development of the site masterplan, a split catchment should not be precluded.

Consistent with the approved Sunrise Stage 1 stormwater strategy, modelling assumed a developed catchment imperviousness of 70%.

Table 5 describes the predeveloped catchment parameters.

Table 5 - Developed Catchment Parameters

Catchment Name	Total area (Ha)	% Impervious
DEV N	0.178	0%
DEV S	3.055	70%
TOTAL	**3.233**	**66%**

From ***Table 5*** it is evident that modelling has assumed a redirection of developed catchment to the south. A small catchment, being an unimproved or landscaped buffer, would drain north to Trotter Road.

5.3 STORMWATER DISCHARGE CONTROLS

This stormwater strategy proposes a precinct-scale infiltration basin. Infiltration basins are unlined, above-ground facilities designed to return runoff to groundwater and attenuate less frequent rainfall events. They have been effectively implemented in the existing Sunrise Stage 1 development.

Modelling has assumed a single basin servicing the entire developed catchment. Overflows from the basin will be controlled by a spillway weir. Modelled parameters are provided in ***Table 6***.

Table 6 - Infiltration Basin Parameters

Parameter	MB01
Depth	1.5m
Volume to top of bank	2,000 m^3
Exfiltration rate	83.6 mm/hour
Outlet	Spillway @ 1.2m

Given a developed catchment of approximately 3.06 Ha, it follows that approximately 655m^3 of detention storage is proposed for each developable hectare of the proposed development. Whilst modelling has assumed a single basin, it is recommended that split catchments feeding multiple basins are not precluded, provided that an equivalent detention volume is met.

5.4 STORMWATER RESULTS

Peak stormwater flows were monitored from the site's northern and southern points of discharge. Hydrographs for the developed site were prepared with and without stormwater discharge controls to evaluate their effectiveness.

5.4.1 Northern Catchment (Trotter Road)

Peak site flows into Trotter Road under existing and developed conditions are presented in ***Figure 7***.

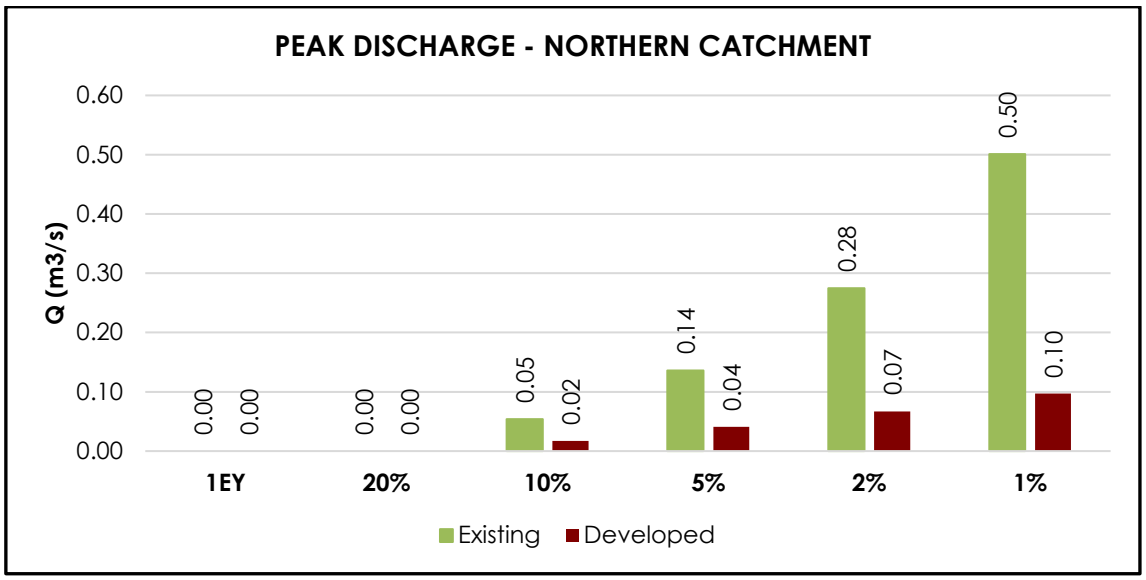


Figure 6 – Peak Site Discharges into Trotter Road.

From ***Figure 7*** it is evident that peak flowrates into Trotter Road are substantially reduced for all design storms under existing conditions. This is an expected result owing to redirection of catchment southwards to the proposed infiltration basin.

From ***Figure 7*** it is also seen that no site runoff occurs under existing conditions up to the 20% AEP design storm. This is an expected result given high permeability of existing soils.

Peak flows into Trotter Road under developed conditions are significantly lower than those allowed for in design of Trotter Road's future upgrade (refer ***Section 2.3***).

5.4.2 Southern Catchment (Nelson Bay Road)

Peak stormwater flows reporting to Nelson Bay Road are shown in ***Figure 8***.

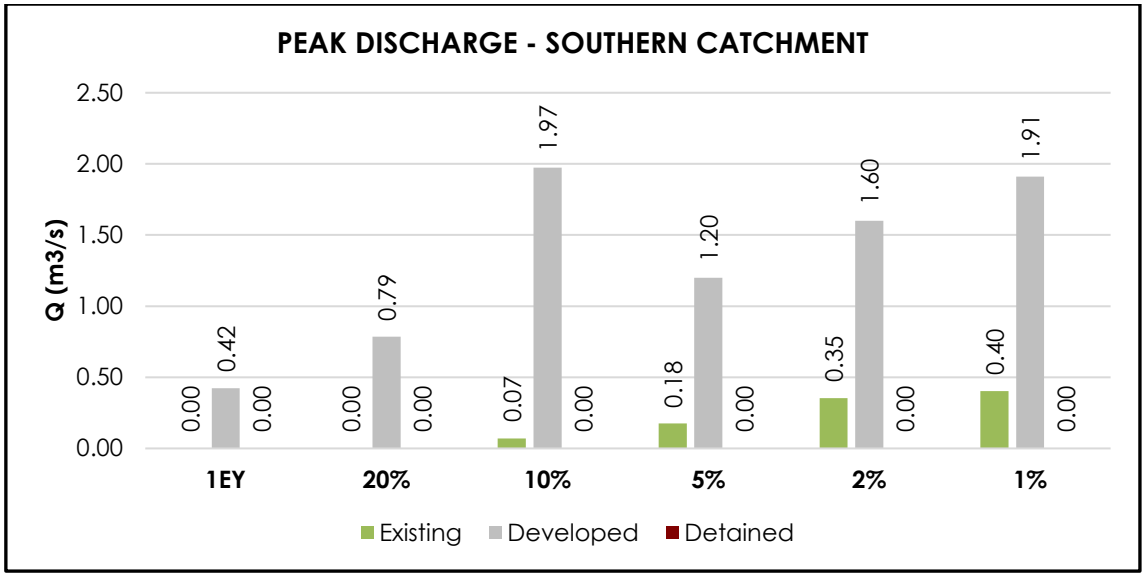


Figure 7 – Site Contribution to Existing Gully.

From ***Figure 8*** it is evident that on-site stormwater controls are required to suppress peak discharges to below their predeveloped magnitudes. It is also seen from ***Figure 8*** that the infiltration basin's volume is sufficient to ensure no site runoff for all design storms up to the 1% AEP.

Consistent with ***Figure 7*** the existing catchment yielded no site runoff up to the 20% AEP design storm.

5.5 SUMMARY OF STORMWATER DETENTION OUTCOMES

With reference to ***Section 5***, the following outcomes are demonstrated by this stormwater strategy:

1. The proposed development is to incorporate on-site infiltration systems in accordance with DCP Control **B4.2**;
2. End-of-line detention storage is to be provided at approximately 655 m^3 per developable hectare, (subject to future design);
3. Modelling has demonstrated a significant reduction in peak flows reporting to Trotter Road for all design storms up and including the 1% AEP, complying with DCP Control **B4.3**;
4. Modelling has confirmed no intensification of flows into Nelson Bay Road, complying with DCP Control **B4.3**; and
5. The proposed detention volume is sufficient to ensure no site runoff from developed catchments up to and including the 1% AEP design storm.

6.0 Stormwater Quality

The Stormwater Management Strategy for the site focuses on minimising impact of the development on the receiving waters adjacent to the site. The quality of the stormwater discharging from the development was determined using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC). The MUSIC model was used to simulate pollutant source elements for the proposed development and the treatment of the pollutant loading using treatment devices.

6.1 MUSIC MODELLING

Source node inputs were obtained from the *NSW MUSIC Modelling Guidelines'* (BMT WBM, 2015) and adjusted as required to satisfy PSC's desired rainfall-runoff parameters. The model utilised version 6.3.4 of Council's MUSIC-Link data and was configured to the Williamtown catchment with sensitive sandy soils.

Catchment boundaries were consistent with those used for detention modelling outlined within **Section 5**. The northern developed catchment, being an unimproved buffer between Trotter Road and the development, was excluded from water quality modelling. The developed catchment was delineated into specific surface types being consistent with similar developments. ***Table 7*** presents the modelled catchment composition.

Table 7 - Catchment Composition

Surface Type	% Of Developable Area	Area (Ha)	Fraction Impervious
Lot (residential)	20%	0.61	40%
Roof	40%	1.22	100%
Driveway (sealed road)	30%	0.92	70%
Open Space (residential)	10%	0.31	10%
Total	**100%**	**3.06**	**-**

Summating impervious lot, roof, driveway and open space areas gives an overall impervious fraction of 70%. This is consistent with assumptions made for peak flow modelling (***Section 5***) and the Sunrise Stage 1 stormwater strategy.

6.2 TREATMENT TRAIN

The MUSIC model implemented a treatment train comprising of Gross Pollutant Traps (GPTs) and infiltration basins. These are detailed in ***Sections 6.2.1*** to ***6.2.2***.

It is noted that the above treatment train devices have been adopted for the purpose of determining the appropriate land take required to facilitate the appropriate treatment of stormwater. Alternate devices such as swales, buffer strips or bioretention facilities could be used, subject to compliance with PSC's stripping targets.

6.2.1 Gross Pollutant Traps

Gross Pollutant Traps (GPTs) are utilised as conveyance controls. It is proposed that a single GPT is positioned at the low point of each developed catchment to intercept a majority of its stormwater discharge (subject to detailed design).

Modelling was based on the SPEL 'Ecoceptor' which has been implemented successfully on similar developments in Bobs Farm. Pollutant removal efficiencies were obtained from SPEL's website and are presented in ***Table 8***.

Table 8 - GPT Pollutant Removal Efficiencies

Pollutant	% Removal Efficiency
Total Suspended Solids	71%
Total Phosphorus	69%
Total Nitrogen	47%
Gross Pollutants(>2000µm)	95%

Source: SPEL 2022.

It is noted that other proprietary GPTs should not be precluded from future stormwater management reporting for the site. Additionally, non-proprietary devices such as Sunrise Stage 1's 'Silt Traps' may also be considered in substitution of a proprietary GPT.

6.2.2 Infiltration Basins

As described in ***Section 5.3.2***, infiltration basins are proposed as end-of-line controls. They provide essential pollutant reduction through the physical settling of suspended particles and via percolation through well-drained surrounding soils.

Basins were modelled in MUSIC as 'Media Filtration' devices with media parameters matching surrounding soils. Volumetric parameters were modelled consistently with the stormwater detention analysis (***Section 5***). ***Table 9*** describes the key parameters implemented within MUSIC.

Table 9 - Infiltration Basin Parameters

Parameter	Value
Extended Detention Depth	1.20m
Filter Area	864m
Exfiltration Rate	0mm/hour
Saturated Hydraulic Conductivity	83.6mm/hour[1]
Filter Depth	0.5m
Median Particle Diameter	2mm

1. *Group A soil under 'rather wet' conditions (PSC 2021).*

6.3 WATER RESULTS

The average annual pollutant loads were assessed at-source and under residual conditions. Pollutant reductions are presented in ***Table 10***.

Table 10 - Treatment Train Effectiveness

Pollutant	Source Load	Residual Load	Reduction (%)
TSS (kg/yr)	2890	74.2	97.4
TP (kg/yr)	6.31	0.8	87.3
TN (kg/yr)	47.2	17.4	63.2
GP (kg/yr)	571	0	100

From ***Table 15*** it is seen that the proposed treatment train, sized for stormwater detention, surpasses Council's minimum requirements for pollutant stripping. With respect to total nitrogen and total phosphorus, high removal efficiencies were observed. This is a direct function of the infiltration-centric stormwater strategy, which limits opportunities for pollutants to discharge from the site via stormwater runoff.

A MUSIC-Link report is provided in ***Appendix D*** and confirms that the results were achieved with conforming parameters.

These results indicate that there is sufficient available land within the site to cater for the proposed development, with detention requirements governing the size of end-of-line stormwater facilities.

6.4 SUMMARY OF WATER QUALITY OUTCOMES

With reference to ***Section 6***, the following outcomes are demonstrated by this stormwater strategy:

1. The proposed development is to incorporate a stormwater treatment train including Gross Pollutant Traps (GPTs) and end-of-line infiltration basins;
2. Modelling confirmed that the treatment train surpassed Council's water quality stripping targets (DCP control **B4.5**);
3. Sizing of end-of-line controls is likely to be governed by stormwater infiltration criteria, rather than water quality criteria; and
4. Alternate water quality treatment trains should not be precluded provided Council's water quality stripping targets are met.

7.0 Flooding

Council's Flood Prone Land Mapping (PMF) is shown in ***Figure 9***.

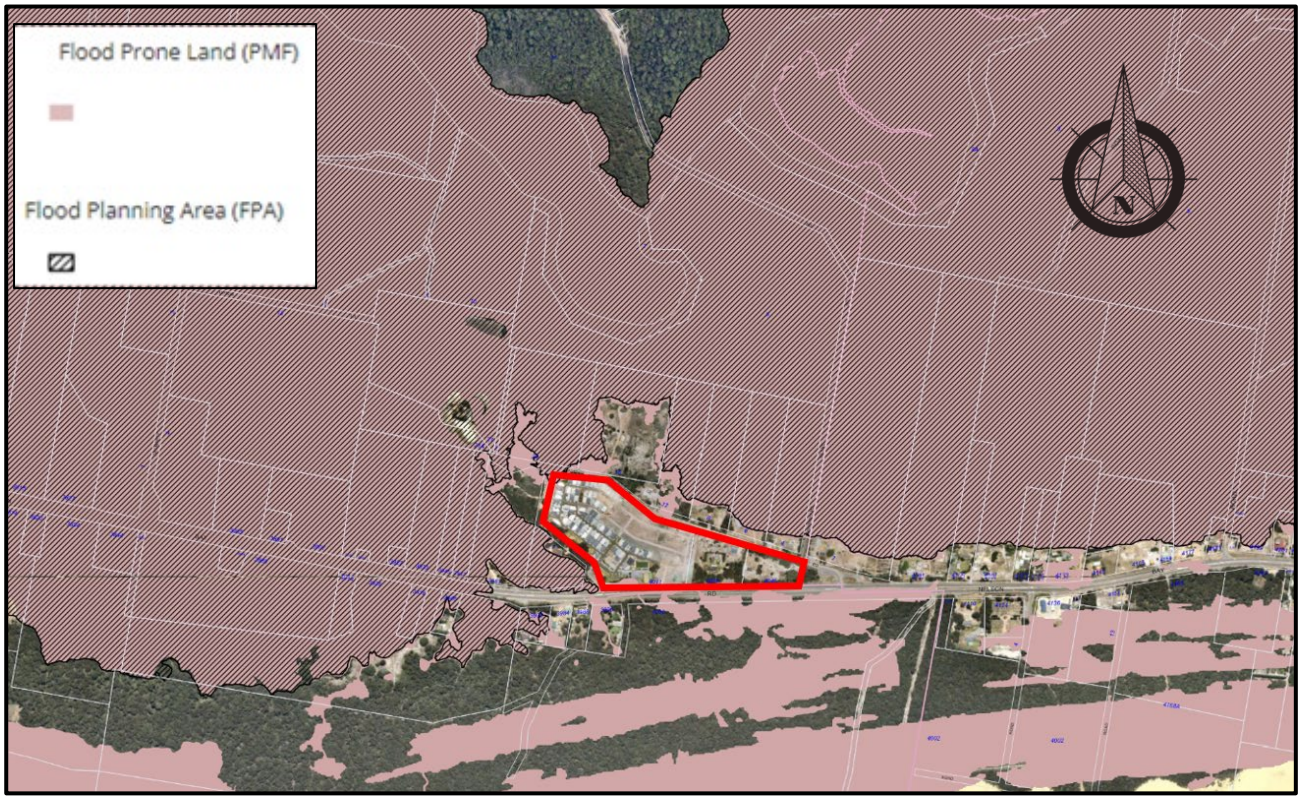


Figure 8 – Flood Prone Land Mapping (PMF).
Source: PSC.

From ***Figure 9*** it is evident that the subject site is not located within Council's Flood Prone Land (PMF) Mapping as shown in ***Figure 9***. A small portion of the existing Sunrise 'Stage 1' development is within the Flood Prone Land mapping.

It is noted that PSC's flood prone land mapping differs slightly to PMF flood extents mapped within the *Anna Bay and Tilligerry Creek Flood Study* prepared by Jacobs Group dated December 2017. Visual inspection confirms a high degree of correlation between sources at major points of inundation. It is subsequently considered that the general flood behaviours and outcomes detailed in Jacobs 2017 remain an appropriate basis for this report.

Both Port Stephens Council and the State Emergency Service websites identify Jacobs 2017 as the current regional flood study for Anna Bay.

7.1 PROBABLE MAXIMUM FLOOD

Noting that the subject site is not flood liable, Council has advised that the proposed development should address Ministerial Direction 4.1 (Flooding), which includes consideration of the Probable Maximum Flood (PMF) and any potential affectation. The *Anna Bay and Tilligerry Creek Flood Study* prepared by Jacobs Group in 2017 maps the site as being above the PMF envelope. An excerpt from Jacobs' flood mapping is provided in ***Figure 10***.

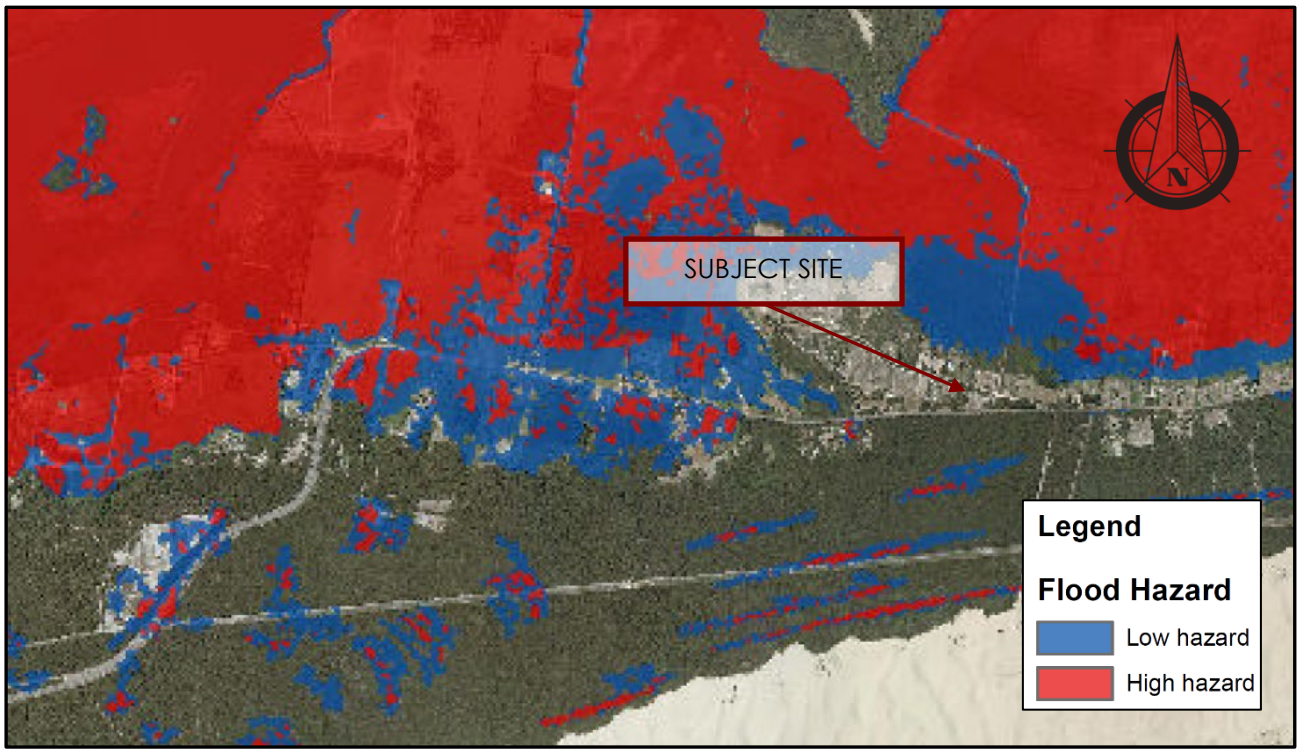


Figure 9 – PMF Flood Extents and Hazard.
Image: Jacobs 2017.

7.2 EMERGENCY RESPONSE PLANNING

NSW Floodplain Development Manual observes the PMF as the appropriate tool for emergency and response planning. As the proposed development is not liable to the PMF, opportunity exists for residents to shelter safely and comfortably in their own homes. Importantly, a shelter-in-place strategy for the proposed development would not confine residents to upper floors. Connectivity between residents and to communal facilities would be preserved by the internal road network which is also flood-free.

Rare and extreme regional floods are likely to be the product of extratropical cyclones (East Coast Lows), cyclones with storm surges or similar. Such meteorological events are likely to provide long warning tames, enabling residents to obtain extra supplies, seek medical treatments or renew medication prescriptions. The presence of a site manager will assist with informing residents of upcoming risk and mobilising response efforts.

The Anna Bay commercial precinct, located approximately 4km east of the proposed development, is a logical destination for off-site evacuation if required. Anna Bay provides groceries, pharmaceuticals and pathology services. Access would be eastward along Nelson Bay Road, then southeast via Gan Gan Road. PMF extents are shown against the proposed evacuation route in ***Figure 11*** below.

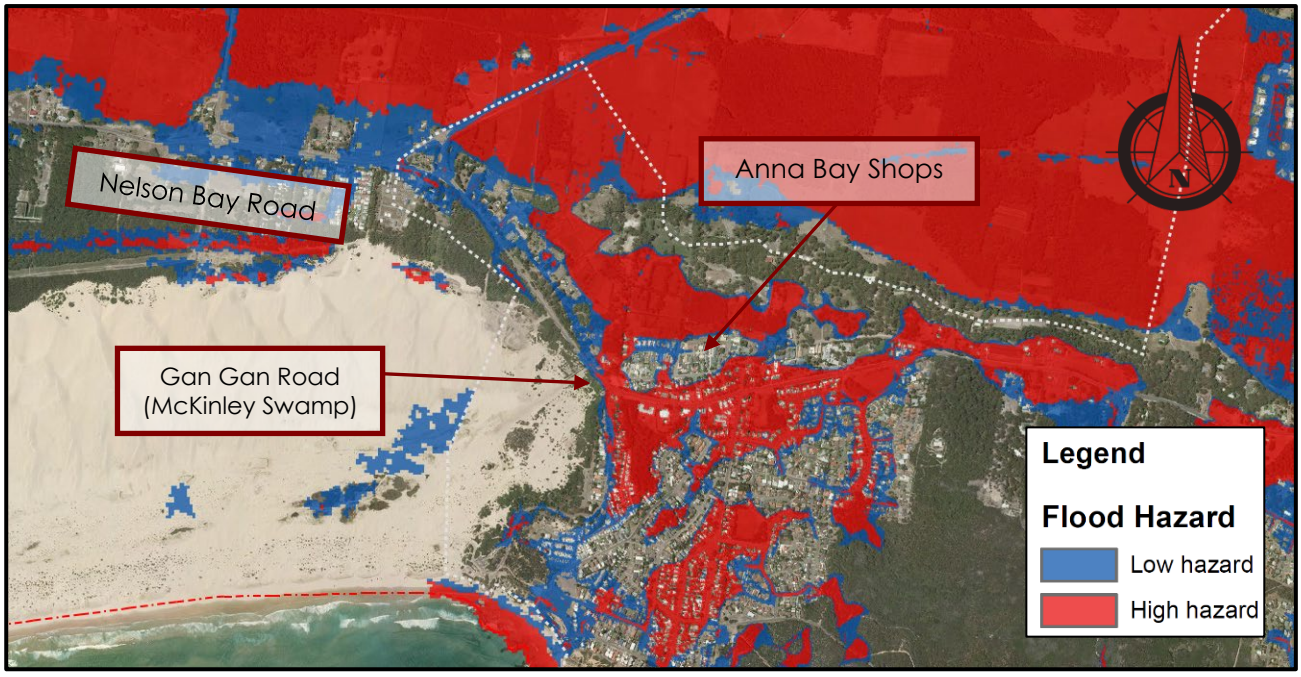


Figure 10 – PMF Site Connectivity.
Image: Jacobs 2017.

From ***Figure 11*** it is noted that Nelson Bay Road and Gan Gan Road are inundated by low-hazard floodwaters at multiple locations during a PMF event. There is one high-hazard point of inundation between the proposed development and the Anna Bay shopping commercial centre, being Gan Gan Road at McKinley Swamp.

The *NSW Flood Risk Management Guide FB03 (Flood Hazard)* defines hazard thresholds for vehicle stability in floods. At low velocities, the guide observes that large cars are considered unstable in flood depths above 0.4m (0.3m for small cars). Jacobs 2017 provides flood level hydrographs at McKinley Swamp for critical design storms up to and including the PMF which is replicated in ***Figure 12***.

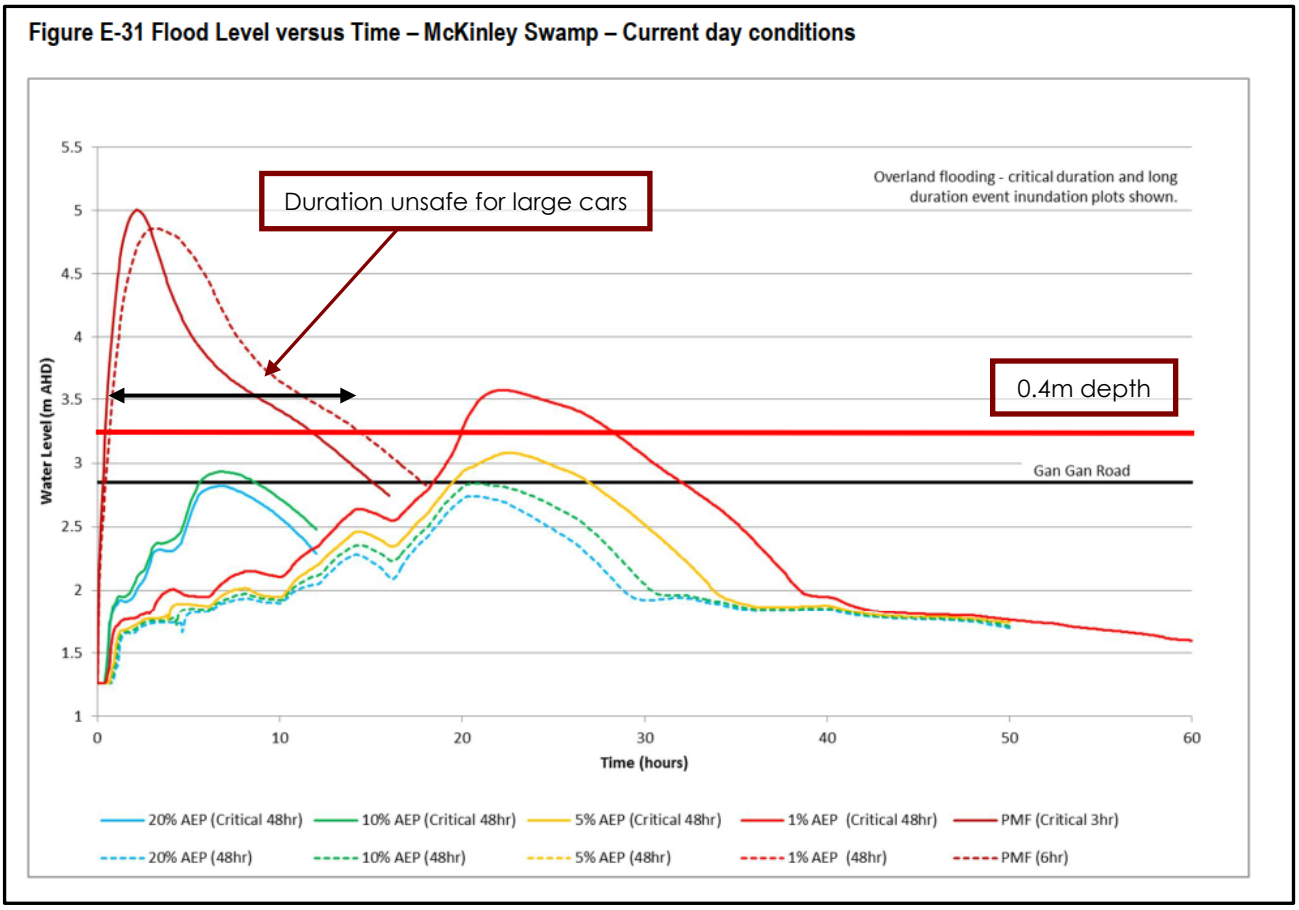


Figure 11 – Flood Level Hydrographs at McKinley Swamp.
Image: Jacobs 2017.

From ***Figure 12*** it is evident that Gan Gan Road is subject to flash flooding behaviour, becoming inundated within 1 hour of the start of the PMF event. Access to Anna Bay for large cars is restored within approximately 14 hours (approximately 18 hours for small cars). This report cannot provide comment on duration of disruption at other points of inundation along Gan Gan Road as flood level hydrographs are not provided. However, owing to shallower reported depths and hazard levels, it is likely that floodwaters would recede at these minor crossings before McKinley Swamp.

7.2.1 NSW Draft Shelter-in-Place Guidelines

The NSW *State Flood Plan* (2021) identifies the ability for people to move themselves from flood-affected areas to a safe location, preferably with access to community services, as the best flood response. Effective emergency response planning must therefore be cognisant of the duration in which access to food and health services may be interrupted. The New South Wales Flood *Draft Shelter-in-Place Guideline (2023)* advises that shelter-in-place is especially appropriate when flood warning time and flood duration are less than six hours.

From ***Section 7.2*** it is noted that the proposed development would be isolated from Anna Bay for approximately fourteen hours. Whilst longer than the duration recommended for Shelter-in-Place, the proposed development benefits from the following mitigation measures:

- The entire Sunrise community, including internal roads and community facilities, is situated above the PMF level;
- Residents sheltering in their homes are likely to have sufficient stores of food and living essentials in the order of several days;
- Connectivity between residents is retained at all times, including residents within the existing Sunrise Stage 1 community;
- Access to an existing service station at 4136 Nelson Bay Road is uninterrupted, providing continuous access to fuel, food and basic amenities;
- Travel between the site and Anna Bay would be gained by specialist vehicles or four-wheel-drives in less than 14 hours should it be warranted by a medical emergency; and
- A community bus is retained on-site which could assist with evacuation of non-driving residents once access to Anna Bay is restored.

It is subsequently considered that the proposed development is uniquely suited for sheltering-in-place for more than six hours.

The Draft Shelter-in-Place Guideline provides a list of considerations for shelter-in-place (SIP) to be successful. ***Table 11*** responds to the guideline's requirements.

Table 11 - Draft Shelter-in-Place Considerations

Consideration	Response	Complies
The duration for flood inundation is less than six hours.	Duration of flood isolation during is in the order of 14 hours (6-hour PMF event). Mitigation factors exist which enable residents to shelter safely for longer than 6 hours. No dwellings or structures are inundated.	No
The development is not located in an area of high-risk (e.g., floodways and H5 or H6 flood hazard areas).	The development is not located in an area of high-risk (e.g., floodways and H5 or H6 flood hazard areas).	Yes
Access to on-site systems to provide power, water and sewerage services during and beyond the event for the full range of flooding.	The proposed development is connected to public utilities. Electricity, sewer and water supplies would be no more vulnerable than at off-site evacuation centres.	Yes
The location of storage of food, water and medical emergency for SIP purposes should be above the PMF level and available during and beyond the event for the full range of flooding.	Residential food, water and emergency stores would be available during and beyond a PMF event. Connectivity between residents would be retained at times allowing for sharing of goods if required.	Yes
SIP floor level is above PMF.	All proposed floor levels are above peak PMF level (Jacobs 2017).	Yes
SIP provides a minimum floor space per person.	The entire Sunrise community is flood free. Residents are not isolated to individual floor areas.	Yes
SIP must be structurally safe and accessible during floods up to the PMF.	No structures are liable to flooding up to and including the PMF.	Yes

7.2.2 Limitations

This section identifies preliminary outcomes in relation to flood evacuation response for extension of an existing lifestyle living development. We note this letter is based on third-party flood information and third-party advice made available at the time of writing. This advice should not be interpreted as a Flood Emergency Response Plan in and of itself.

We acknowledge that flood risk management policy has been the subject of rapid reforms since the 2022 NSW flood enquiry. We recommend that all relevant authorities are consulted prior to the preparation of a formal Flood Emergency Response Plan for the site. It would be appropriate for this plan to be developed in support of a future Development Application.

7.3 SUMMARY OF FLOODING OUTCOMES

With reference to ***Section 7***, the following outcomes are demonstrated by this stormwater strategy:

1. The proposed development is not located within Council's Flood Planning Area;
2. The site is not liable to the Probable Maximum Flood;
3. Site access to Anna Bay is impeded by the Probable Maximum Flood. The proposed development is well-suited for shelter-in-place until safe vehicular access is restored;
4. Whilst the duration of shelter-in-place would exceed the draft guideline's recommended maximum of six hours, unique circumstances exist which enable residents to shelter in comfort and safety for longer periods;
5. The proposed development satisfies all other considerations of the NSW Draft Shelter-in-Place Guideline (2023);
6. Shelter-in-Place is an appropriate strategy to investigate for this site given it is above the PMF level and likely long warning times for the flood type (East Coast Lows or similar);
7. Opportunity exists for off-site evacuation to Anna Bay within approximately 14 hours of a PMF event. Food, shelter and health services are readily available in Anna Bay.

8.0 Coastal Wetlands

The State Environmental Planning Policy (SEPP) (Resilience and Hazards) includes provisions for development within mapped 'Proximity Areas' to coastal wetlands, as well as coastal environment areas. ***Figure 13*** presents an extract from the SEPP Coastal Wetlands Area Map.

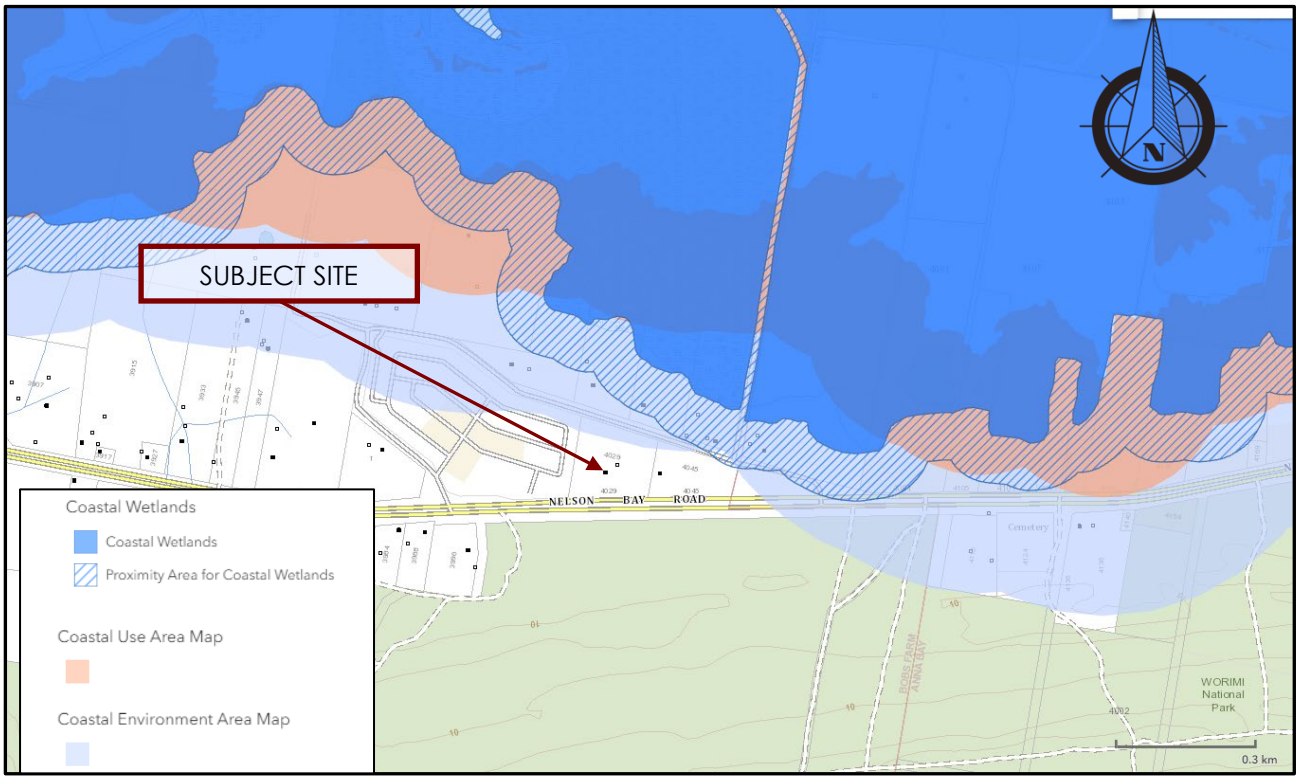


Figure 12 – Coastal Wetlands and Proximity Areas.
Source: NSW ePlanning 2022.

From ***Figure 13*** it is seen that the site's northern frontage (approximately 30m) is within the mapped Coastal Environment Area. The Bobs Farm creek estuary, positioned to the site's north, is mapped as coastal wetlands.

In relation to surface water impacts, controls are proposed to ensure no site runoff up to and including the 1% AEP design storm (refer ***Section 5***). It follows that flooding hydrology and flow volumes within the coastal wetlands complex will not be intensified by the subject development. Noting that the proposed development accounts for less than 1% of the Bobs Farm Creek catchment, the provision of on-site infiltration controls will have negligible impact on wetland drying hydrology.

As the proposed stormwater controls will ensure no site runoff from developed catchments, it follows that no runoff-borne pollutants will discharge from the development. It follows that the proposed development will have no impact on nutrification and sedimentation of downstream coastal wetlands.

Furthermore, owing to flat topography and highly permeable soils, the geomorphic regime of low intensity rainfall events is dominated by groundwater recharge. Subsequently, changes to the subject site's land use will not adversely impact the downstream environments' hydrologic integrity.

9.0 Drinking Water Catchments

Port Stephens Council has noted that the site is located adjacent to a mapped drinking water catchment. ***Figure 14*** presents an excerpt from Council's LEP mapping.

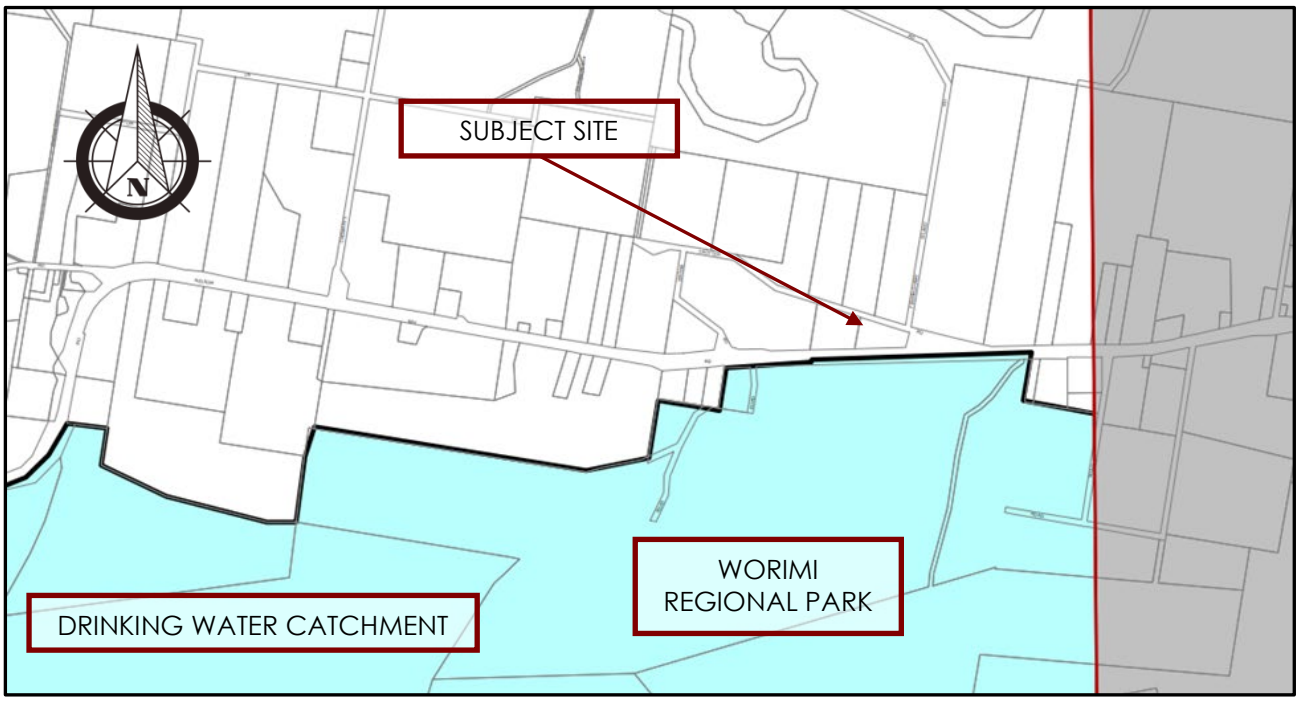


Figure 13 – Drinking Water Catchment.
Source: PSC LEP 2013.

The site is located to the north of the Stockton Sandbeds drinking water catchment, being an unconfined sand aquifer. The site is separated from the Stockton Sandbeds by a ridgeline through Worimi Regional Park peaking at approximately RL 20m AHD. Subsequently, the site drains north to Bobs Farm Creek rather than south to the sandbeds.

If follows that the proposed development will have no impact on drinking water catchments.

10.0 Erosion and Sediment Control

Port Stephens Council requires the use of erosion and sediment controls to manage and contain pollutant runoff, both during construction and as long-term permanent treatments thus ensuring the minimisation of impact on the environment. All erosion and sediment controls and practices are to be in accordance with PSC's DCP and *'Managing Urban Stormwater'* by Landcom/NSW Department of Housing.

Treatment devices will be utilised to contain the generated pollutants from the site during construction. These include but are not limited to:

- Sediment Basins;
- Silt Fencing;
- Strawbale and Geotextile Fencing;
- Kerb Inlet Controls;
- Sandbag Kerb Inlet Sediment traps;
- Shaker Ramp; and
- Diversion Drains.

Any clean water entering the site from upstream catchments is to be diverted around the construction site where possible hence remaining clean. Runoff generated from within the site is to be treated and managed using a combination of the above stated treatment devices.

Due to the extents of disturbed areas, the use of sediment basins will be required (Landcom, 2004). During construction, the proposed infiltration basin would be utilised as a temporary sediment basin.

11.0 Water Sensitive Urban Design

Port Stephens Council requires stormwater drainage plans to minimise impacts on water balance, and to incorporate mitigation measures which are effective and maintainable.

A fundamental objective of Water Sensitive Urban Design (WSUD) is to 'disconnect' impervious catchments from public drainage systems. An end-of-line infiltration system is proposed to disconnect the site from downstream drainage infrastructure.

WSUD additionally aims to reduce a development's demand on potable, mains-supplied water. Consistent with the Sunrise lifestyle village, the proposed development will create premium dwellings supplied with AAA+ appliances and fixtures. Measures such as dual-flush cisterns, efficient appliances and water-conscious gardens shall be provided to reduce each dwelling's potable water demand.

At a precinct scale, measures to reduce mains water consumption shall be revisited at the Development Application stage. Specifically, there may opportunity to utilise the site's groundwater as an alternate water source for irrigation of landscaped areas. Access to groundwater by spear point contingent on appropriate licensing. The suitability of groundwater interception would be subject to further investigations and conceptual design.

12.0 Conclusion

ADW Johnson has been engaged by Hometown Australia Holdings Pty Ltd to prepare a stormwater strategy for Lots 3622 DP 622485 and 2 DP 622229 at Bobs Farm. The strategy is required to support a Planning Proposal for the extension of an existing lifestyle village located on Lot 51 DP 1175028.

The site's existing drainage regime is characterised by flat topography and well-drained sandy soils. Subsequently, an infiltration-centric stormwater strategy has been devised. The capacity of downstream legal points of discharge, being a swale in Trotter Road (proposed by others) and an existing Table Drain in Nelson Bay Road, have been respected by the strategy.

The hydraulic routing package *DRAINS* was used to evaluate peak site discharges under existing and developed conditions. An infiltration basin was assessed providing approximately 655 m^3 of detention storage per developable hectare. Modelling confirmed that the basin indicated on the Concept Plan was sufficiently sized to ensure no site runoff from developed catchments up to and including the 1% AEP design storm, thus ensuring no increase in peak flowrates at the site's points of discharge. Whilst the size and configuration of detention storage is subject to further design, this strategy confirms that Council's requirements can be readily met within the site's footprint.

The proposed development shall be supported by a water quality treatment train comprising of a gross pollutant trap and end-of-line infiltration basin. MUSIC modelling has confirmed that the treatment train satisfied Council's water quality stripping targets.

The 2017 *Anna Bay and Tilligerry Creek Flood Study* indicates that the subject site is flood-free for all regional design floods including the Probable Maximum Flood. In relation to emergency response planning, there are safe and viable arrangements for shelter-in-place and evacuation subject to extreme flood events.

Owing to the existing geomorphic regime, and with consideration given to proposed on-site controls, the hydrological integrity of downstream environments will be materially upheld by the proposed development. It follows that Council's requirements under SEPP (Hazards and Resilience) (coastal wetlands) are met.

LEP mapping indicates that the site adjoins a drinking water catchment, being the Stockton Sandbeds. However, mapping and ground-truthing have confirmed that the site does not report to the drinking water catchment.

Appropriate erosion and sediment controls implemented to the requirements of Port Stephens Council are required for the construction period to protect downstream receiving waters.

This strategy report has concluded that appropriate stormwater controls can be readily implemented within the proposed site footprint. It is considered that the stormwater strategy presented herein is well-suited to existing site conditions and is fully compliant with Council's Development Control Plan.

13.0 References

ADW Johnson. (2022). *Trotter Road Upgrade – DA16-2007-15-5 – Stormwater Improvements (Revision D)*.

Geoscience Australia. (2019). *Australian Rainfall and Runoff: A guide to Flood Estimation*.

Jacobs Group. (2017). *Anna Bay and Tilligerry Creek Flood Study*. Retrieved from <https://flooddata.ses.nsw.gov.au/flood-projects/>.

MM Hyndes Bailey & Co. (2017). *Drainage Strategy Report for Section 96 Application of DA 16-2013-790-1*.

New South Wales Department of Primary Industries. (2008). *Acid Sulfate Soil Assessments in the Anna Bay Catchment*.

New South Wales Government. (2023). *Draft Shelter-in-Place Guideline*.

New South Wales Government. (2021). *NSW State Flood Plan*.

Landcom. (2010). *Water Sensitive Urban Design Book 1: Policy*. Retrieved from <http://www.landcom.com.au/>.

Port Stephens Council. (2014). *Development Control Plan Section B – General Controls*.

Port Stephens Council. (2017). *Hydrologic Soil Mapping*.

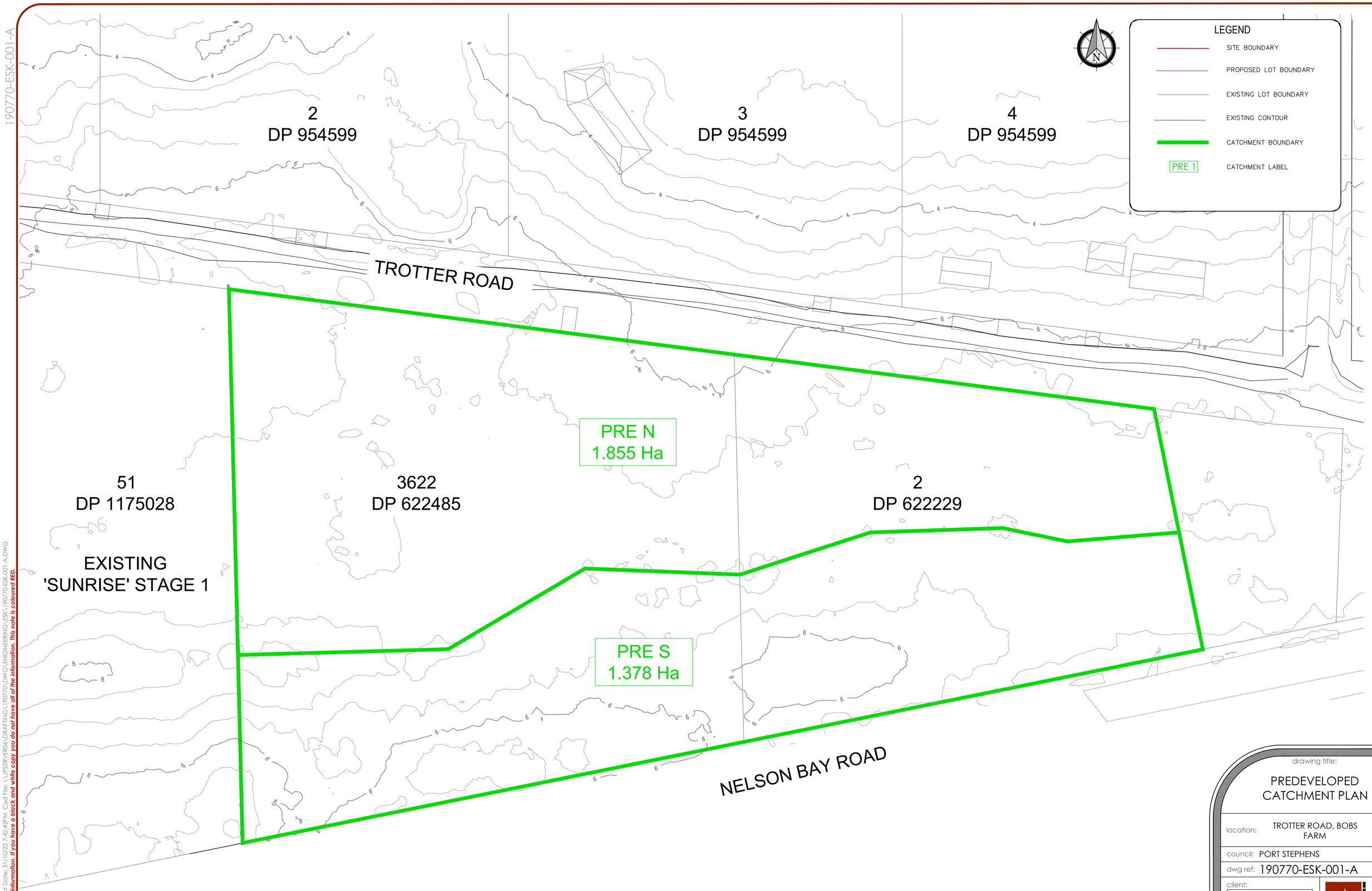
Spel Stormwater. (2022). *Ecoceptor Product Brochure*. Retrieved 26th October 2022 from < https://spel.com.au/ecoceptor/>.

WBM BMT. (2015). *NSW MUSIC Modelling Guidelines*.

Appendix A

STORMWATER STRATEGY PLANS

FIGURE A-1 – PREDEVELOPED CATCHMENT PLAN
FIGURE A-2 – DEVELOPED CATCHMENT PLAN



ver.	date	comment	surveyed	drawn	checked	pm
A	29/10/22	FIRST ISSUE	N/A	MK	MK	SVD

co-ordinate information
CO-ORDINATE SYSTEM: GDA 20
ORIGIN OF CO-ORDINATES: N/A
DATE OF SURVEY N/A

level information
DATUM: A.H.D.
ORIGIN OF LEVELS: N/A
CONTOUR INTERVAL: 0.5m

scale (A1 original size)
0 5 10
A1 / A3
1:200 / 1:400

page
1 OF 1

drawing title:
PREDEVELOPED CATCHMENT PLAN

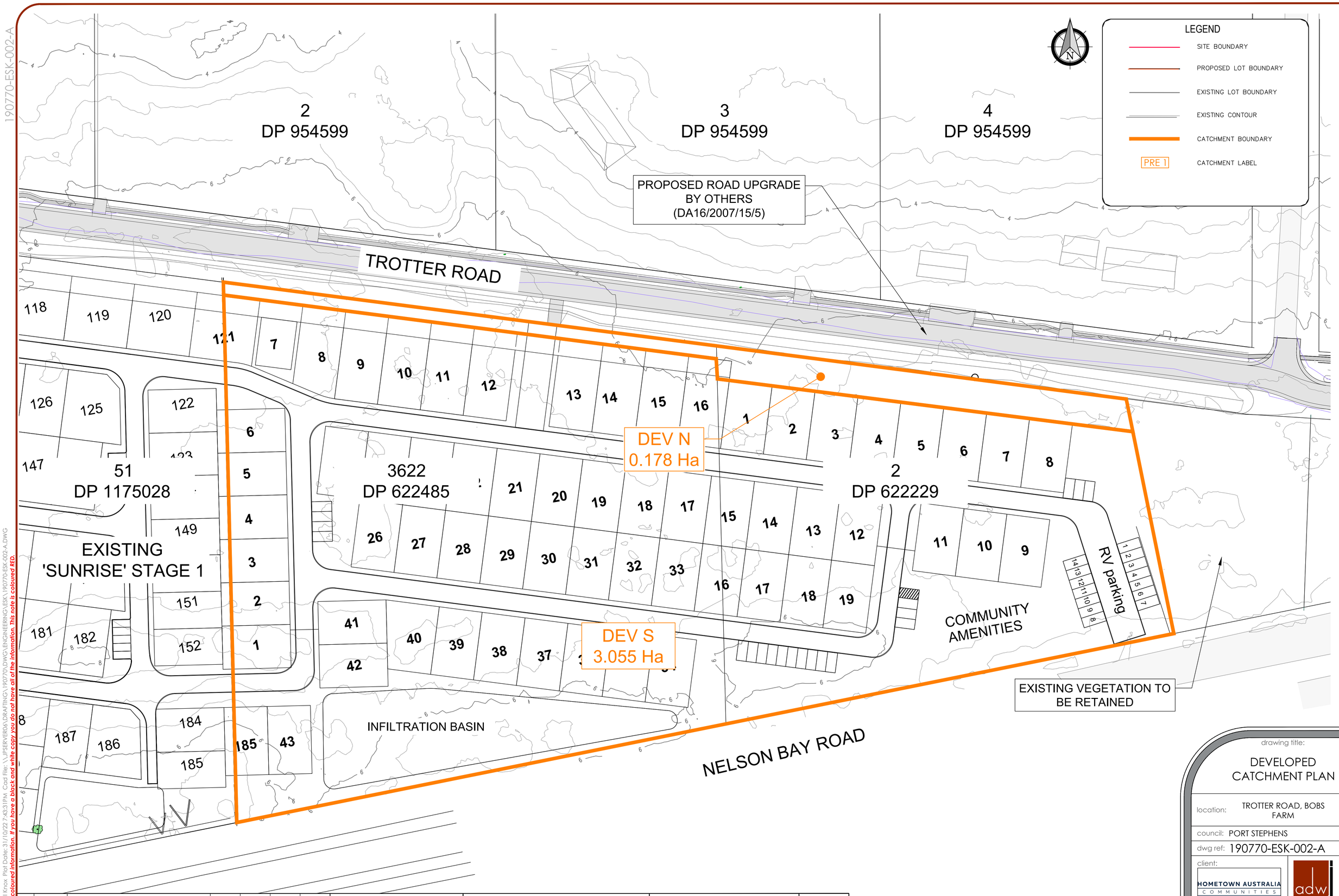
location: TROTTER ROAD, BOBS FARM
council: PORT STEPHENS
dwg ref: 190770-ESK-001-A
client: HOMETOWN AUSTRALIA COMMUNITIES

adw johnson
central coast office ph: (02) 4305 4300
hunter office ph: (02) 4978 5100
sydney office ph: (02) 8046 7411
www.adwjohnson.com.au

working beyond expectations

• project management • civil engineering • infrastructure • superintendency • economic analysis • social impact • town planning • surveying • development feasibility • visualisation • urban design

Plotted By: Mitchell Knox Plot Date: 31/10/22 7:42:42PM Cad File: \\JPSERVER06\DRAFTING\190770\DWG\ENGINEERING\ESK\190770-ESK-001-A.DWG
This plan includes coloured information. If you have a black and white copy you do not have all of the information. This note is coloured RED.
COPYRIGHT NOTICE: This plan and the information it contains are copyright and remain the property of ADW Johnson Pty Ltd. ADW Johnson Pty Ltd grants to the client named on this plan a license to use the information hereon for the purpose for which we were engaged to perform the work. Use of the plan and information it contains for any other purpose is not permitted unless prior written approval has been obtained from ADW Johnson Pty Ltd.



ver.	date	comment	surveyed	drawn	checked	pm	co-ordinate information	level information	scale (A1 original size)	page
A	29/10/22	FIRST ISSUE	N/A	MK	MK	SVD	CO-ORDINATE SYSTEM: GDA 20 ORIGIN OF CO-ORDINATES: N/A DATE OF SURVEY N/A	DATUM: A.H.D. ORIGIN OF LEVELS: N/A CONTOUR INTERVAL: 0.5m	0 5 10 A1 / A3 1:200 / 1:400	1 OF 1

drawing title:

DEVELOPED CATCHMENT PLAN

location: TROTTER ROAD, BOBS FARM

council: PORT STEPHENS

dwg ref: 190770-ESK-002-A

client: HOMETOWN AUSTRALIA COMMUNITIES

adw johnson
central coast office ph: (02) 4305 4300
hunter office ph: (02) 4978 5100
sydney office ph: (02) 8046 7411
www.adwjohnson.com.au

working beyond expectations

Plotted By: Mitchell Knox Plot Date: 31/10/22 7:43:31PM Cad File: \\JPSERVER06\DRAFTING\190770\DWG\ENGINEERING\ESK\190770-ESK-002-A.DWG
This plan includes coloured information. If you have a black and white copy you do not have all of the information. This note is coloured RED.

Copyright Notice: This plan and the information it contains are copyright and remains the property of ADW Johnson Pty Ltd. ADW Johnson Pty Ltd grants to the client named on this plan a license to use the information herein for the purpose for which we were engaged to perform the work. Use of the plan and information it contains for any other purpose is not permitted unless prior written approval has been obtained from ADW Johnson Pty Ltd.

Appendix B

DRAINS MODEL

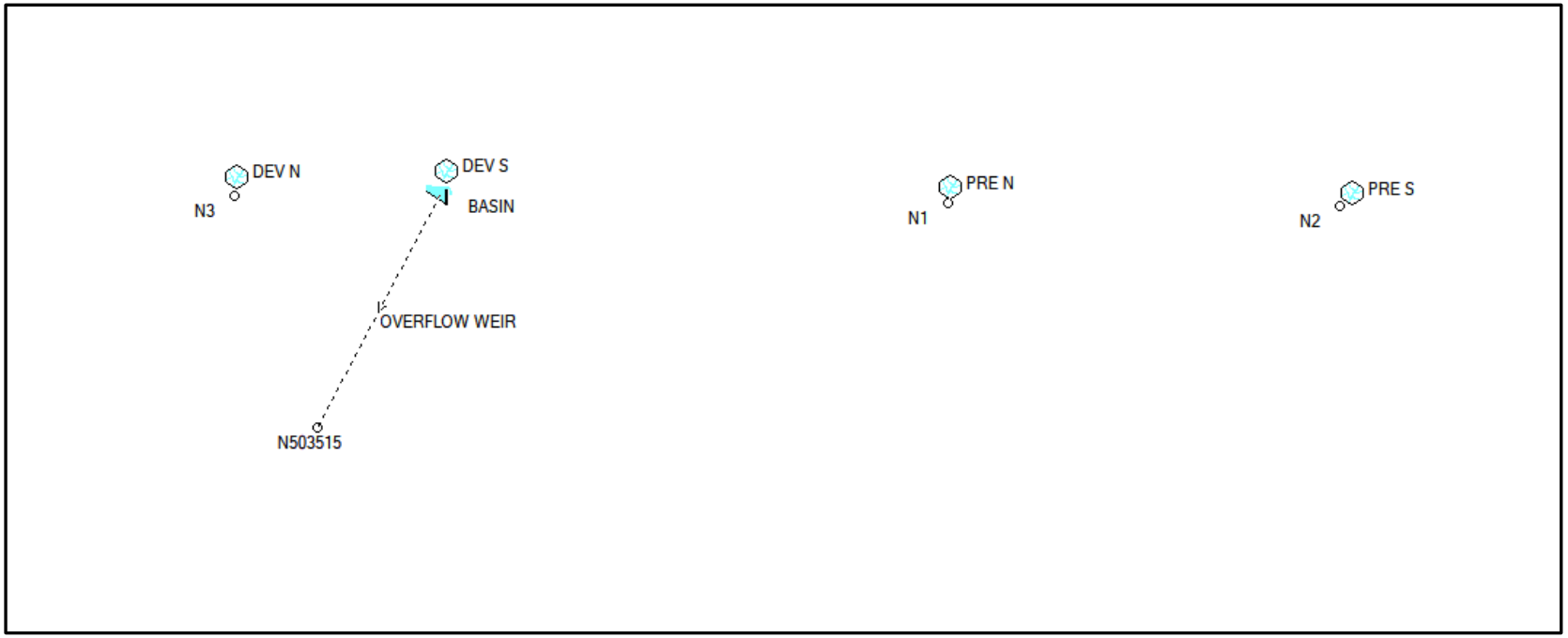


FIGURE B-1 – DRAINS NETWORK DIAGRAM

Table B-1 – Drains Data

PIT / NODE DETAILS			Version 15																		
Name	Type	Family	Size	Ponding	Pressure	Surface	Max Pond	Base	Blocking	x	y	Bolt-down	id	Part Full	Inflow	Pit is	Internal	Inflow is	Minor Safe	Major Safe	
				Volume	Change	Elev (m)	Depth (m)	Inflow	Factor			lid		Shock Loss	Hydrograph		Width	Misaligned	Pond Depth	Pond Depth	
				(cu.m)	Coeff. Ku			(cu.m/s)									(mm)		(m)	(m)	
N1	Node							0		1125.803	-405.91		1154915		No						
N2	Node							0		1137.409	-406.02		1154922		No						
N3	Node							0		1104.667	-405.709		1154939		No						
N503515	Node							0		1107.102	-412.548		1154946		No						
DETENTION BASIN DETAILS																					
Name	Elev	Surf. Area	Not Used	Outlet Type	K	Dia(mm)	Centre RL	Pit Family	Pit Type	x	y	HED	Crest RL	Crest Length(m)	id						
BASIN	0	864		None						1110.729	-405.709	No			1154932						
	0.1	917.4																			
	0.2	972.2																			
	0.3	1028.2																			
	0.4	1085.4																			
	0.5	1144																			
	0.6	1203.8																			
	0.7	1265																			
	0.8	1327.4																			
	0.9	1391																			
	1	1456																			
	1.1	1522.2																			
	1.2	1589.8																			
	1.3	1658.6																			
	1.4	1728.6																			
	1.5	1800																			
SUB-CATCHMENT DETAILS																					
Name	Pit or Node	Total Area	Paved Area	Grass Area	Supp Area	Paved Time	Grass Time	Supp Time	Paved Length	Grass Length	Supp Length	Paved Slope(%)	Grass Slope	Supp Slope	Paved Rough	Grass Rough	Supp Rough	Lag Time or Factor	Gutter Length	Gutter Slope	Gutter FlowFactor	Rainfall Multiplier
		(ha)	%	%	%	(min)	(min)	(min)	(m)	(m)	(m)	%	%	%					(m)	%		
PRE N	N1	1.855	0	100	0	0	0	0	1	150	-1	1	1	-1	0.015	0.2	-1	0				1
PRE S	N2	1.378	0	100	0	0	0	0	1	60	-1	1	1	-1	0.015	0.2	-1	0				1
DEV S	BASIN	3.055	70	30	0	0	0	0	150	150	150	1	1	1	0.02	0.2	0.02	0				1
DEV N	N3	0.178	0	100	0	0	0	0	20	20	0	1	1	0	0.015	0.2	0	0				1

PIPE DETAILS																						
Name	From	To	Length	U/S IL	D/S IL	Slope	Type	Dia	I.D.	Rough	Pipe Is	No. Pipes	Chg From	At Chg	Chg	Rl	Chg	RL	etc			
			(m)	(m)	(m)	(%)		(mm)	(mm)						(m)	(m)	(m)	(m)	(m)			
DETAILS of SERVICES CROSSING PIPES																						
Pipe	Chg	Bottom	Height of Service	Chg	Bottom	Height of Service	Chg	Bottom	Height of Service	etc												
	(m)	Elev (m)	(m)	(m)	Elev (m)	(m)	(m)	Elev (m)	(m)	etc												
CHANNEL DETAILS																						
Name	From	To	Type	Length	U/S IL	D/S IL	Slope	Base Width	L.B. Slope	R.B. Slope	Manning	Depth	Roofed									
				(m)	(m)	(m)	(%)	(m)	(1:?)	(1:?)	n	(m)										
OVERFLOW ROUTE DETAILS																						
Name	From	To	Travel	Spill	Crest	Weir	Cross	Safe Depth	SafeDepth	Safe	Bed	D/S Area		id	U/S IL	D/S IL	Length (m)					
			Time	Level	Length	Coeff. C	Section	Major Storms	Minor Storms	DxV	Slope	Contributing										
			(min)	(m)	(m)			(m)	(m)	(sq.m/sec)	(%)	%										
OVERFLOW WEIR	BASIN	N503515	0.1	1.2	5	2	WEIR 3	0.15	0.15	0.6	1	0		1154945	1.2	1	5					
PIPE COVER DETAILS																						
Name	Type	Dia (mm)	Safe Cover (m)	Cover (m)																		
This model has no pipes with non-return valves																						

Appendix C

MUSIC MODEL

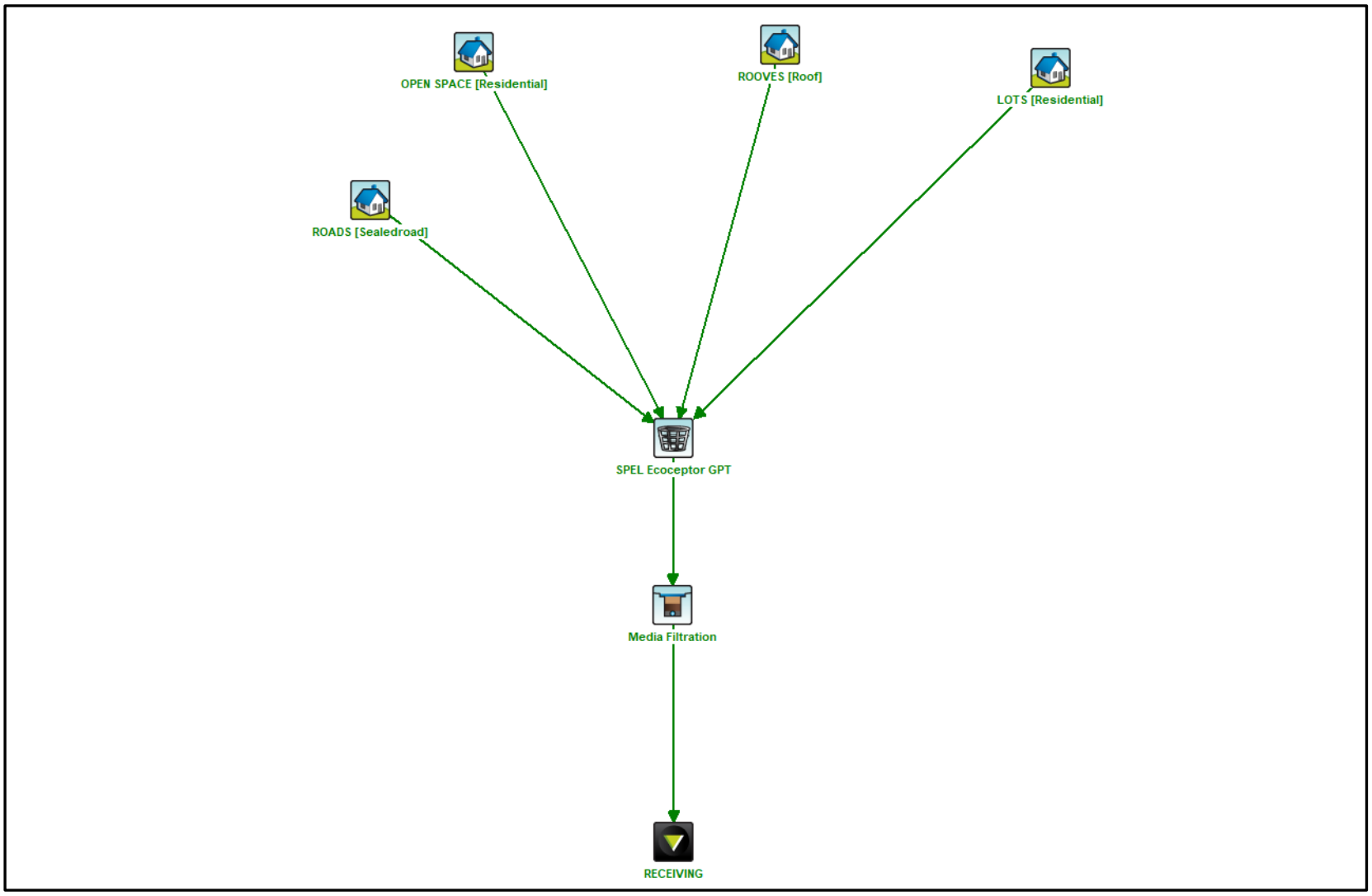


FIGURE C-1 – MUSIC NETWORK DIAGRAM.

Appendix D

MUSIC-LINK REPORT

MUSIC-*link* Report

Project Details		Company Details	
Project:	190770 Sunrise Stage 2	**Company:**	ADW Johnson
Report Export Date:	31/10/2022	**Contact:**	Mitchell Knox
Catchment Name:	190770 MUSIC_A	**Address:**	7/335 Hillsborough Road
Catchment Area:	3.06ha	**Phone:**	4978 5100
Impervious Area*:	69.93%	**Email:**	mitchellk@adwjohnson.com.au
Rainfall Station:	WILLIAMTOWN RAAF - Station 061078 - Zone A		
Modelling Time-step:	6 Minutes		
Modelling Period:	1/01/1998 - 31/12/2007 11:54:00 PM		
Mean Annual Rainfall:	1013mm		
Evapotranspiration:	1394mm		
MUSIC Version:	6.3.0		
MUSIC-link data Version:	6.34		
Study Area:	Anna Bay and Nelson Bay		
Scenario:	Default Catchment - Sandy soils		

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

Treatment Train Effectiveness		Treatment Nodes		Source Nodes	
Node: RECEIVING	**Reduction**	**Node Type**	**Number**	**Node Type**	**Number**
Flow	-0.0571%	Media Filtration Node	1	Urban Source Node	4
TSS	97.4%	GPT Node	1		
TP	87.3%				
TN	63.2%				
GP	100%				

Comments

Please refer to associated stormwater strategy report.

Passing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
GPT	SPEL Ecoceptor GPT	Hi-flow bypass rate (cum/sec)	None	99	0.024
Receiving	RECEIVING	% Load Reduction	None	None	-0.05
Receiving	RECEIVING	GP % Load Reduction	90	None	100
Receiving	RECEIVING	TN % Load Reduction	45	None	63.2
Receiving	RECEIVING	TP % Load Reduction	60	None	87.3
Receiving	RECEIVING	TSS % Load Reduction	90	None	97.4
Urban	LOTS	Area Impervious (ha)	None	None	0.242
Urban	LOTS	Area Pervious (ha)	None	None	0.367
Urban	LOTS	Total Area (ha)	None	None	0.61
Urban	OPEN SPACE	Area Impervious (ha)	None	None	0.029
Urban	OPEN SPACE	Area Pervious (ha)	None	None	0.280
Urban	OPEN SPACE	Total Area (ha)	None	None	0.31
Urban	ROADS	Area Impervious (ha)	None	None	0.647
Urban	ROADS	Area Pervious (ha)	None	None	0.272
Urban	ROADS	Total Area (ha)	None	None	0.92
Urban	ROOVES	Area Impervious (ha)	None	None	1.22
Urban	ROOVES	Area Pervious (ha)	None	None	0
Urban	ROOVES	Total Area (ha)	None	None	1.22

Only certain parameters are reported when they pass validation



adw johnson

APPROVED COMPANY ISO 9001 Quality Management Systems
QMS Certification Services

APPROVED COMPANY ISO 14001 Environmental Management Systems
QMS Certification Services

APPROVED COMPANY AS/NZS 4801 Occupational Health & Safety Management Systems
QMS Certification Services

JAS-ANZ

www.adwjohnson.com.au

Attachment 10 – Preliminary Contamination Assessment

Preliminary Contamination Assessment

4029-4045 Nelson Bay Road, Bobs Farm NSW

NEW22P-0199-AA.rev1
2 November 2022

Qualtest
LABORATORY (NSW) PTY LTD

GEOTECHNICAL I LABORATORY I EARTHWORKS I QUARRY I CONSTRUCTION MATERIAL TESTING

Document control record

Document prepared for:

Hometown Australia Holdings
C/- ADW Johnson Pty Ltd
5 Pioneer Avenue
Tuggerah NSW 2259

Document prepared by:

Qualtest Laboratory (NSW) Pty Ltd
ABN 98 153 268 896
2 Murray Dwyer Circuit
Mayfield West, NSW 2304
T 02 4968 4468
W www.qualtest.com.au

Document Control					
Report Title		Preliminary Contamination Assessment			
Document ID		NEW22P-0199-AA.rev1			
Project		Preliminary Contamination Assessment 4029-4045 Nelson Bay Road, Bobs Farm NSW			
Rev	**Date**	**Revision details/status**	**Prepared by**	**Author**	**Reviewer**
0	1 November 2022	Original	Qualtest	L.Betz	L.Fox
1	2 November 2022	Revision 1	Qualtest	L.Betz	

Executive Summary

Qualtest Laboratory NSW Pty Ltd (Qualtest) has carried out a Preliminary Contamination Assessment (PCA) on behalf of Hometown Australia Holdings, for the site located at 4029 – 4045 Nelson Bay Road, Bobs Farm, NSW (the Site).

The site is located at Lot 3622 DP622485 and Lot 2 D622229 and is about 4.15ha in area. The site is currently zoned RU2 Rural Landscape. The site is proposed to be rezoned to extend the existing Sunrise Lifestyle Village located to the east of the site.

It is understood that the PCA will be submitted to Port Stephens Council (Council) as part of the proposed rezoning application.

The objectives of the PCA were to provide an assessment of the likelihood for contamination to be present on the site from past uses and activities, and provide recommendations on the need for further assessment (if required).

In order to achieve the above objective, Qualtest carried out the following scope:

- Desktop study and site history review;
- Site walkover; and
- Data assessment and preparation of a Preliminary Contamination Assessment Report.

The site history indicates that prior to the 1960's the site consisted of vacant bushland. The eastern portion of the site was potentially used for residential/farming purposes in the mid 1960's, prior to sand mining being carried out across the majority of the site in the late 1960's early 1970's. Following sand mining the site has been used for residential purposes. A commercial shed has also been present in the central north of the site since 2015.

Materials and equipment are stored in and around onsite sheds and dwellings, and areas of fill and fill stockpiles were also observed across the site. Buildings constructed of potential ACM were observed on the site, including the eaves of the residential dwelling at 4029 Nelson Bay Road and/or cladding of the residential dwelling at 4045 Nelson Bay Road.

Five Areas of Environmental Concern (AECs) were identified based on the site history and site observations. The AECs related to:

1. Current and former buildings across the site - Weathering of potentially hazardous materials (asbestos, lead paint, galvanised metals); Use of pesticides around buildings; Demolition of structures over time.

2. Filling and stockpiling on the site - Potential use of imported fill of unknown quality and origin.

3. Storage of equipment/waste materials across the site. Stored timber, bricks, metals, plastics, tyres, wood, fibreglass fridge, trailers and small quantities of paints, fuels, degreasers.

4. Septic tank located in centre of the site - Septic tank soak aways and adsorption trenches, potential leaks of effluent.

5. Sand Mining - Former sand mining carried out in the north and eastern portion of the site; Processing of ore and placement of slimes; Use and storage of machinery and equipment during mining works.

The Preliminary Conceptual Site Model (CSM) indicated that there was a potential for soil, surface water and groundwater contamination to exist on the site and potentially complete exposure pathways could exist to current and future site users and the environment.

Based on the above, it is recommended that a Detailed Contamination Assessment (DCA), comprising intrusive investigations in the AECs identified be carried out. Given the age of the buildings on site it is also recommended that a Hazardous Materials Survey (HMS) is carried out by a suitably qualified consultant, prior to refurbishment and/or demolition of the structures. The former sand mining areas will require a radiation survey and possible soil sampling to assess the risk posed form NORM.

It is recommended that the DCA, HMS and radiation survey be carried out to inform the future development application, however for the purpose of the rezoning it is likely that the site could be made suitable, as the recommended additional assessments would unlikely identify contamination that would preclude the site being developed for the proposed use (i.e. was not able to be remediated or managed using conventional techniques).

This report was prepared in general accordance with the relevant sections of the NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Land and the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), NEPC 2013*, Canberra (referred to as ASC NEPM 2013). The report comprises a Preliminary Contamination Assessment in accordance with State Environmental Planning Policy (Resilience and Hazards) 2021, Chapter 4, Stage 1 assessment.

Table of Contents:

1.0 Introduction 1
1.1 Objectives 1
1.2 Scope of Works 1
2.0 Site Description 1
2.1 Site Identification 1
2.2 Topography and Drainage 2
2.3 Regional Geology 2
2.4 Hydrogeology 3
2.5 Acid Sulfate Soils 3
3.0 Site History Review 4
3.1 Historical Titles Search 4
3.2 Aerial Photograph Review 5
3.3 Site Observations 7
3.4 NSW EPA Records & Environment Protection Licenses 9
3.5 Anecdotal Information 10
3.6 Section 10.7 Certificate 11
3.7 Previous Reports 12
3.8 Summary of Site History 12
3.9 Potential Offsite Sources of Contamination 12
3.10 Gaps in the Site History 12
4.0 Preliminary Conceptual Site Model 13
5.0 Conclusions and Recommendations 15
6.0 Limitations 16
7.0 References 16

Attachments:

Appendix A - Figures: Figure 1 - Site Location Plan
Figure 2 – Lot Location Plan
Figure 3 – Site Features Plan
Appendix B: Groundwater Bore Search
Appendix C: Historical Titles
Appendix D: Aerial Photographs
Appendix E: Site Photographs
Appendix F: NSW EPA Records
Appendix G: Section 10.7 Certificates

1.0 Introduction

Qualtest Laboratory NSW Pty Ltd (Qualtest) has carried out a Preliminary Contamination Assessment (PCA) on behalf of Hometown Australia Holdings, for the site located at 4029 – 4045 Nelson Bay Road, Bobs Farm, NSW (the Site).

The site is located at Lot 3622 DP622485 and Lot 2 D622229 and is about 4.15ha in area. The site is currently zoned RU2 Rural Landscape. The site is proposed to be rezoned to extend the existing Sunrise Lifestyle Village located to the east of the site.

It is understood that the PCA will be submitted to Port Stephens Council (Council) as part of the proposed rezoning application.

This report was prepared in general accordance with the relevant sections of the NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Land and the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), NEPC 2013*, Canberra (referred to as ASC NEPM 2013). This report comprises a stage 1 preliminary site investigation as described by State Environmental Planning Policy (Resilience and Hazards) 2021 Chapter 4.

1.1 Objectives

The objectives of the PCA were to provide an assessment of the likelihood for contamination to be present on the site from past uses and activities, and provide recommendations on the need for further assessment (if required).

1.2 Scope of Works

In order to achieve the above objective, Qualtest carried out the following scope:

- Desktop study and site history review;
- Site walkover; and
- Data assessment and preparation of a Preliminary Contamination Assessment Report.

2.0 Site Description

2.1 Site Identification

General site information is provided below in Table 2.1. The site location is shown in Figure 1, Appendix A.

Table 2.1: Summary of Site Details

Site Address:	4029 – 4045 Nelson Bay Road, Bobs Farm
Approximate site area and dimensions:	Approx. 4.15 ha Approx. 345m wide (east to west) by 180m long (north to south) at its widest and longest points
Title Identification Details:	Lot 3622 DP622485 and Lot 2 D622229 are within the Port Stephens local government area, Parish of Tomaree, County of Gloucester
Current Zoning	RU2 Rural Landscape
Current Ownership:	Private Individuals
Current Occupier:	Residential Landuse
Previous and Current Landuse:	Sand Mining/Residential Landuse
Proposed Landuse:	Proposed to be rezoned to extend the Sunrise Lifestyle Village
Adjoining Site Uses:	North – Trotter Road, followed by rural residential East – Trotter Road, followed by Nelson Bay Road, rural residential and bushland South – Nelson Bay Road, followed by Bushland West – Residential (Sunrise Lifestyle Village)
Site Coordinates for approx. centre of site:	32°46'7.00 S 152°2'28.81 E

2.2 Topography and Drainage

Reference to the NSW Land and Property Information Spatial Information Exchange website (https://six.nsw.gov.au/wps/portal/) indicated the elevation of the site was less than 10m AHD.

The site surface was generally flat. Rain falling on the site would be expected to infiltrate into the sandy site soils. Excess surface water may flow offsite to the north into an unnamed swamp, located approximately 200m north of the site. The swamp forms part of Bobs Farm Creek, located approximately 800m north of the site. Bobs Farm Creek flows into Tiligerry Creek, located approximately 2.2km north of the site.

2.3 Regional Geology

The 1:100,000 Nelson Bay Coastal Quaternary Geological Maps indicates that the site is underlain Holocene back barrier flat: marine sand, silt, clay, gravel, shell. Some parts of the site maybe overlain with aeolian wind derived sand dunes.

2.4 Hydrogeology

Groundwater beneath the site is anticipated to be present in an unconfined aquifer within marine and aeolian sands at depths greater than 2m below ground surface (bgs).

Groundwater flow direction is anticipated to flow to the north north-east discharging to either Bobs Farm Creek, located approximately 800m north of the site or Tiligerry Creek, located approximately 2.2km north of the site. Tiligerry Creek flows into Port Stephens about 4.5km to the north east.

It should be noted that groundwater conditions can vary due to rainfall and other influences including regional groundwater flow, temperature, permeability, recharge areas, surface condition, and subsoil drainage.

A search of the NSW Department of Primary Industries (Office of Water) registered groundwater bores located within a 500m radius of the site was undertaken. The search revealed that there was one bore within this radius. A copy of the search is provided in Appendix B.

Table 2.1 – Groundwater Bore Search

Bore ID	Installation Date	Purpose	Approx. Distance and Gradient from the site	Water Bearing Zones
GW080273	06/08/2002	Irrigation	120m north east of the site	-

2.5 Acid Sulfate Soils

Reference to the Acid Sulfate Soil online database from State of NSW and Department of Planning, Industry and Environment, 2021(espade.environment.nsw.gov.au) indicates that the site is located in an area of low probability of ASS >3m below ground surface (bgs). It is noted that an area located approximately 80m to the north from the north boundary of the site is located within an area of high probability of ASS <1m bgs.

The Port Stephens Local Environmental Plan (LEP) 2013 maps the site as Class 4 ASS which requires development consent and an ASS Management Plan (ASSMP) for "*Works more than 2 metres below the natural ground surface. Works by which the watertable is likely to be lowered more than 2 metres below the natural ground surface.*"

Qualtest carried out a Preliminary Acid Sulfate soil assessment on the site in October 2022, refer to NEW22P-0199-AB, dated 1 November 2022.

As part of the ASS assessment, two boreholes were drilled to 2.0m bgs in the north western and north eastern portions of the site. The results of the ASS assessment indicated that ASS were not considered to be present in the soils to the depth investigated (2.0m) based on field observations and results of the laboratory analysis.

The field screening indicated that ASS were unlikely to be present. This was confirmed by the results of the laboratory testing which showed concentrations of net acidity, and Chromium Reducible Sulfur below the action criteria in each sample tested.

Based on the results of the assessment, an ASS Management Plan is not required for excavation to 2.0m bgs. It is noted that ASS may be present in soils deeper than 2.0m. If deeper excavations are proposed, further assessment at depth would be required.

3.0 Site History Review

A site history review was undertaken as part of the PCA, and included:

- A review of historical ownership of the site (Lot 3622 DP622485 and Lot 2 DP622229);
- A review of aerial photography from the past 68 years;
- A review of Section 10.7 Certificate for Lot 3622 DP622485 from Port Stephens Council;
- Search of the NSW EPA's list of contaminated sites relevant to the site and nearby properties;
- Interview with the current site owner of 4029 Nelson Bay Road; and
- A site walkover to help identify current and previous activities carried out on the site, identify surrounding land uses, and assess Areas of Environmental Concern (AECs) and Chemicals of Potential Concern (COPCs).

The information provided from the above reviews is summarised in the sections below.

3.1 Historical Titles Search

A search of historical titles for the site was undertaken by Advanced Legal Searchers Pty Ltd. A list of past registered proprietors dating back to 1953 was obtained. The results of the search are included in Appendix C and a summary is presented below in Tables 3.1.1 and 3.1.2.

Table 3.1.1: Summary of Historical Titles – 4029 Nelson Bay Road (Lot 3622 DP622485)

Date	Owner
14 Sep 1982 – to date	William Frederick Robinson
26 Oct 1981	Alma Joan Chapman
17 May 1976	Ross Reginald Chapman, business proprietor Alma Joan Chapman, his wife
09 Oct 1967	Alma Joan Chapman, married women
20 May 1958	Donald Frederick Robinson, farmer
04 Dec 1953	Nellie May Robinson, widow / grantee
Prior to 04 Dec 1953	Crown Land

Table 3.1.2: Summary of Historical Titles – 4045 Nelson Bay Road (Lot 2 DP622229)

Date	Owner
24 Oct 2018 – todate	David John Slack Lisa Jayne Slack
24 Feb 1986	Mark Stephen Barrett
19 Jun 1984	Margot Riessbeck
30 Nov 1976	Henry Reissbeck, garage proprietor
09 Oct 1967	Alma Joan Chapman, married women

Date	Owner
20 May 1958	Donald Frederick Robinson, farmer
04 Dec 1953	Nellie May Robinson, widow / grantee
Prior to 04 Dec 1953	Crown Land

The historical title search indicated that the site has been owned by private individuals (business proprietor, married women, farmer, garage proprietor) from 1953 to present day. Prior to 1953 the site was crown land. The current site owners of Lot 3622 purchased the site in 1982. The current site owners of Lot 2 purchased the site in 2018.

3.2 Aerial Photograph Review

Aerial photographs of the site from 1954, 1965, 1975, 1986, 1992 and 2001 were obtained from the NSW Government Spatial Portal (https://portal.spatial.nsw.gov.au/), and satellite images from Near Maps for 2010 and 2022, were assessed by a Qualtest Environmental Scientist. The results of the aerial photograph review are summarised below in Table 3.2. The aerial photographs are presented in Appendix D.

Table 3.2: Aerial Photograph Review

Year	4029 Nelson Bay Road	4045 Nelson Bay Road	Surrounding Land
1954	The lot appears to consist of dense bushland	The lot appears to consist of dense bushland	The surrounding land uses appear to consist of bushland. Nelson Bay Road is present to the south of the site. Rural/residential and farming properties are present to the east and west of the site.
1965	The lot appears to consist mostly of bushland/vegetation. Some disturbed land/access tracks are present in the northern portion of the lot.	The majority of the lot has been cleared of vegetation. A building/structure is present in the eastern portion of the lot. Access tracks and a small structure is also present in the western portion of the lot.	Land to the north of the site has been cleared for farming and a residential dwelling has been constructed to the west of the site. A road has also been constructed to the north east of the site. The remaining surrounding land appears generally unchanged.
1975	The northern portion of the lot appears to have been cleared of vegetation, with evidence of land disturbance.	The majority of the lot appears to have been cleared of vegetation, with evidence of land disturbance. A small portion of grass cover is	A large area to the north and north west of the site appears to have been cleared of vegetation with extensive land disturbance.

Year	4029 Nelson Bay Road	4045 Nelson Bay Road	Surrounding Land
		present in the south eastern portion of the lot. The building/structure present in the eastern portion of the lot in the 1965 photograph has been removed.	Additional rural residential/farming land appears to be present in the wider surrounding area.
1986	Vegetation appears to have regrown across the northern portion of the lot. A small amount of land disturbance may be present in the centre of the lot, however based on the quality of the photo, this cannot be confirmed.	Vegetation appears to be present along the southern and western boundaries of the lot. Dwellings/structures appear to have been constructed in the western portion of the lot. The remainder of the lot appears to be vacant grassland.	The land disturbance to the north and north west of the site appears to have some vegetation regrowth. The remaining surrounding areas appears relatively unchanged since the 1975 aerial photograph.
1992	A residential dwelling and shed has been constructed in the western portion of the site. Some minor land disturbance is presented in the central south of the site. Vegetation has been planted surrounding the residential dwelling.	A residential dwelling and additional site sheds/structures are present in the western portion of the lot. With the exception of some vegetation in the western portion and south eastern corner of the lot, the site consists of vacant grassland. A small stockpile/land disturbance is also present in the north eastern portion of the site.	Rural residential/farming properties appear to be present to the north and north west of the site. The remaining surrounding area appears relatively unchanged since the 1986 aerial photograph.
2001	The lot appears relatively unchanged from the 1992 aerial photograph.	The lot appears relatively unchanged from the 1992 aerial photograph.	The surrounding area appears relatively unchanged since the 1992 aerial photograph.

Year	4029 Nelson Bay Road	4045 Nelson Bay Road	Surrounding Land
2010	A swimming pool appears to have been installed to the north of the residential dwelling. Additional smaller site sheds/structures also appear to have been constructed to the north west and north east of the residential dwelling. Some cleared/disturbed land is present in the south western corner of the lot. The remainder of the lot appears relatively unchanged from the 2001 aerial photograph.	A driveway has been constructed in the south western corner of the lot. Land to the west of the residential dwelling appears to have been cleared and cars parked in the area. Some land disturbance is also present in the north western portion of the lot. The remainder of the lot appears relatively unchanged from the 2001 aerial photograph.	The surrounding area appears relatively unchanged since the 2001 aerial photograph.
2022	A shed has been constructed in the north eastern portion of the lot. Some stockpiles are present in the central east and a driveway has been constructed in the western portion. The remainder of the lot appears relatively unchanged from the 2010 aerial photograph.	Additional works have been carried out on the driveway in the south western portion of the lot. A shed has also been constructed to the west of the residential dwelling. Structures/vegetation previously present to the north of the residential dwelling have been removed. Some stockpiles are present in the eastern portion of the site. The remainder of the lot appears relatively unchanged from the 2010 aerial photograph.	A lifestyle village has been constructed to the west of the site. The remaining surrounding area appears relatively unchanged since the 2010 aerial photograph.

3.3 Site Observations

A Qualtest Environmental Scientist visited the site on 18 October 2022. Selected site photographs are presented in Appendix E. The location of site features is shown on Figure 3, Appendix A. A summary of the site features is outlined below:

4029 Nelson Bay Road (Lot 3622 DP622485)

- A residential dwelling was observed in the central south of the lot. The dwelling was observed to have been constructed with brick and a tile roof. Potential Asbestos Containing Materials (PACM) were observed in the eaves of the dwelling (see Photograph 1 and 2).
- A shed (Shed 1) was observed to the north east of the residential dwelling. The shed was constructed with metal and a concrete floor in good condition (no major cracks, some minor staining). Shed 1 was used to store a vehicle, lawn mower, compressors, equipment and minor quantities of fuels, fertilisers, pool chemicals, paints, lubricants and detergent (less than 100L total). A metal car port and garden shed were also located adjacent to Shed 1. The carport had an earthen floor and was empty at the time of inspection. The garden shed had a concrete floor and was also empty at the time of inspection (see Photographs 3 to 4).
- A portable shower/toilet block was observed to the north of Shed 1. The shower/toilet block was constructed from metal (see Photograph 5).
- A metal fenced pool area was observed to the north of the residential dwelling. The pool was surrounding by grass and pavers. A small pool pump shed was located in the south eastern portion of the pool area (see Photograph 6).
- A former domestic sized chicken pen was located to the west of the pool area. The chicken pen was constructed of metal and overgrown with vegetation (see Photograph 7).
- A septic tank was observed to the north of the residential dwelling. The infiltration area of the septic was observed within vegetation to the north west of the septic tank (see Photograph 8).
- A metal shipping container with timber flooring, in good condition, was observed to the north west of the residential dwelling. The shipping container was observed to store a lawn mower, timber, metal equipment and small quantities of degreasers/oils (<5L). Some timber, tyres and plastics were observed surrounding the shipping container (see Photographs 9 and 10).
- Two large fill mounds (approximately 250m^3) were observed along the southern boundary pf the lot. The fill mounds were observed to consist of sand and overgrown with vegetation. (See Photograph 11).
- A small stockpile of timber offcuts (1m^3) was observed in the central west of the site (see Photograph 12).
- A small stockpile (1m^3) of roadbase/sandy gravel was observed to the north of the shipping container (see Photograph 13).
- A trailer, fibreglass fridge and waste storage area (plastics, bricks, fibre cement sheets, hose, PVC, glass) were observed in the central north and north western portion of the lot (see Photographs 14 to 16).
- A large metal shed/covered area (Shed 2) on a concrete slab was observed in the north eastern portion of the lot. The concrete was observed to be in good condition with no major cracks with some staining. No access was provided inside the shed. Stored on the concrete (covered area) was large eskies, rope, plastic bins, plastic tubs, timber desk, LPG gas bottles (see Photograph 17)
- An area of fill/driveway was observed to the south and west of shed 2. The fill material was observed to consists of asphalt, gravel, crushed bricks and concrete (See Photograph 18).
- A metal shipping container was observed to the west of Shed 2. No access was provided to the shipping container.
- A dilapidated boat trailer was observed to the north of Shed 2. Empty 205L drums, plastics and glass were also observed to the north of Shed 2 (See Photographs 19 and 20).
- A septic and water tanks were observed to the east of Shed 2. An infiltration area for the septic was also observed to the east of the septic tank.

- A storage area (timber, metal, plastics) was also observed along the eastern boundary of the lot (see Photograph 21).
- A stockpile SP3 was observed to the south of Shed 2. SP3 was approximately 15m^3 and contained timber chip board (see Photograph 22).
- A stockpile (SP4) was observed to the west of SP3. SP4 was approximately 20m^3 and contained timber, plastics, pallets, tyres, metal (see Photograph 23).
- Two driveways were observed running generally north south from Nelson Bay Road. The driveways were observed to contain gravel.

4045 Nelson Bay Road (Lot 2 DP622229)

- A dilapidated residential dwelling was observed in the south western portion of the lot. The building was observed to have been constructed with fibre cement cladding, brick and a tile roof. The eave lining and internal walls had been removed from the building. Fragments of potential Asbestos Containing Materials (PACM) were observed beneath the building (see Photograph 24).
- A shed (Shed 3) was observed to the west of the residential dwelling. The shed was observed to be in good condition on a concrete slab. No access was provided to the shed at the time of the site inspection. Two PVC water tanks were observed to the north of the shed (see Photograph 25).
- A gravel driveway was observed to the south of the shed, entering from Nelson Bay Road (see Photograph 26).
- A hose and possible groundwater bore pump was observed to the north east of the residential dwelling (see Photograph 27).
- A stockpile of gravel and carpet (SP5) (<2m^3) and metal sheets were observed to the north of the residential dwelling (see Photographs 28).
- A waste storage area of plastic and metals was observed in the north western portion of the lot and a stockpile (SP6) (approx. 30m^3) of concrete bricks and tiles were observed to the east of the residential dwelling (see Photographs 29 and 30).
- A stockpile (SP7) of timber pallets/timber doors was observed in the central south of the lot. Stockpiles of fallen trees were also observed adjacent to SP7 and in the central portion of the lot (See Photographs 31 and 32).
- No septic tank was observed, but is assumed to be to the north of the residential dwelling.

3.4 NSW EPA Records & Environment Protection Licenses

Contaminated Land Records

A search of the NSW EPA database of notices issued under the Contaminated Land Management Act, 1997 (CLM Act) revealed there were no properties listed as having current and/or former notices within the Bobs Farm suburb.

A search of sites that have been notified to NSW EPA as contaminated (as of 10 October 2022) was also carried out. The search identified one property within the Bobs Farm suburb which has been notified to the NSW EPA as being contaminated:

- Bobs Farm – 15 Fenningham Island Road, Bobs Farm, located >2km north of the site, regulation not required under the CLM Act.

Given the distance from the site and given the above property does not require regulation, it is considered unlikely that contamination from the above property (if any) would impact the site.

A copy of the above searches is provided in Appendix F.

Environment Protection Licenses (EPLs)

The Protection of the Environment Operations (POEO) register under Section 308 of the POEO Act 1997, was searched for Environment Protection Licenses (EPLs) for the suburb of Bobs Farm NSW. The search revealed one property within the suburb of Bobs Farm which had current and/or former EPLs.

Company	EPL No.	Location	Status	Issued Date/Type	Approx. Distance and Direction from Site
Holcim (Australia) Pty Ltd	11710	Nelson Bay Road, Bobs Farm	Issued	21/01/2003 Land based extraction	12km to the west of the site.

A copy of the above search is provided in Appendix F.

Based on the distance of the property from the site, and the type of property, it is considered that contamination on the property (if any) would be unlikely to impact the site.

NSW EPA PFAS Investigation Program

Based on a review of the NSW EPA Government PFAS Investigation Program (ref: https://www.epa.nsw.gov.au/your-environment/contaminated-land/pfas-investigation-program), there are no properties in the suburb of Bobs Farm that have been identified as a site that is likely to have used large quantities of PFAS.

It is noted that two sites; Salt Ash Weapons Range and Williamtown RAAF Base, located greater than 10Km to the west of the site, have been identified as likely to have used large quantities of PFAS. The RAAF Base Williamtown PFAS Management Area (Broader Zone) is also located greater than 2km to the west of the site.

Based on the distance of the site from the above mentioned properties, and as the site is not located in the Broader PFAS Management Area, PFAS contamination (from the above properties) is not considered to impact the site.

NSW EPA Former Gasworks Sites

Based on a review of the NSW EPA website (ref: https://www.epa.nsw.gov.au/your-environment/contaminated-land/other-contamination-issues/former-gasworks-sites), no former gas works have been identified in the Port Stephens Council area.

3.5 Anecdotal Information

An interview was held with the current site owner of 4029 Nelson Bay Road, Mr Bill Robinson. Mr Robinson has owned 4029 Nelson Bay Road since 1982. Information obtained from Mr Robinson is summarised below:

- Mr Robinson's family purchased the site and land to the west of the site (the Lifestyle Village), in the 1950's.
- The northern and eastern portion of 4029 and the majority of 4045 Nelson Bay Road was used for sand mining in the 1960's to early 1970's. The sand mining was carried out using a floating dredge.
- Large shed in the north eastern portion of the lot was constructed in 2015 for Mr Robinson's sons fishing company. The shed also stores nets, fishing boxes. A 'granny flat' is also located within the shed.

- During construction of the shed, imported beach sand was used to raise the level of the shed. A road base material was also imported from an asphalt plant in Tomago to construct a driveway around the shed.
- Timber stored in stockpiled across the site is to burn.
- Large fill mounds along the southern boundary of the site were constructed as a noise barrier. The mounds consist of imported beach sand and topsoil material.
- The portable shower/toilet block was brought in for use when using the swimming pool and is connected to the site septic system.
- The house located at 4045 Nelson Bay Road was built in 1977/1978. The slab for the shed was poured 10 years ago, but shed only constructed in the last 3 years (on existing slab). No-one has lived on the lot for many years.

3.6 Section 10.7 Certificate

A Section 10.7 Certificates for 4029 Nelson Bay Road, Bobs Farm NSW, was obtained from Port Stephens Council, and is presented in Appendix G.

Item	Lot 3622 DP622485
Land Zoning	*RU2 Rural Landscape*
Acid Sulfate Soils	No information on acid sulfate soils provided. Qualtest notes that the Port Stephens Local Environmental Plan (LEP) 2013 maps the site as Class 4 ASS which requires development consent and an ASS Management Plan (ASSMP) for *"Works more than 2 metres below the natural ground surface. Works by which the watertable is likely to be lowered more than 2 metres below the natural ground surface."*
Loose-Fill Asbestos Insulation	*"No, the land does not include any residential dwelling identified on the Loose-Fill Asbestos Insulation Register as containing loose-fill asbestos ceiling insulation".*
Contaminated Land Management Act 1997	*"The following matters are prescribed by section 59 (2) of the Contaminated Land Management Act 1997 as additional matters to be specified in a planning certificate:* *(a) Whether or not the land to which the certificate relates is significantly contaminated land within the meaning of that Act.* *(b) Whether or not the land to which the certificate relates is subject to a management order within the meaning of that Act.* *(c) Whether or not the land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of the Act.* *(d) Whether or not the land to which this certificate relates is subject to an ongoing maintenance order within the meaning of that Act.* *(e) Whether or not the land to which the certificate relates is the subject of a site audit statement within the meaning of that Act – if a copy of such statement has been provided at any time to the local authority issuing the certificate."* *"There are no prescribed matters under section 59(2) of the Contaminated Land Management Act 1997 to be disclosed".*

3.7 Previous Reports

Qualtest has not been provided with, or been made aware of any previous contamination assessments conducted on the site.

3.8 Summary of Site History

The site history review showed:

- The historical title search indicated that the site has been owned by private individuals (business proprietor, married women, farmer, garage proprietor) from 1953 to present day. Prior to 1953 the site was crown land. The current site owners of Lot 3622 purchased the site in 1982. The current site owners of Lot 2 purchased the site in 2018.
- Anecdotal evidence indicates that the northern and eastern portion of 4029 and the majority of 4045 Nelson Bay Road was used for sand mining in the late 1960's to early 1970's. The sand mining was carried out using a floating dredge.
- Prior to the 1960's the site consisted of vacant bushland. The eastern portion of the site was potentially used for residential/farming purposes in the mid 1960's, prior to sand mining being carried out on the site. Following sand mining the site has been used for residential purposes since the 1980's. A commercial shed has also been present in the central north of the site since 2015.
- Some general materials/equipment was observed stored in and around onsite sheds and dwellings on the site. The materials/equipment included; timber, metal, plastic, bricks, tyres, trailers, eskies and empty 205L drums.
- Imported fill material and stockpiles of gravel, concretes and bricks were also observed.
- Buildings constructed of potential ACM were observed on the site, including the eaves of the residential dwelling at 4029 Nelson Bay Road and/or cladding of residential dwelling at 4045 Nelson Bay Road.

3.9 Potential Offsite Sources of Contamination

No potential offsite sources of contamination have been identified for the site.

3.10 Gaps in the Site History

Whilst the site history is reasonably comprehensive there are some gaps identified in the review as follows:

- The source and quality of the fill used on the site is unknown.
- It is not known if hazardous building materials (i.e. asbestos, lead paint) were used to construct the current and/or former buildings on site. However, based on site observations, portions of the previous and current buildings were likely constructed with asbestos containing materials (ACM).
- The exact operations of the sand mining such as ore processing and slimes burial are unknown
- Site access was restricted for some sheds due to being locked and so the items stored in these sheds could not be observed.

4.0 Preliminary Conceptual Site Model

Based on the results of the preliminary contamination assessment carried out on the site, a preliminary Conceptual Site Model (CSM) has been developed.

Table 4.0 – Preliminary Conceptual Site Model

AEC	COPC	Likelihood of Contamination	Mechanism of Contamination	Potentially Affected Media	Human & Ecological Receptors	Potential mechanisms of exposure	Potential & Complete Exposure Pathways	Comments
1. Current and former buildings across the site. • Weathering of potentially hazardous materials (asbestos, lead paint, galvanised metals) • Use of pesticides around building • Demolition of structures over time	Metals, Asbestos, OCPs	Medium to High	• Top-down leaks/spills, flakes/fibres onto soil. • Leaching of soil contaminants to surface water and groundwater.	• Surface Soils • Surface water • Groundwater • Sediments	• Current site visitors • Future construction workers & site users • Soil biota/plants and transitory wildlife • Surface and ground water depended ecosystems • Offsite surface water – unnamed swamp, located 200m north of the site. • Offsite groundwater discharge point – Bobs Farm Creek located approximately 800m north of the site or Tiligerry Creek, located approximately 2.2km north of the site.	• Direct dermal contact with contaminated soil and/or surface water • Ingestion of contaminated soil and/or surface water • Inhalation of asbestos fibres, or contaminated soil (as dust) • Leaching of soil contaminants to surface water and/or groundwater • Surface water discharge to unnamed swamp, located 200m north of the site and potential groundwater discharge to Bobs Farm Creek or Tiligerry Creek located approximately 0.8km to 2.2km north of the site.	• Potentially complete exposure pathway for current site visitors, future construction workers and site users. • Potentially complete exposure pathway for ecological receptors. • Potentially complete exposure pathway for soil contaminants to leach to surface water. • Potentially complete exposure pathway for soil contaminates to leach to groundwater due to sandy soils.	Exposure pathways would be incomplete if soils are found to not be contaminated via sampling & analysis. It is recommended that a Hazardous Materials Survey is carried out on the existing site building.
2. Filling and stockpiling on the site • Potential use of imported fill of unknown quality and origin.	TRH, BTEX, PAH, OCPs, Metals, Asbestos	Low to medium	• Importation of potentially contaminated fill. • Leaching of soil contaminants to underlying soils, surface water and groundwater.	• Fill soils • Underlying soils • Surface water • Groundwater • Sediments		• Direct dermal contact with contaminated soil and/or surface water • Ingestion of contaminated soil • Inhalation of asbestos fibres, or contaminated soil (as dust) • Inhalation of hydrocarbon vapours • Leaching of soil contaminants to surface water and/or groundwater • Surface water discharge to unnamed swamp, located 200m north of the site and potential groundwater discharge to Bobs Farm Creek or Tiligerry Creek located approximately		Exposure pathways would be incomplete if soils are found to not be contaminated via sampling & analysis.
3. Storage of equipment/waste materials across the site • Stored timber, bricks, metals, plastics, tyres, wood, fibreglass fridge, trailers and small quantities of paints, fuels, degreasers	TRH, BTEX, PAH, Metals, Asbestos, OCPs (CoPCs dependent on material/waste type)	Low to Medium	• Top-down leaks/spills, flakes/fibres onto soil. • Leaching of soil contaminants to surface water and groundwater.	• Aesthetics • Surface soils • Surface water • Groundwater • Sediments				

AEC	COPC	Likelihood of Contamination	Mechanism of Contamination	Potentially Affected Media	Human & Ecological Receptors	Potential mechanisms of exposure	Potential & Complete Exposure Pathways	Comments
						0.8km to 2.2km north of the site.		
4. Septic tank located in centre of the site • Septic tank soak aways and adsorption trenches, potential leaks of effluent	Microbiological	Low	• Subsurface leaks from tank • Subsurface & surface leaks from pipes and/or trenches	• Soil • Surface water • Sediment • Groundwater	• Current site visitors • Future construction workers & site users • Soil biota/plants and transitory wildlife • Surface and ground water depended ecosystems • Offsite surface water – unnamed swamp, located 200m north of the site. • Offsite groundwater discharge point – Bobs Farm Creek located approximately 800m north of the site or Tiligerry Creek, located approximately 2.2km north of the site.	• Direct dermal contact with contaminated soil and/or surface water • Ingestion of contaminated soil and/or surface water • Leaching of soil contaminants to surface water and/or groundwater • Surface water discharge to unnamed swamp, located 200m north of the site and potential groundwater discharge to Bobs Farm Creek or Tiligerry Creek located approximately 0.8km to 2.2km north of the site.	• Potentially complete exposure pathway for current site visitors, future construction workers and site users. • Potentially complete exposure pathway for ecological receptors. • Potentially complete exposure pathway for soil contaminants to leach to surface water. • Potentially complete exposure pathway for soil contaminates to leach to groundwater due to sandy soils.	Exposure pathway would be incomplete if soils and surface water are found to not be contaminated via sampling & analysis.
5. Sand Mining • Former sand mining carried out in the north and eastern portion of the site • Processing of ore and placement of slimes • Use and storage of machinery and equipment during mining works	Naturally Occurring Radio Active Material (NORM), TRH, BTEX, PAHs, Metals	Low to medium	• Top-down leaks/spills, flakes/fibres onto soil • Concentration of NORM in areas where ore was processed and within areas where slimes could be buried • Radiation risk if NORM located on site	• Soil • Surface water • Sediment • Groundwater			• Potentially complete exposure pathway for current site visitors, future construction workers and site users. • Potentially complete exposure pathway for ecological receptors. • Potentially complete exposure pathway for soil contaminants to leach to surface water. • Potentially complete exposure pathway for soil contaminates to leach to groundwater due to sandy soils.	

5.0 Conclusions and Recommendations

The site history indicates that prior to the 1960's the site consisted of vacant bushland. The eastern portion of the site was potentially used for residential/farming purposes in the mid 1960's. Sand mining was carried out across the majority of the site in the late 1960's early 1970's. Following sand mining the site has been used for residential purposes. A commercial shed has also been present in the central north of the site since 2015.

Materials and equipment are currently stored in and around onsite sheds and dwellings, and areas of fill and fill stockpiles were also observed across the site. Buildings constructed of potential ACM were observed on the site, including the eaves of the residential dwelling at 4029 Nelson Bay Road and/or cladding of the residential dwelling at 4045 Nelson Bay Road.

Five Areas of Environmental Concern (AECs) were identified based on the site history and site observations. The AECs related to:

1. Current and former buildings across the site - Weathering of potentially hazardous materials (asbestos, lead paint, galvanised metals); Use of pesticides around buildings; Demolition of structures over time.

2. Filling and stockpiling on the site - Potential use of imported fill of unknown quality and origin.

3. Storage of equipment/waste materials across the site. Stored timber, bricks, metals, plastics, tyres, wood, fibreglass fridge, trailers and small quantities of paints, fuels, degreasers.

4. Septic tank located in centre of the site - Septic tank soak aways and adsorption trenches, potential leaks of effluent.

5. Sand Mining - Former sand mining carried out in the north and eastern portion of the site; Processing of ore and placement of slimes; Use and storage of machinery and equipment during mining works.

The Preliminary Conceptual Site Model (CSM) indicated that there was a potential for soil, surface water and groundwater contamination as well a radiation risk, to exist on the site and potentially complete exposure pathways could exist to current and future site users and the environment.

Based on the above, it is recommended that a Detailed Contamination Assessment (DCA), comprising intrusive investigations in the AECs identified be carried out. Given the age of the buildings on site it is also recommended that a Hazardous Materials Survey (HMS) is carried out by a suitably qualified consultant, prior to refurbishment and/or demolition of the structures. The former sand mining areas will require a radiation survey and possible soil sampling to assess the risk posed form NORM.

It is recommended that the DCA, HMS and radiation survey be carried out to inform the future development application, however for the purpose of the rezoning it is likely that the site could be made suitable, as the recommended additional assessments would unlikely identify contamination that would preclude the site being developed for the proposed use (i.e. was not able to be remediated or managed using conventional techniques).

This report was prepared in general accordance with the relevant sections of the NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Land and the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), NEPC 2013*, Canberra (referred to as ASC NEPM 2013). The report comprises a Preliminary Contamination Assessment in accordance with State Environmental Planning Policy (Resilience and Hazards) 2021, Chapter 4, Stage 1 assessment.

6.0 Limitations

This report has been prepared by Qualtest for Hometown Australia Holdings based on the objectives and scope of work listed in Sections 1.1 and 1.2. No warranty, expressed or implied, is made as to the information and professional advice included in this report. Anyone using this document does so at their own risk and should satisfy themselves concerning its applicability and, where necessary, should seek expert advice in relation to their particular situation.

The opinions, conclusions and recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. Qualtest has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

In preparing this report Qualtest has relied on information contained in searches of government websites and has not independently verified or checked the data contained on these websites.

In preparing this report, current guidelines for assessment and management of contaminated land were followed.

Site conditions may change after the date of this Report. Qualtest does not accept responsibility arising from, or in connection with, any change to the site conditions.

7.0 References

NSW Department of Primary Industries (Office of Water) Registered Groundwater Bore Map, accessed from http://allwaterdata.water.nsw.gov.au/water.stm.

NSW Land and Property Information, Spatial Information eXchange (SIX) Maps - Topographic Map, accessed from https://maps.six.nsw.gov.au/.

State of NSW and Department of Planning, Industry and Environment, 2022, Acid Sulfate Soil online database (https://espade.environment.nsw.gov.au

NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Land.

NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), Canberra (ASC NEPM 2013).

NSW ePlanning Spatial Viewer Portal (https://www.planningportal.nsw.gov.au/spatialviewer/)

NSW Spatial Portal - Historical Imagery (https://portal.spatial.nsw.gov.au/portal/apps/

APPENDIX A:

Figures



LEGEND:

Site Location

Image obtained from Google Earth

Qualtest LABORATORY (NSW) PTY LTD

Client:	Hometown Australia Holdings	Drawing No:	FIGURE 1
Project:	Preliminary Contamination Assessment	Project No:	NEW22P-0199-AA
Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	Scale:	N.T.S.
Title:	Site Location Plan	Date:	25/10/2022



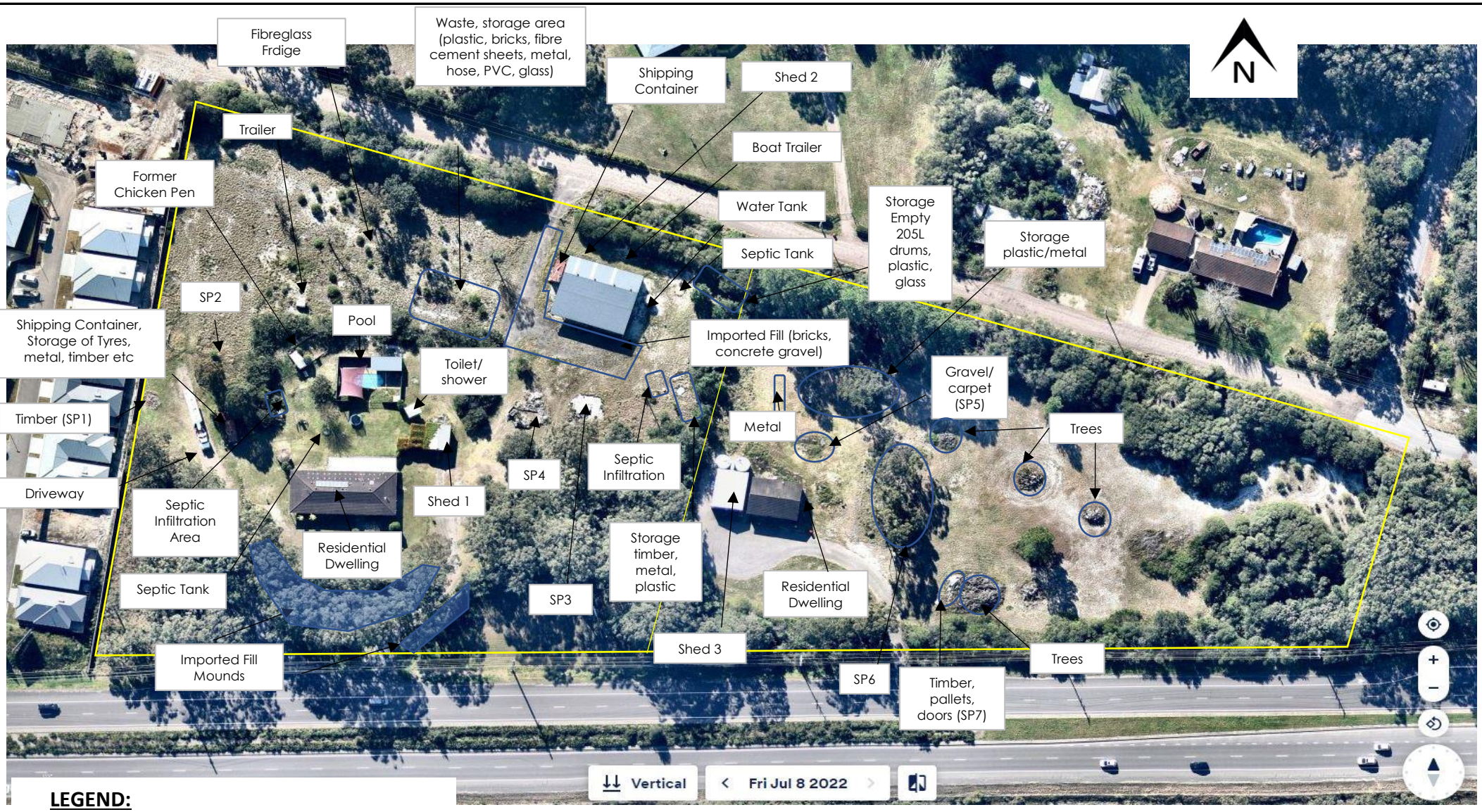
LEGEND:

Approximate Site/Lot Boundary

Image sourced from SIX maps

Qualtest LABORATORY (NSW) PTY LTD

Client:	Hometown Australia Holdings	Drawing No:	FIGURE 2
Project:	Preliminary Contamination Assessment	Project No:	NEW22P-0199-AA
Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	Scale:	N.T.S.
Title:	Lot Location Plan	Date:	25/10/2022



LEGEND:

Approximate Site/Lot Boundary

Image sourced from NearMaps

Qualtest LABORATORY (NSW) PTY LTD

Client:	Hometown Australia Holdings	Drawing No:	FIGURE 3
Project:	Preliminary Contamination Assessment	Project No:	NEW22P-0199-AA
Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	Scale:	N.T.S.
Title:	Site Features Plan	Date:	25/10/2022

APPENDIX B:

Groundwater Bore Search

WaterNSW

⊞ Real Time Data - Major Dams

Groundwater (Telemetered data)

favourites | search | download sites | find a site

⊞ Real Time Data - Bores

All Groundwater Site details

search | download sites | find a site | search by licence

Search

Enter keywords
(site name or number)

search

⊞ All Groundwater Map

Meteorology

favourites | search

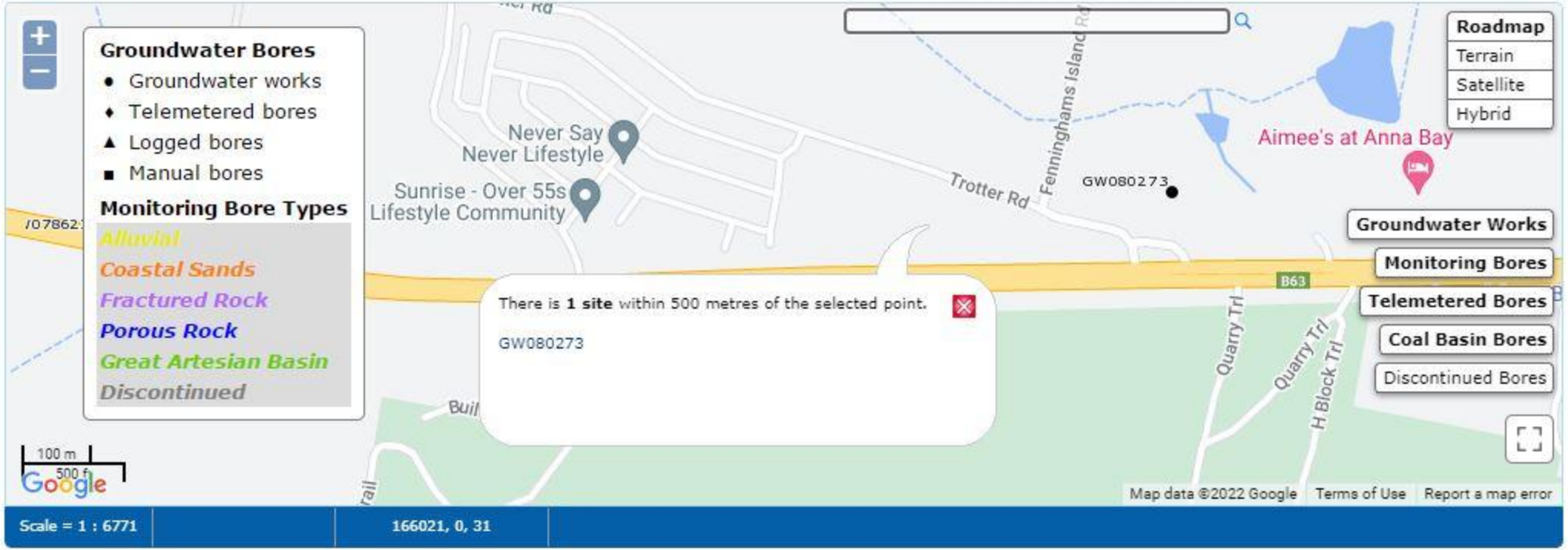
All Groundwater Site Details

ALL GROUNDWATER MAP

bookmark this page

All data times are Eastern Standard Time

Map | Info



WaterNSW
Work Summary

GW080273

Licence:
Licence Status:
Authorised Purpose(s):
Intended Purpose(s): IRRIGATION

Work Type: Spear
Work Status:
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 16/08/2002
Final Depth:
Drilled Depth:

Contractor Name: (None)
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	GLOUCESTER	TOMAREE	LT99 DP753204
Licensed:			

Region: 20 - Hunter
River Basin: 209 - KARUAH RIVER
Area/District:
CMA Map: 9332-3N
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)
Northing: 6374006.000
Easting: 410540.000
Latitude: 32°46'05.5"S
Longitude: 152°02'41.5"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Remarks

01/12/2009: Reviewed data - nothing to update.

***** End of GW080273 *****

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

APPENDIX C:

Historical Titles

ADVANCE LEGAL SEARCHERS PTY LTD

(ACN 147 943 842)
ABN 82 147 943 842

18/36 Osborne Road,
Manly NSW 2095

Mobile: 0412 169 809
Email: search@alsearchers.com.au

17th October, 2022

QUALTEST PTY LTD
2 Murray Dwyer Circuit,
MAYFIELD WEST, NSW 2304

Attention Libby Betz,

RE: **4029 & 4045 Nelson Bay Road,**
Bobs Farm
Purchase Order NEW22P- Hometown Australia Holdings

Note 1:	**Lot 3622**	**DP 622485**	(page 1)
Note 2:	**Lot 2**	**DP 622229**	(page 4)

Note 1:

Current Search

Folio Identifier 3622/622485 (title attached)
DP 622485 (plan attached)
Dated 14th October, 2022
Registered Proprietor:
WILLIAM FREDERICK ROBINSON

Title Tree
Lot 3622 DP 622485

Folio Identifier 3622/622485

Certificate of Title Volume 14712 Folio 36

Certificate of Title Volume 13027 Folio 245

Certificate of Title Volume 6731 Folio 247

Crown land

****

Index

T – Transfer
A – Application
G – Grant

****

Summary of proprietor(s)
Lot 3622 DP 622485

Year	Proprietor(s)	
	(Lot 3622 DP 622485)	
14 Sep 1988 – todate	William Frederick Robinson	
	(Lot 3622 DP 622485 – CTVol 14712 Fol 36)	
26 Jul 1982	William Frederick Robinson	T
15 Apr 1982	Alma Joan Chapman	
	(Lot 362 DP 581098 – CTVol 13027 Fol 245)	
26 Oct 1981	Alma Joan Chapman	T
17 May 1976	Ross Reginald Chapman, business proprietor Alma Joan Chapman, his wife	T
06 Apr 1976	Alma Joan Chapman, married woman	
	(Portion 36 Parish Tomaree – Area 43 Acres – CTVol 6731 Fol 247)	
19 Mar 1976	Alma Joan Chapman, married woman	
09 Oct 1967	Alma Joan Chapman, married woman	A
20 May 1958	Donald Frederick Robinson, farmer	A
04 Dec 1953	Nellie May Robinson, widow / grantee	G
	(Portion 36 Parish Tomaree – Area 43 Acres)	
Prior to 04 Dec 1953	Crown Land	
(1953 – 1953)	*(Lease in Perpetuity 1953/93 Newcastle)*	
(1921 – 1953)	*(Suburban Holding 1921/6 Newcastle)*	

****

Note 2:

Current Search

Folio Identifier 2/622229 (title attached)
DP 622229 (plan attached)
Dated 14th October, 2022
Registered Proprietor:
DAVID JOHN SLACK
LISA JAYNE SLACK

Title Tree
Lot 2 DP 622229

Folio Identifier 2/622229

Certificate of Title Volume 14671 Folio 96

Certificate of Title Volume 13027 Folio 244

Certificate of Title Volume 6731 Folio 247

Crown land

****

Index

T – Transfer
TA – Transmission Application
A – Application
G – Grant

****

Summary of proprietor(s)
Lot 2 DP 622229

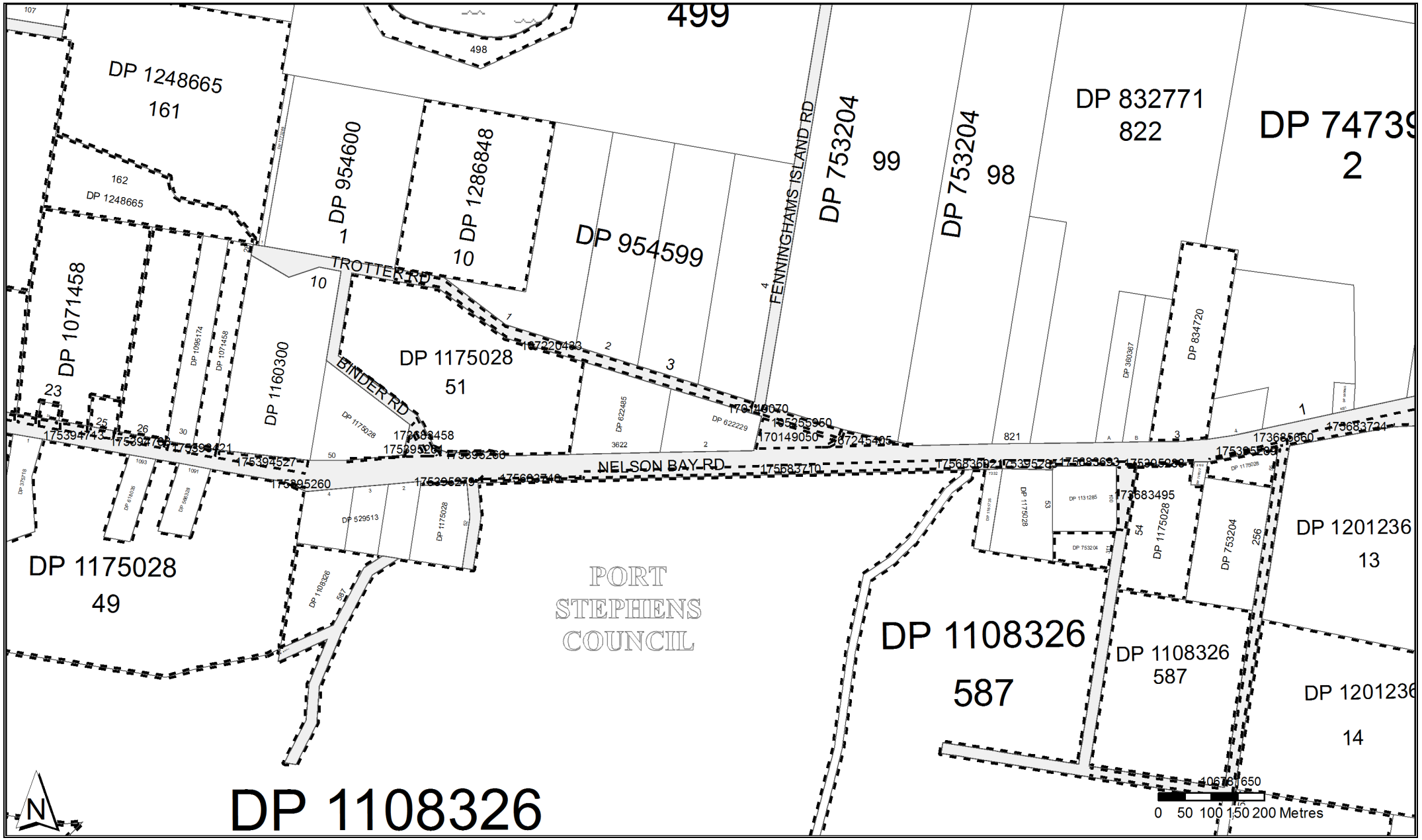
Year	Proprietor(s)	
	(Lot 2 DP 622229)	
24 Oct 2018 – todate	David John Slack Lisa Jayne Slack	T
14 Sep 1988	Mark Stephen Barrett	
	(Lot 2 DP 622229 – CTVol 14671 Fol 96)	
24 Feb 1986	Mark Stephen Barrett	T
19 Jun 1984	Margot Riessbeck	TA
19 Jul 1982	Henry Reissbeck, garage proprietor	
	(Lot 361 DP 581098 – CTVol 13027 Fol 244)	
30 Nov 1976	Henry Reissbeck, garage proprietor	T
06 Apr 1976	Alma Joan Chapman, married woman	
	(Portion 36 Parish Tomaree – Area 43 Acres – CTVol 6731 Fol 247)	
19 Mar 1976	Alma Joan Chapman, married woman	
09 Oct 1967	Alma Joan Chapman, married woman	A
20 May 1958	Donald Frederick Robinson, farmer	A
04 Dec 1953	Nellie May Robinson, widow / grantee	G
	(Portion 36 Parish Tomaree – Area 43 Acres)	
Prior to 04 Dec 1953	Crown Land	
(1953 – 1953)	*(Lease in Perpetuity 1953/93 Newcastle)*	
(1921 – 1953)	*(Suburban Holding 1921/6 Newcastle)*	

****

Cadastral Records Enquiry Report : Lot 2 DP 622229

Ref : NOUSER

Locality : BOBS FARM
Parish : TOMAREE
LGA : PORT STEPHENS
County : GLOUCESTER



Copyright © Crown in right of New South Wales, 2017

This information is provided as a searching aid only.Whilst every endeavour is made to ensure that current map, plan and titling information is accurately reflected, the Registrar General cannot guarantee the information provided. For ALL ACTIVITY PRIOR TO SEPTEMBER 2002 you must refer to the RGs Charting and Reference Maps

	Status	Surv/Comp	Purpose
DP728124			
Lot(s): 498			
NSW GAZ. 02-05-2003 Folio : 4639			
LOT 498 DP728124 RESERVED AS PART OF TILLIGERRY NATURE RESERVE			
DP753204			
Lot(s): 311			
NSW GAZ. 24-01-2003 Folio : 466			
ADDITION TO RESERVED CROWN LAND RESERVE NO. 74744 - LOT 311 DP753204			
DP834720			
Lot(s): 3			
DP1200992	REGISTERED	SURVEY	EASEMENT
DP1033110			
Lot(s): 2			
DP815252	HISTORICAL	SURVEY	SUBDIVISION
DP866324	HISTORICAL	SURVEY	SUBDIVISION
DP1071458			
Lot(s): 23			
DP1214256	REGISTERED	SURVEY	EASEMENT
Lot(s): 26			
DP1205730	REGISTERED	SURVEY	EASEMENT
Lot(s): 23, 25, 43, 45, 46			
DP588972	HISTORICAL	SURVEY	SUBDIVISION
Lot(s): 28, 49			
DP340555	HISTORICAL	SURVEY	UNRESEARCHED
Lot(s): 24, 44			
DP327837	HISTORICAL	SURVEY	UNRESEARCHED
DP1097992			
Lot(s): 592			
NSW GAZ. 05-12-2008 Folio : 11884			
ACQUIRED FOR THE PURPOSES OF THE ELECTRICITY SUPPLY ACT, 1995 PROPOSED EASEMENT FOR ELECTRICITY TRANSMISSION LINES AND ACCESS THERETO OF VARIABLE WIDTH DESIGNATED (A), (B), SHOWN IN DP1066223			
DP1108326			
Lot(s): 587			
DP1104760	REGISTERED	SURVEY	EASEMENT
DP1113487			
Lot(s): 212			
DP749014	HISTORICAL	SURVEY	SUBDIVISION
DP1175028			
Lot(s): 54			
DP1276856	REGISTERED	SURVEY	EASEMENT
Lot(s): 51			
DP1269361	REGISTERED	SURVEY	EASEMENT
Lot(s): 51, 64			
DP809679	HISTORICAL	SURVEY	SUBDIVISION
Lot(s): 54, 67			
DP778272	HISTORICAL	SURVEY	SUBDIVISION
Lot(s): 55, 68			
DP753204	HISTORICAL	COMPILATION	CROWN ADMIN NO.
Lot(s): 49, 62			
DP618035	HISTORICAL	SURVEY	SUBDIVISION
Lot(s): 55			
NSW GAZ. 18-05-2018 Folio : 2904			
NATIONAL PARKS AND WILDLIFE ACT, 1974 - PROCLAMATION RESERVED AS AN ADDITION TO WORIMI NATIONAL PARK			
DP1177621			
Lot(s): 3907			
DP1071458	HISTORICAL	SURVEY	ROADS ACT, 1993

Caution: This information is provided as a searching aid only. Whilst every endeavour is made the ensure that current map, plan and titling information is accurately reflected, the Registrar General cannot guarantee the information provided. For **ALL ACTIVITY PRIOR TO SEPTEMBER 2002** you must refer to the RGs Charting and Reference Maps.

Copyright © Crown in right of New South Wales, 2017

	Status	Surv/Comp	Purpose
DP1201236			
Lot(s): 14			
DP1052037	REGISTERED	SURVEY	EASEMENT
NSW GAZ. 05-12-2008 Folio : 11884 ACQUIRED FOR THE PURPOSES OF THE ELECTRICITY SUPPLY ACT, 1995 PROPOSED EASEMENT FOR ELECTRICITY TRANSMISSION LINES AND ACCESS THERETO OF VARIABLE WIDTH DESIGNATED (A), (B), (C), (D), (E) AND (J) SHOWN IN DP1052037			
DP1248665			
Lot(s): 161			
DP1171865	HISTORICAL	SURVEY	ROADS ACT, 1993
NSW GAZ. 17-02-2012 Folio : 454 CLOSED ROAD LOTS 1-2 DP1171865			
Lot(s): 161, 162			
DP753204	HISTORICAL	COMPILATION	CROWN ADMIN NO.
DP1286848			
Lot(s): 10			
DP954600	HISTORICAL	SURVEY	UNRESEARCHED
Road			
Polygon Id(s): 170149050			
NSW GAZ. 01-11-2013 Folio : 5047 DEDICATED PUBLIC ROAD LOT 1 DP622229			
Polygon Id(s): 175683745, 175683746, 175683710, 175683692, 175683693, 175683724			
NSW GAZ. 05-12-2003 Folio : 11115 ACQUIRED FOR THE PURPOSES OF THE ROADS ACT, 1993 LOTS 51-57 DP1053988			
Polygon Id(s): 175683745, 175683746, 175683710, 175683692, 175683724			
PA81474 - LOTS 51-57 DP1053988 AND LOTS 1-3 DP1046439			
Polygon Id(s): 175683745, 175683746, 175683710, 175683692, 175683693, 175683724			
NSW GAZ. 12-05-2017 Folio : 1671 DEDICATED PUBLIC ROAD LOTS 51-57 DP1053988			
Polygon Id(s): 175394788			
LOT 47 DP1071458 IS REQUIRED FOR ROAD PURPOSES - SEE AG574554			
Polygon Id(s): 175394710, 175394711, 175394712, 175394713, 175394765, 175394788			
NSW GAZ. 12-05-2017 Folio : 1671 DEDICATED PUBLIC ROAD LOTS 40, 42 TO 47 DP1071458			
Polygon Id(s): 175394789			
NSW GAZ. 12-05-2017 Folio : 1671 DEDICATED PUBLIC ROAD LOT 49 DP1071458			
NSW GAZ. 12-05-2017 Folio : 1671 DEDICATED PUBLIC ROAD LOT 31 DP1095172			
Polygon Id(s): 175393421			
NSW GAZ. 12-05-2017 Folio : 1671 DEDICATED PUBLIC ROAD LOT 31 DP1095174			
Polygon Id(s): 175394527			
NSW GAZ. 12-05-2017 Folio : 1671 DEDICATED PUBLIC ROAD LOT 11 DP1160300			
Polygon Id(s): 175395266			
LOT 64 DP1175028 IS REQUIRED FOR ROAD PURPOSES - SEE AH762508			
Polygon Id(s): 175395260, 175395261, 175395266, 175395279			
NSW GAZ. 12-05-2017 Folio : 1671 DEDICATED PUBLIC ROAD LOTS 62-65 DP1175028			

Caution: This information is provided as a searching aid only. Whilst every endeavour is made the ensure that current map, plan and titling information is accurately reflected, the Registrar General cannot guarantee the information provided. For **ALL ACTIVITY PRIOR TO SEPTEMBER 2002** you must refer to the RGs Charting and Reference Maps.

Copyright © Crown in right of New South Wales, 2017

Status	Surv/Comp	Purpose
Polygon Id(s): 175395285, 175395288, 175395289		
NSW GAZ.	12-05-2017	Folio : 1671
DEDICATED PUBLIC ROAD LOTS 66-72 DP1175028		
Polygon Id(s): 106781650		
NSW GAZ.	18-05-2018	Folio : 2904
NATIONAL PARKS AND WILDLIFE ACT, 1974 - PROCLAMATION RESERVED AS AN ADDITION TO WORIMI NATIONAL PARK. THE CROWN ROAD SEPARATING LOT 55 DP1175028 FROM LOT 13 DP1201236		
Polygon Id(s): 173683492, 173683494, 173683495		
NSW GAZ.	19-07-2013	Folio : 3545
TRANSFER OF CROWN ROAD TO COUNCIL		
Polygon Id(s): 105255950, 167220433, 167245405, 170149070		
NSW GAZ.	17-02-2012	Folio : 451
TRANSFER OF CROWN ROAD TO COUNCIL		
Polygon Id(s): 173683458, 173683473, 173683491, 173683494, 173685660		
NSW GAZ.	26-02-2016	Folio : 340
TRANSFER OF CROWN ROAD TO COUNCIL		

Caution: This information is provided as a searching aid only. Whilst every endeavour is made the ensure that current map, plan and titling information is accurately reflected, the Registrar General cannot guarantee the information provided. For **ALL ACTIVITY PRIOR TO SEPTEMBER 2002** you must refer to the RGs Charting and Reference Maps.

Copyright © Crown in right of New South Wales, 2017

Plan	Surv/Comp	Purpose
DP360367	COMPILATION	UNRESEARCHED
DP375718	SURVEY	UNRESEARCHED
DP529513	SURVEY	SUBDIVISION
DP566328	SURVEY	SUBDIVISION
DP585665	SURVEY	SUBDIVISION
DP618035	SURVEY	SUBDIVISION
DP622229	SURVEY	SUBDIVISION
DP622485	COMPILATION	SUBDIVISION
DP700904	SURVEY	SUBDIVISION
DP728124	COMPILATION	CROWN FOLIO CREATION
DP747399	SURVEY	SUBDIVISION
DP753204	COMPILATION	CROWN ADMIN NO.
DP778272	SURVEY	SUBDIVISION
DP832771	SURVEY	SUBDIVISION
DP834720	SURVEY	SUBDIVISION
DP954599	SURVEY	UNRESEARCHED
DP954600	SURVEY	UNRESEARCHED
DP1033110	SURVEY	SUBDIVISION
DP1071458	SURVEY	ROADS ACT, 1993
DP1095174	COMPILATION	ROADS ACT, 1993
DP1097992	SURVEY	CROWN FOLIO CREATION
DP1108326	SURVEY	SUBDIVISION
DP1113487	SURVEY	SUBDIVISION
DP1131285	COMPILATION	CROWN LAND CONVERSION
DP1160300	SURVEY	ROADS ACT, 1993
DP1161735	COMPILATION	CROWN LAND CONVERSION
DP1173269	COMPILATION	CROWN ROAD ENCLOSURE
DP1175028	SURVEY	ROADS ACT, 1993
DP1177621	SURVEY	SUBDIVISION
DP1201236	COMPILATION	CROWN LAND CONVERSION
DP1248665	SURVEY	SUBDIVISION
DP1286848	SURVEY	REDEFINITION
DP1286848	SURVEY	REDEFINITION

Caution: This information is provided as a searching aid only. Whilst every endeavour is made the ensure that current map, plan and titling information is accurately reflected, the Registrar General cannot guarantee the information provided. For **ALL ACTIVITY PRIOR TO SEPTEMBER 2002** you must refer to the RGs Charting and Reference Maps.

Copyright © Crown in right of New South Wales, 2017

Req:R602985 /Doc:CT 13027-244 CT /Rev:23-Dec-2010 /NSW LRS /Pgs:ALL /Prt:14-Oct-2022 14:33 /Seq:1 of 2
© Office of the Registrar-General /Src:GlobalX /Ref:advlegs

13027244

CERTIFICATE OF TITLE

NEW SOUTH WALES — REAL PROPERTY ACT, 1900

Vol. 13027 Fol. 244

Prior Title (Crown Grant)
Vol. 6731 Fol. 247

CANCELLED

EDITION ISSUED
6 4 1976

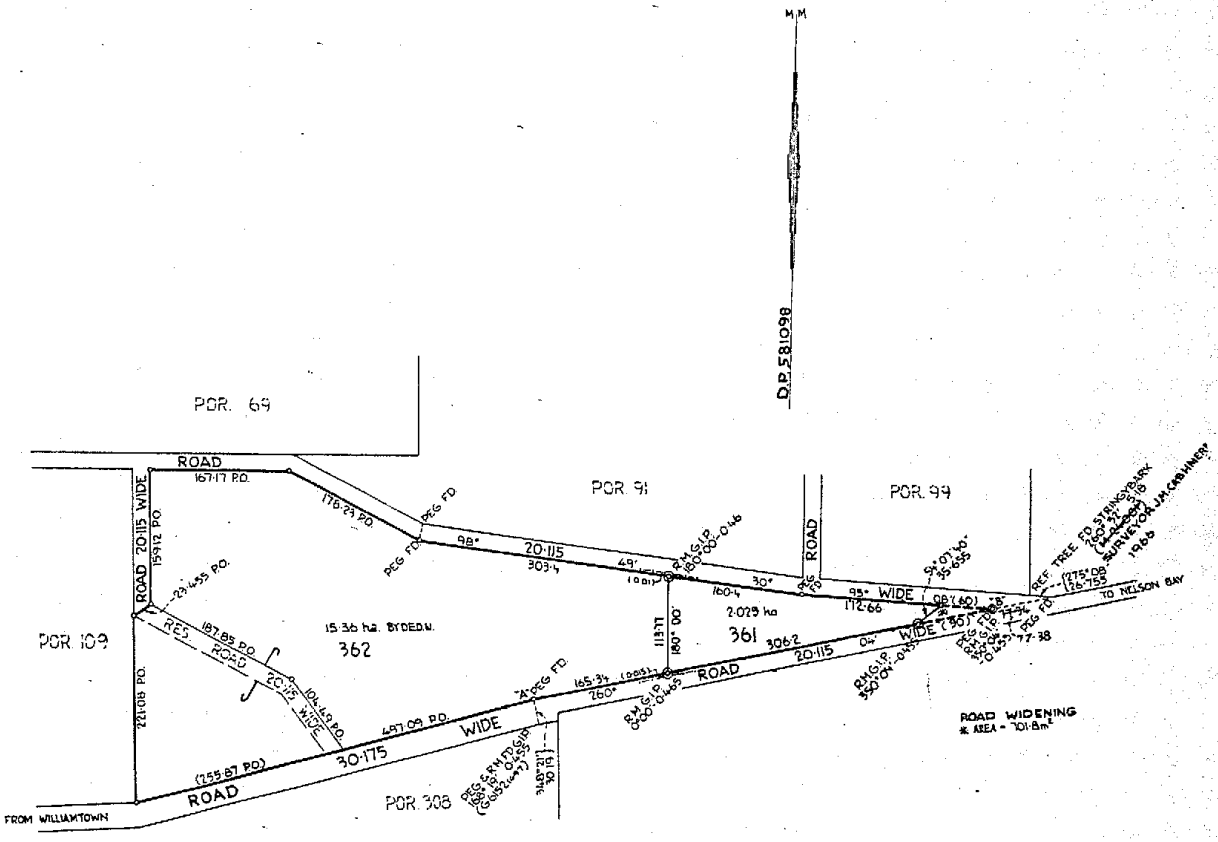
(Page 1) Vol. 13027 Fol. 244

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Registrar General.

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 361 in Deposited Plan 581098 at Bobs Farm in the Shire of Port Stephens Parish of Tomaree and County of Gloucester. EXCEPTING THEREOUT the minerals reserved by the Crown Grant.

FIRST SCHEDULE

~~ALMA JOAN CHAPMAN of Bobs Farm, Married Woman.~~

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. Restriction on dealings - See Section 129B Crown Lands Consolidation Act, 1913, (1921/6 Newcastle).

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

RG 2/62 NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED.

Req:R602985 /Doc:CT 13027-244 CT /Rev:23-Dec-2010 /NSW LRS /Pgs:ALL /Prt:14-Oct-2022 14:33 /Seq:2 of 2
© Office of the Registrar-General /Src:GlobalX /Ref:advlegs
(Page 2 of 2 pages)

Vol. 13027 Fol. 244

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General
Henry Reissbeck of Bobs Farm, Garage Proprietor.	Transfer	P984739	--------	30-11-1976	

NEW CERTIFICATE(S) OF TITLE ISSUED — DP622229
NO DEALING TO BE REGISTERED UNTIL NEW CERTIFICATE(S) OF TITLE ISSUED

P813470 TC
P984739 TC
C.T. 5.11.81
DP 622229

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION
Mortgage	P984740	------	to The Commercial Bank of Australia Limited.	30-11-1976		

Whole
10-2-1982
622229
1467 595 96

REGISTRAR GENERAL

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

Req:R602984 /Doc:CT 13027-245 CT /Rev:23-Dec-2010 /NSW LRS /Pgs:ALL /Prt:14-Oct-2022 14:33 /Seq:1 of 2
© Office of the Registrar-General /Src:GlobalX /Ref:advlegs

13027245

CERTIFICATE OF TITLE

NEW SOUTH WALES — [redacted] PROPERTY ACT, 1900

Vol. 13027 Fol. 245

Prior Title (Crown Grant)
Vol. 6731 Fol. 247

CANCELLED

EDITION ISSUED
6 4 1976

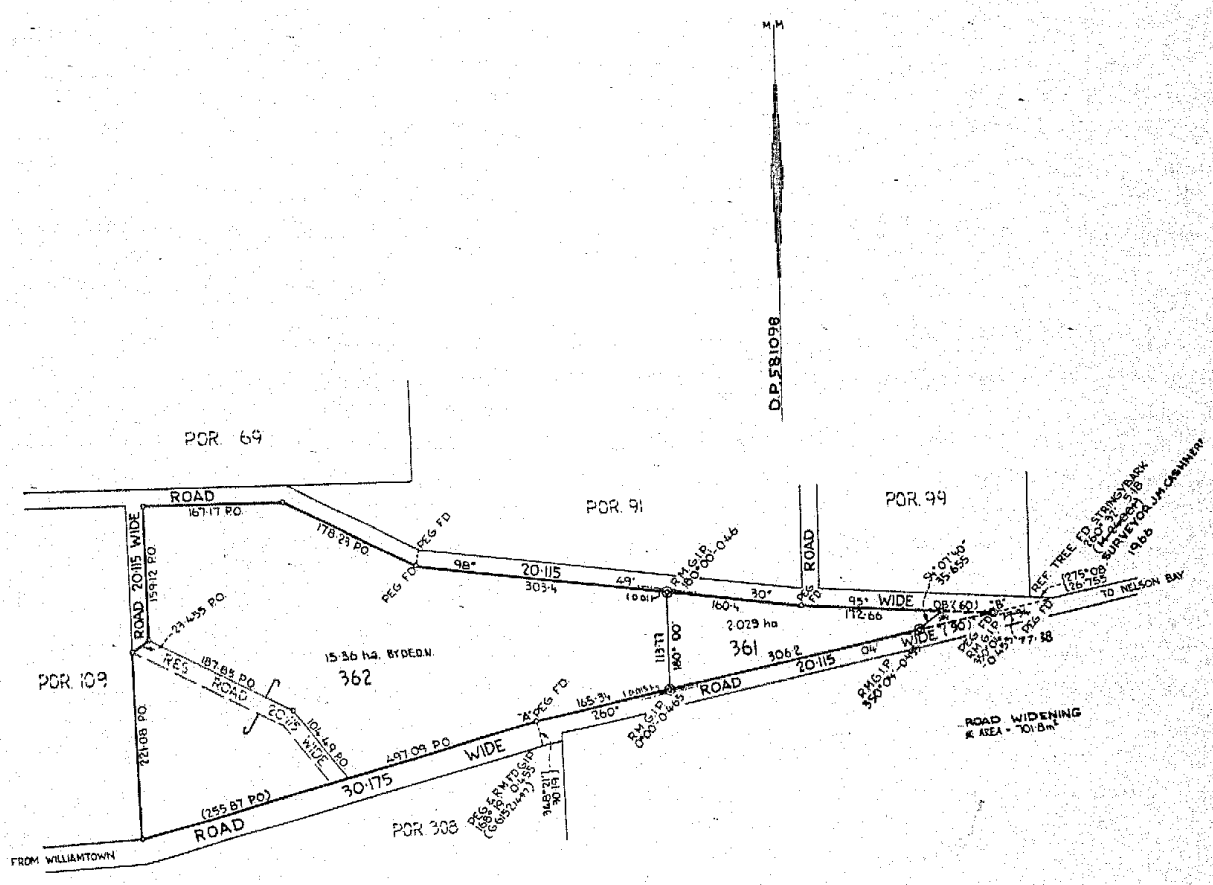
I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Registrar General.

(Page 1) Vol. 13027 Fol. 245

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 362 in Deposited Plan 581098 at Bobs Farm in the Shire of Port Stephens Parish of Tomaree and County of Gloucester. EXCEPTING THEREOUT the road shown in the plan hereon and the minerals reserved by the Crown Grant.

FIRST SCHEDULE

~~AIMA JOAN CHAPMAN of Bobs Farm, Married Woman.~~

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. Restriction on dealings - See Section 129B Crown Lands Consolidation Act, 1913, (1921/6 Newcastle).

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

RG 2/62 NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED.

Vol. 13027 Fol. 245

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General
Ross Reginald Chapman of Bobs Farm, Business Proprietor and Alma Joan Chapman his wife as joint tenants.	~~Transfer~~	~~P707760~~	------	~~17-5-1976~~	
Alma Joan Chapman, by Transfer S748848, Registered 26-10-1981					

NEW CERTIFICATE(S) OF TITLE ISSUING ON DP622485
NO DEALING TO BE REGISTERED WITHOUT REFERENCE TO DEALINGS BRANCH.

P. 70176 OTe
P843928m &
Q54901 D/M
S748848 To
C.T. 23/12.
DP 622485

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION		
~~Mortgage~~	~~P843928~~	------	~~to Australian Housing Corporation~~	~~16-8-1976~~		Discharged	Q54901	

This deed is cancelled as to Whole.
New Certificates of Title have issued on 15/4/82.
for lots in ~~Strata~~ Deposited Plan No. 622485 as follows:-
Lots ~~3621 & 3622~~ Vol. 14712 Fol. ~~35 & 36~~ respectively.

REGISTRAR GENERAL

(Page 2 of 2 pages)

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

Req:R602984 /Doc:CT 13027-245 CT /Rev:23-Dec-2010 /NSW LRS /Pgs:ALL /Prt:14-Oct-2022 14:33 /Seq:2 of 2
© Office of the Registrar-General /Src:GlobalX /Ref:advlegs

Req:R602924 /Doc:CT 14671-096 CT /Rev:27-Jan-2011 /NSW LRS /Pgs:ALL /Prt:14-Oct-2022 14:28 /Seq:1 of 2
© Office of the Registrar-General /Src:GlobalX /Ref:advlegs

14671096

NEW SOUTH WALES

[redacted]FICATE OF TITLE

[redacted]AL PROPERTY ACT, 1900

Vol. 14671 Fol. 96

Crown Grant Vol. 6731 Fol.247

Prior Title Vol.13027 Fol.244

EDITION ISSUED

CANCELLED 1982

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

SEE SHEET 2

Registrar General.

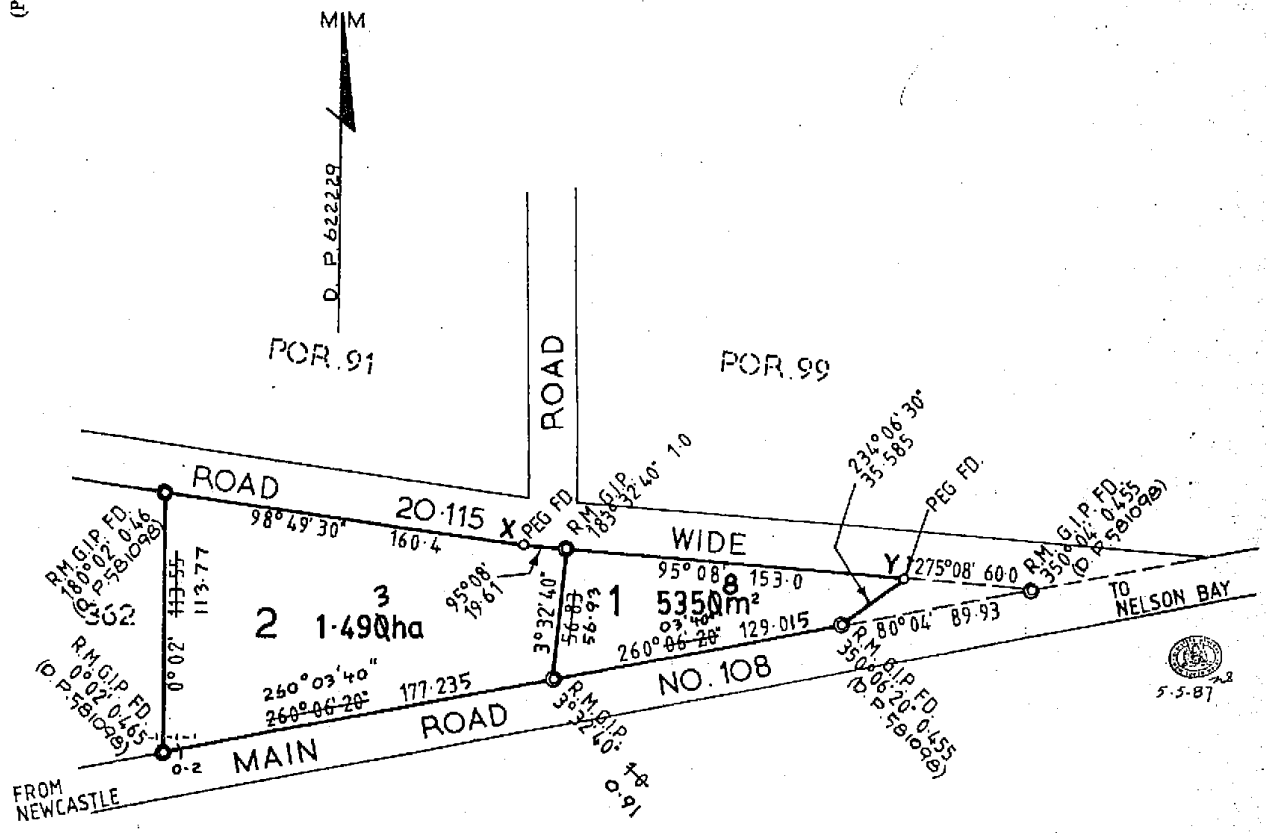
Vol. 14671 Fol. 96

(Page 1) Vol. .....

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 2 in Deposited Plan 622229 at Bobs Farm in the Shire of Port Stephens Parish of Tomaree and County of Gloucester. EXCEPTING THEREOUT the minerals reserved by the Crown Grant.

FIRST SCHEDULE

~~HENRY [redacted] BECK.~~

SECOND SCHEDULE

GRM AA
1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. Restrictions on dealings - see section 129B Crown Lands Consolidation Act, 1913 (1921/6 Newcastle).
~~3. P984740 Mortgage to The Commercial Bank of Australia Limited.~~ Discharged T61298

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

RG 2/64

Vol. 14671 Fol. 96

94137C 4.81 D. West, Government Printer

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	Registrar General
~~Margot Riessbeck by Transmission V177670. Registered 19-6-1984~~	
Mark Stephen Barrett by Transfer W198955. Registered 24-2-1986	

CANCELLED

SEE AUTO FOLIO

SECOND SCHEDULE (continued)

PARTICULARS	Registrar General	CANCELLATION

NOTATIONS AND UNREGISTERED DEALINGS

T6/2988/M P
V177670 TA R
W198955 Tie R
Amndt Pending
See pps 00 Existing
Refer to Amendments re

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY TI

© Office of the Registrar-General /Src:GlobalX /Ref:advlegs Req:R602924 /Doc:CT 14671-096 CT /Rev:27-Jan-2011 /NSW LRS /Pgs:ALL /Prt:14-Oct-2022 14:28 /Seq:2 of 2

Req:R602925 /Doc:CT 14712-036 CT /Rev:19-Jan-2011 /NSW LRS /Pgs:ALL /Prt:14-Oct-2022 14:28 /Seq:1 of 2
© Office of the Registrar-General /Src:GlobalX /Ref:advlegs

14712036

[redacted]ICATE OF TITLE

NEW SOUTH WALES

[redacted]L PROPERTY ACT, 1900

Vol. 14712 Fol. 36

EDITION ISSUED

15 4 1982

Crown Grant Vol. 6731 Fol.247

Prior Title Vol.13027 Fol.245

CANCELLED

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

SEE AUTOFOLIO

Registrar General.

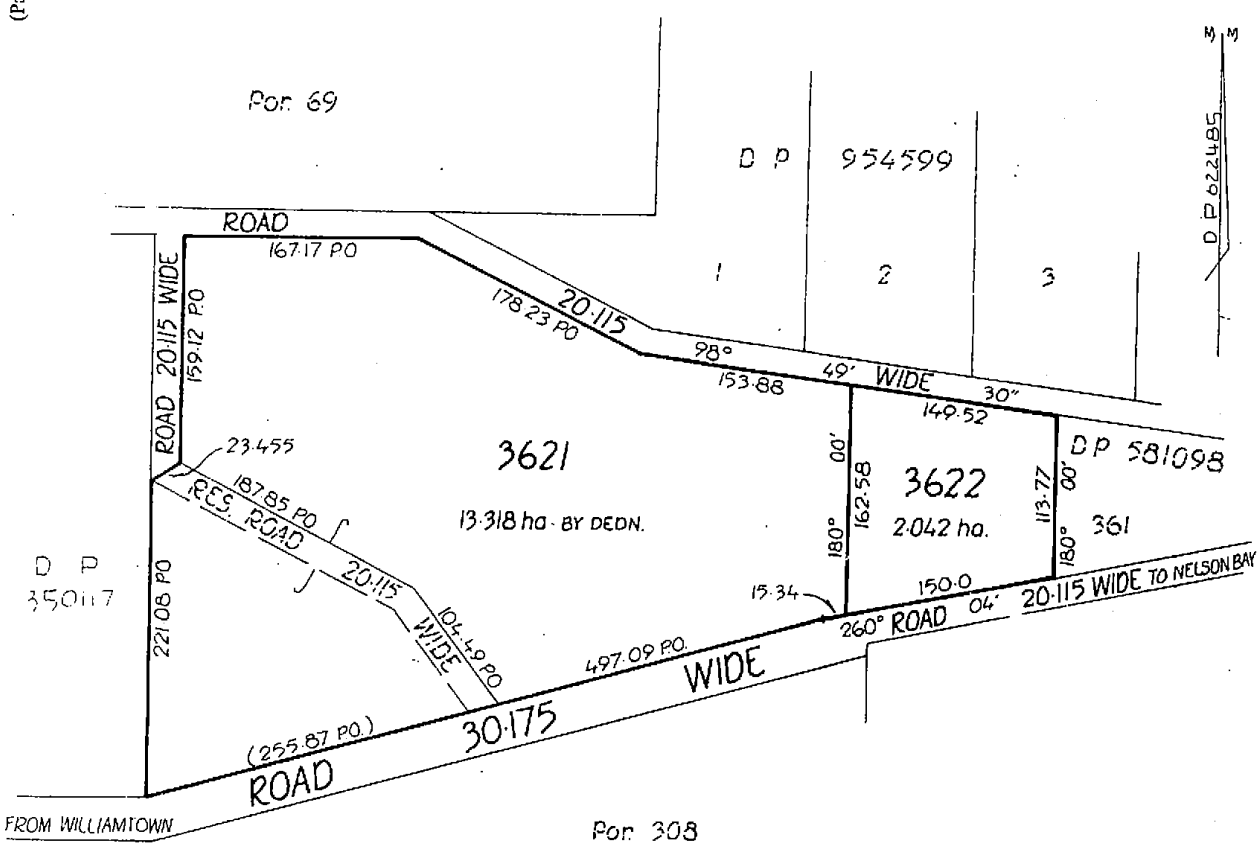
14712 Fol. 36

(Page 1) Vol.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



ESTATE AND LAND REFERRED TO

S Estate in Fee Simple in Lot 3622 in Deposited Plan 622485 at Bobs Farm in the Shire of Port Stephens Parish of Tomoree and County of Cloucester. EXCEPTING THEREOUT the minerals reserved by the Crown Grant.

FIRST SCHEDULE

~~ALMA JOAN CHAPMAN.~~

SECOND SCHEDULE

GRM 1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
AA 2. Restriction on dealings - see Section 129B Crown Lands Consolidation Act, 1913 (1921/6 Newcastle).

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

RG 2/64

Vol. 14712 Fol. 36

94137C 4.81 D. West, Government Printer

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	Registrar General
William Frederick Robinson by Transfer T158245. Registered 26.7.1982.	

CANCELLED

SECOND SCHEDULE (continued)

PARTICULARS	Registrar General	CANCELLATION
~~T248167 Mortgage to Commonwealth Trading Bank of Australia. Registered 28-9-1982.~~		W997009

NOTATIONS AND UNREGISTERED DEALINGS

T158245 TR
T248167 mtge
W997009 DLM

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY TI

Req:R602925 /Doc:CT 14712-036 CT /Rev:19-Jan-2011 /NSW LRS /Pgs:ALL /Prt:14-Oct-2022 14:28 /Seq:2 of 2
© Office of the Registrar-General /Src:GlobalX /Ref:advlegs

Plan Form 1

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

DP622229 *OFFICE USE ONLY

Council Clerk's Certificate.

I hereby certify that—

(a) the requirements of the Local Government Act, 1919 (other than the requirements for the registration of plans), and

*(b) the requirements of section 34B of the ~~†Metropolitan Water, Sewerage, and Drainage Act, 1924, as amended~~, †Hunter District Water, Sewerage, and Drainage Act, 1938, as amended,

have been complied with by the applicant in relation to the proposed

..... SUBDIVISION .....

(insert "new road", "subdivision" or "consolidated lot") set out herein.

Subdivision No. 81/84

Date 8·9·81.

(Signature) ..... Council Clerk.

*This part of certificate to be deleted where the application is only for a consolidated lot or the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water Sewerage and Drainage Board and the Hunter District Water Board

†Delete if inapplicable

Surveyor's Certificate

I, DESMOND JOSEPH MOONEY

of PUNCH, MOONEY & ASSOCIATES NEWCASTLE

a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan ..... is accurate and has been made *(1) by me ~~(2) under my immediate supervision~~ in accordance with the Survey Practice Regulations, 1933, and was completed on †

25TH MARCH 1981

Signature .....

Surveyor registered under Surveyors Act, 1929, as amended.

Datum Line of Azimuth: X–Y

*Strike out either (1) or (2). †Insert date of survey.

PLAN OF SUBDIVISION OF LOT 361 D.P. 581098

~~Mun./Shire~~ ~~City~~ PORT STEPHENS Locality: ANNA BAY

Parish: TOMAREE County: GLOUCESTER

Reduction Ratio 1: 2500 Lengths are in metres.

D. P. 622229

Registered: 8·2·1982

C.A.: No 84 OF 8·9·1981

Title System: Torrens

Purpose: Subdivision

Ref. Map: Z 1072-7

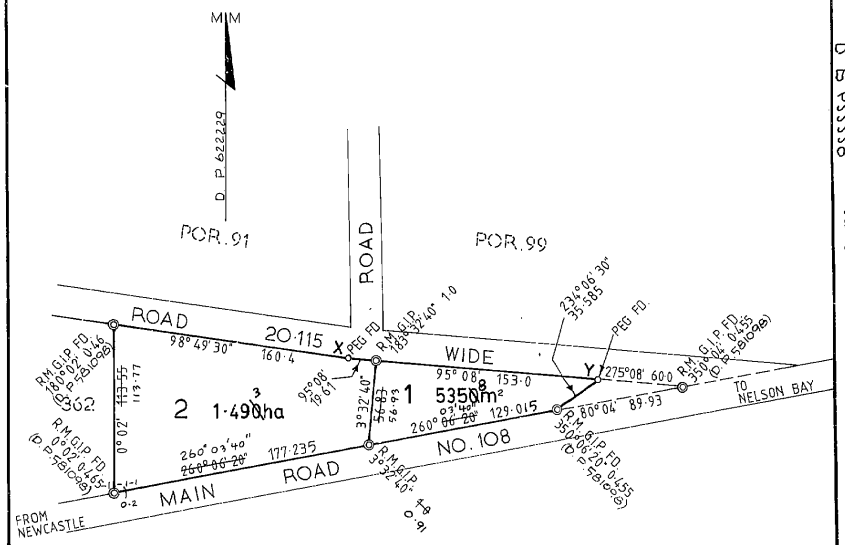
Last Plan: D.P. 581098

NO02AIIA

Signatures, seals and statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements or restrictions as to user.

THE COMMERCIAL BANK OF AUSTRALIA LIMITED
by its Attorney

and I, the said Attorney, state that I have not received any notice of the revocation of the Power of Attorney, registered No. 990 Book 3282 under the authority of which I have just executed the within instrument.



AMENDMENTS MADE IN L.T.O. AT SURVEYORS REQUEST 7-5-1987

0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 Table of mm | 100 | 110 | 120 | 130 | 140 | 150 | 160

Plan drawing only to appear in this space.

D 622229

M.P.D.

SURVEYOR'S REFERENCE: DM 8147

Plan drawing only to appear in this space.

AMENDMENTS AND/OR ADDITIONS MADE ON PLAN IN THE LAND TITLES OFFICE.

0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | *90 | *100 Table of mm | *110 | 120 | 130 | 140

This negative is a photograph made as a permanent record of a document in the custody of the Registrar General this day. 7th May, 1987

REGISTRAR GENERAL NEW SOUTH WALES

Req:R602923 /Doc:DP 0622229 P /Rev:10-Dec-1992 /NSW LRS /Pgs:ALL /Prt:14-Oct-2022 14:28 /Seq:1 of 1
© Office of the Registrar-General /Src:GlobalX /Ref:advlegs

PLAN FORM 1

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

D. P. 622485 *OFFICE USE ONLY

Council Clerk's Certificate

I hereby certify that

(a) the requirements of the Local Government Act, 1919 (other than the requirements for the registration of plans), and

*(b) ~~the requirements of section 348 of the Metropolitan Water, Sewerage, and Drainage Act, 1924, as amended.~~ †Hunter District Water, Sewerage, and Drainage Act, 1938, as amended.

have been complied with by the applicant in relation to the proposed SUBDIVISION (†insert "new road", "subdivision" or "consolidated lot") set out herein

Subdivision No. 81/90

Date 25.9.81

(Signature) Council Clerk

*This part of certificate to be deleted where the application is only for a consolidated lot or the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water Sewerage and Drainage Board and the Hunter District Water Board.
†Delete if inapplicable.

Surveyor's Certificate

I, GEOFFREY HAMILTON McCLELLAND of CN.SCOTT CRISP & CO., PO BOX 113 NELSON BAY, a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan IS COMPILED FROM DP 581098 is accurate ~~and has been made *(1) by me (2) under my immediate supervision in accordance with the Survey Practice Regulations, 1933~~, and was completed on † 27TH AUGUST 1981

Signature Geoffrey Mcclelland

Surveyor registered under Surveyors Act, 1929, as amended.
Datum Line of Azimuth.
*Strike out either (1) or (2). †Insert date of survey.

PLAN OF SUBDIVISION OF LOT 362 IN DP 581098

Mun./Shire ~~City~~ : PORT STEPHENS

Locality: BOBS FARM

Parish: TOMAREE

County: GLOUCESTER

Reduction Ratio 1: 4000

Lengths are in metres

D. P. 622485

Registered: 8.2.1982

C.A.: No 81/90 OF 25.9.1981

Title System: TORRENS

Purpose: SUBDIVISION

Ref. Map: Z0172-9

Last Plan: D. P. 581098

N 0 2 A 1 B

Signatures, seals and statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements or restrictions as to user.

D 622482

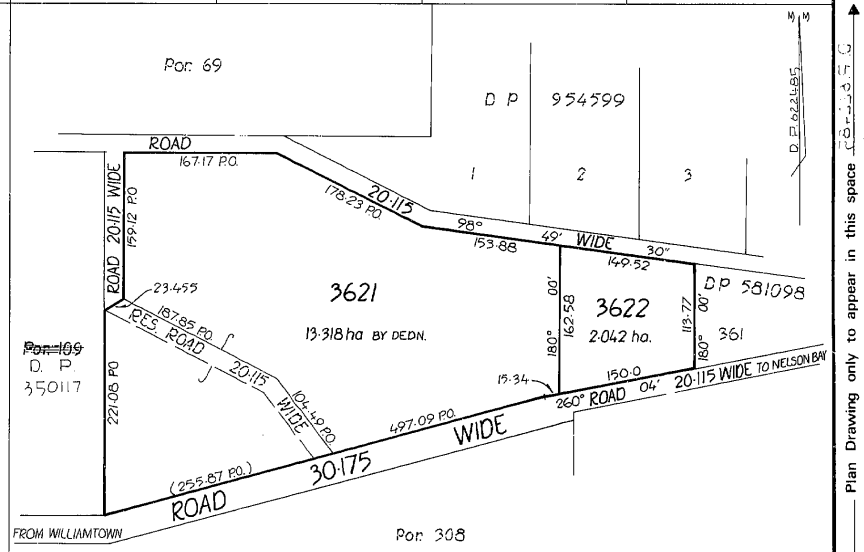


Table of mm

Plan Drawing only to appear in this space

M.P.D.

SURVEYOR'S REFERENCE 534681

Plan Drawing only to appear in this space

Table of mm

I, Bruce Richard Davies, Under Secretary for Lands and Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this day.

9th February, 1982

Req:R602922 /Doc:DP 0622485 P /Rev:10-Dec-1992 /NSW LRS /Pgs:ALL /Prt:14-Oct-2022 14:28 /Seq:1 of 1
© Office of the Registrar-General /Src:GlobalX /Ref:advlegs

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
14/10/2022 2:28PM

FOLIO: 2/622229

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 14671 FOL 96

Recorded	Number	Type of Instrument	C.T. Issue
28/3/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
14/9/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
17/4/1989	Y302820	MORTGAGE	EDITION 1
6/8/1998	5180754	DEPARTMENTAL DEALING	
24/10/2018	AN798971	DISCHARGE OF MORTGAGE	
24/10/2018	AN798972	TRANSFER	
24/10/2018	AN798973	MORTGAGE	EDITION 2 CORD ISSUED

*** END OF SEARCH ***

advlegs PRINTED ON 14/10/2022

Obtained from NSW LRS on 14 October 2022 01:28 PM AEST

© Office of the Registrar-General 2022

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
14/10/2022 2:28PM

FOLIO: 3622/622485

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 14712 FOL 36

Recorded	Number	Type of Instrument	C.T. Issue
28/3/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
14/9/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
7/4/1993	I241699	MORTGAGE	EDITION 1
6/9/1995	O512929	MORTGAGE	EDITION 2
6/8/1998	5181137	DEPARTMENTAL DEALING	
2/9/2018	AN678864	DEPARTMENTAL DEALING	EDITION 3 CORD ISSUED

*** END OF SEARCH ***

advlegs PRINTED ON 14/10/2022

Obtained from NSW LRS on 14 October 2022 01:28 PM AEST

© Office of the Registrar-General 2022

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 2/622229

SEARCH DATE	TIME	EDITION NO	DATE
14/10/2022	2:28 PM	2	24/10/2018

LAND

LOT 2 IN DEPOSITED PLAN 622229
AT BOBS FARM
LOCAL GOVERNMENT AREA PORT STEPHENS
PARISH OF TOMAREE COUNTY OF GLOUCESTER
TITLE DIAGRAM DP622229

FIRST SCHEDULE

DAVID JOHN SLACK
LISA JAYNE SLACK
AS JOINT TENANTS (T AN798972)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 AN798973 MORTGAGE TO NEWCASTLE PERMANENT BUILDING SOCIETY LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

advlegs PRINTED ON 14/10/2022

Obtained from NSW LRS on 14 October 2022 01:28 PM AEST © Office of the Registrar-General 2022
* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. GlobalX hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900. Note: Information contained in this document is provided by GlobalX Pty Ltd, ABN 35 099 032 596, www.globalx.com.au an approved NSW Information Broker.

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 3622/622485

SEARCH DATE	TIME	EDITION NO	DATE
14/10/2022	2:28 PM	3	2/9/2018

LAND

LOT 3622 IN DEPOSITED PLAN 622485
AT BOBS FARM
LOCAL GOVERNMENT AREA PORT STEPHENS
PARISH OF TOMAREE COUNTY OF GLOUCESTER
TITLE DIAGRAM DP622485

FIRST SCHEDULE

WILLIAM FREDERICK ROBINSON (T T158245)

SECOND SCHEDULE (3 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 I241699 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA
3 O512929 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

advlegs PRINTED ON 14/10/2022

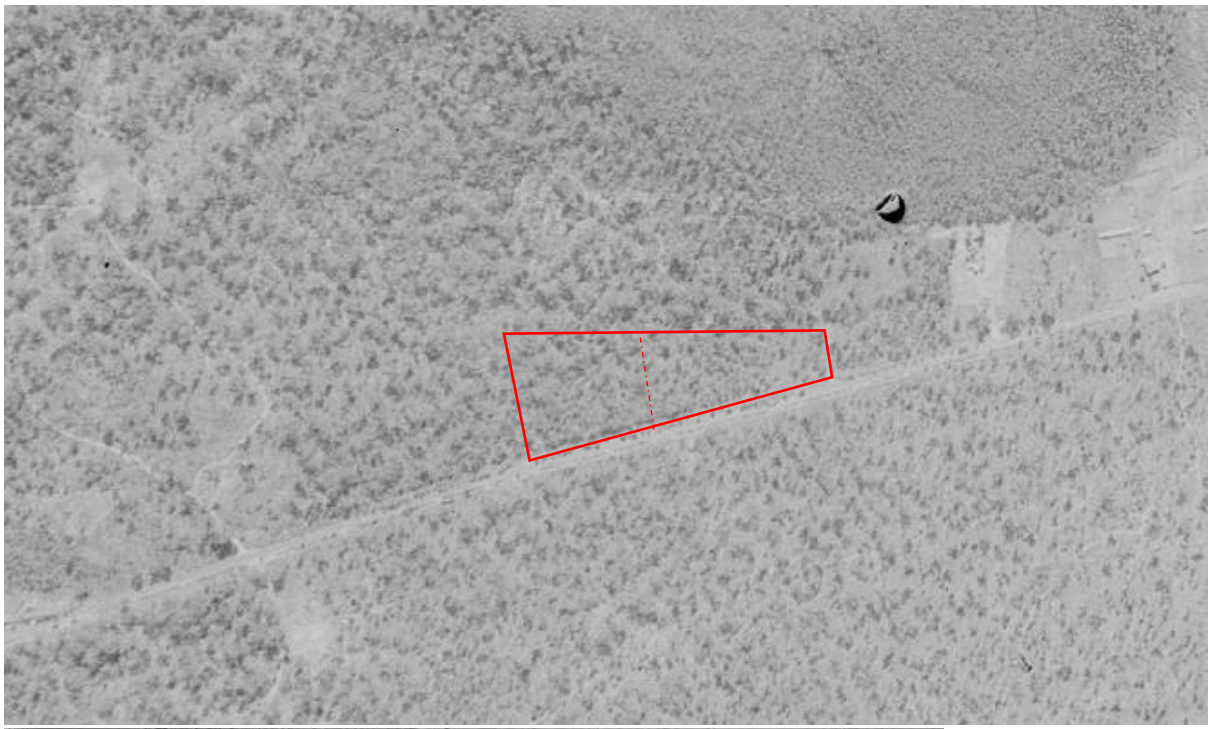
Obtained from NSW LRS on 14 October 2022 01:28 PM AEST © Office of the Registrar-General 2022
* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. GlobalX hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900. Note: Information contained in this document is provided by GlobalX Pty Ltd, ABN 35 099 032 596, www.globalx.com.au an approved NSW Information Broker.

APPENDIX D:

Aerial Photographs

Aerial Photographs

1954





1965





1975





1986



1992





2001





2010





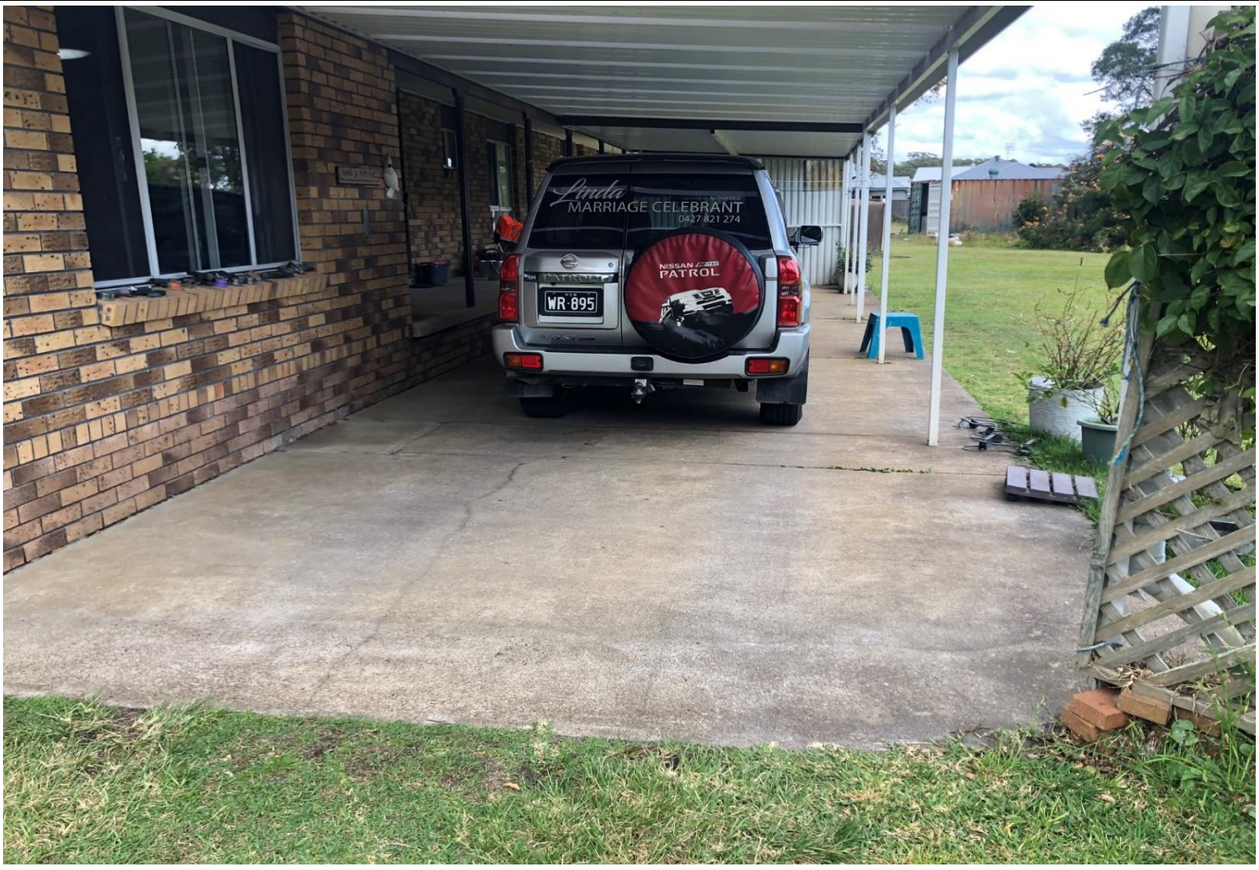
2022





APPENDIX E:

Site Photographs



Photograph 1 - Resdiental Dwelling - 4029 Nelson Bay Road

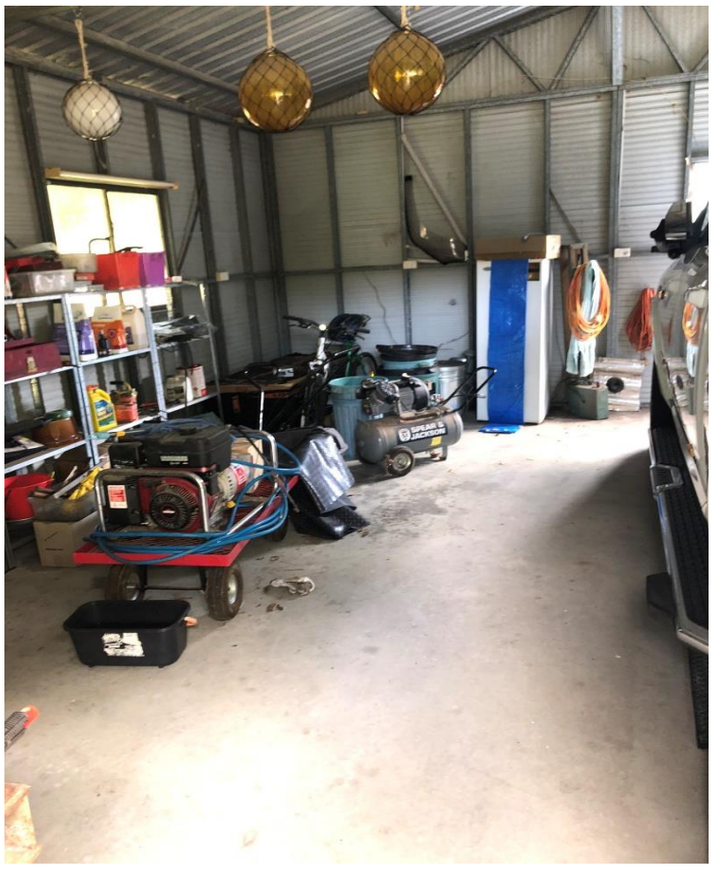


Photograph 2 - Resdiental Dwelling - 4029 Nelson Bay Road

Qualtest LABORATORY (NSW) PTY LTD	Client:	Hometown Australia Holdings	Project No:	NEW22P-0199-AA
	Project:	Preliminary Contamination Assessment	Date:	25/10/2022
	Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	No:	**1 and 2**
	Title:	Site Photographs		



Photograph 3 - Shed 1/carport - 4029 Nelson Bay Road



Photograph 4 -Shed 1 - 4029 Nelson Bay Road

Qualtest LABORATORY (NSW) PTY LTD	Client:	Hometown Australia Holdings	Project No:	NEW22P-0199-AA
	Project:	Preliminary Contamination Assessment	Date:	25/10/2022
	Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	No:	**3 and 4**
	Title:	Site Photographs		



Photograph 5 - Portable shower/toilet block - 4029 Nelson Bay Road



Photograph 6 - Pool area - 4029 Nelson Bay Road

Qualtest LABORATORY (NSW) PTY LTD	Client:	Hometown Australia Holdings	Project No:	NEW22P-0199-AA
	Project:	Preliminary Contamination Assessment	Date:	25/10/2022
	Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	No:	**5 and 6**
	Title:	Site Photographs		



Photograph 7 - Former Chicken Pen - 4029 Nelson Bay Road



Photograph 8 - Septic Tank - 4029 Nelson Bay Road

Qualtest LABORATORY (NSW) PTY LTD	Client:	Hometown Australia Holdings	Project No:	NEW22P-0199-AA
	Project:	Preliminary Contamination Assessment	Date:	25/10/2022
	Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	No:	**7 and 8**
	Title:	Site Photographs		



Photograph 9 - Shipping Container - 4029 Nelson Bay Road



Photograph 10 - Storage of metal, timber, tyres - 4029 Nelson Bay Road

Qualtest LABORATORY (NSW) PTY LTD	Client:	Hometown Australia Holdings	Project No:	NEW22P-0199-AA
	Project:	Preliminary Contamination Assessment	Date:	25/10/2022
	Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	No:	**9 and 10**
	Title:	Site Photographs		



Photograph 11 - Imported Fill Mounds - 4029 Nelson Bay Road



Photograph 12 - SP1 - Timber off cuts - 4029 Nelson Bay Road

Qualtest LABORATORY (NSW) PTY LTD	Client:	Hometown Australia Holdings	Project No:	NEW22P-0199-AA
	Project:	Preliminary Contamination Assessment	Date:	25/10/2022
	Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	No:	**11 and 12**
	Title:	Site Photographs		



Photograph 13 - SP2 - Sandy Gravel - 4029 Nelson Bay Road



Photograph 14 - Fibreglass fridge - 4029 Nelson Bay Road

Qualtest LABORATORY (NSW) PTY LTD	Client:	Hometown Australia Holdings	Project No:	NEW22P-0199-AA
	Project:	Preliminary Contamination Assessment	Date:	25/10/2022
	Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	No:	**13 and 14**
	Title:	Site Photographs		



Photograph 15 - Waste Storgae Area - 4029 Nelson Bay Road



Photograph 16 - Waste Storgae Area - 4029 Nelson Bay Road

Qualtest LABORATORY (NSW) PTY LTD	Client:	Hometown Australia Holdings	Project No:	NEW22P-0199-AA
	Project:	Preliminary Contamination Assessment	Date:	25/10/2022
	Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	No:	**15 and 16**
	Title:	Site Photographs		



Photograph 17 - Shed 2 - 4029 Nelson Bay Road



Photograph 18 - Area of fill (concrete/bricks/gravel) - 4029 Nelson Bay Road

Qualtest LABORATORY (NSW) PTY LTD	Client:	Hometown Australia Holdings	Project No:	NEW22P-0199-AA
	Project:	Preliminary Contamination Assessment	Date:	25/10/2022
	Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	No:	**17 and 18**
	Title:	Site Photographs		



Photograph 19 - Boat Trailer - 4029 Nelson Bay Road



Photograph 20 - Storage of waste (205L drums, plastics, glass) - 4029 Nelson Bay Road

Qualtest LABORATORY (NSW) PTY LTD	Client:	Hometown Australia Holdings	Project No:	NEW22P-0199-AA
	Project:	Preliminary Contamination Assessment	Date:	25/10/2022
	Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	No:	**19 and 20**
	Title:	Site Photographs		



Photograph 21 - Storage Area - Eastern Boundary - 4029 Nelson Bay Road



Photograph 22 - SP3 - Timber chipboard - 4029 Nelson Bay Road

Qualtest LABORATORY (NSW) PTY LTD	Client:	Hometown Australia Holdings	Project No:	NEW22P-0199-AA
	Project:	Preliminary Contamination Assessment	Date:	25/10/2022
	Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	No:	**21 and 22**
	Title:	Site Photographs		



Photograph 23 - SP4 - timber, plastics, pallets, tyres, metal - 4029 Nelson Bay Road



Photograph 24 - Resiential dwelling - 4045 Nelson Bay Road

Qualtest LABORATORY (NSW) PTY LTD	Client:	Hometown Australia Holdings	Project No:	NEW22P-0199-AA
	Project:	Preliminary Contamination Assessment	Date:	25/10/2022
	Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	No:	**23 and 24**
	Title:	Site Photographs		



Photograph 25 - Shed 3 - 4045 Nelson Bay Road



Photograph 26 - Gravel driveway - 4045 Nelson Bay Road

Qualtest LABORATORY (NSW) PTY LTD	Client:	Hometown Australia Holdings	Project No:	NEW22P-0199-AA
	Project:	Preliminary Contamination Assessment	Date:	25/10/2022
	Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	No:	**25 and 26**
	Title:	Site Photographs		



Photograph 27 - Hose and potential groundwater bore pump - 4045 Nelson Bay Road



Photograph 28 - Metal Storage - 4045 Nelson Bay Road

Qualtest LABORATORY (NSW) PTY LTD	Client:	Hometown Australia Holdings	Project No:	NEW22P-0199-AA
	Project:	Preliminary Contamination Assessment	Date:	25/10/2022
	Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	No:	**27 and 28**
	Title:	Site Photographs		



Photograph 29 - Waste storage area - 4045 Nelson Bay Road



Photograph 30 - SP6 - 4045 Nelson Bay Road

Qualtest LABORATORY (NSW) PTY LTD	Client:	Hometown Australia Holdings	Project No:	NEW22P-0199-AA
	Project:	Preliminary Contamination Assessment	Date:	25/10/2022
	Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	No:	**29 and 30**
	Title:	Site Photographs		



Photograph 31 - SP7 - 4045 Nelson Bay Road



Photograph 30 - Tree/vegetation stockpiles - 4045 Nelson Bay Road

Qualtest LABORATORY (NSW) PTY LTD	Client:	Hometown Australia Holdings	Project No:	NEW22P-0199-AA
	Project:	Preliminary Contamination Assessment	Date:	25/10/2022
	Location:	4029 to 4045 Nelson Bay Road, Bobs Farm	No:	**31 and 32**
	Title:	Site Photographs		

APPENDIX F:

NSW EPA Records

Public registers

+ POEO Public Register
– Contaminated land record of notices
About the record of notices
List of notified sites
Tips for searching
Disclaimer
Dangerous goods licences
Pesticide licences
Radiation licences

Search results

Your search for: LGA: PORT STEPHENS COUNCIL

Matched 1 notice relating to 1 site.

Search Again Refine Search

Suburb	Address	Site Name	Notices related to this site
TOMAGO	25 School DRIVE	Former Hydromet Site	1 former

Page 1 of 1

26 October 2022

BOAMBEE	Lindsay Bros transport depot site	542 Pacific HIGHWAY	Other Petroleum	Regulation under CLM Act not required	-30.33106848	153.0802985
BOAMBEE	BP-branded (former Mobil) Boambee Service Station	601 Pacific HIGHWAY	Service Station	Regulation under CLM Act not required	-30.33544287	153.0817266
BOBS FARM	Bob's Farm	15 Fenningham Island ROAD	Other Industry	Regulation under CLM Act not required	-32.74867207	152.0316217
BOGGABILLA	Former Caltex Service Station	90 Simpson Street, corner Newell HIGHWAY	Service Station	Regulation under CLM Act not required	-28.60654029	150.3571056

Public registers

– POEO Public Register

- Licences, applications and notices search
- Penalty notices search
- Enforceable undertakings search
- Enforceable undertakings media releases
- Exemptions and approvals search
- Prosecutions or civil proceedings search
- Terms of use: POEO public register
- Licensing FAQs

Home Public registers POEO Public Register Licences, applications and notices search

Search results

Your search for: **POEO Licences** with the following criteria

Suburb - Bobs Farm

returned 1 results

Export to excel 1 of 1 Pages Search Again

Number	Name	Location	Type	Status	Issued date
11710	HOLCIM (AUSTRALIA) PTY LTD	Nelson Bay Road , BOBS FARM,NSW 2316	POEO licence	Issued	21 Jan 2003

26 October 2022

The NSW Government PFAS Investigation Program

View a map of the sites in NSW that may be contaminated with PFAS, learn how to reduce your exposure to these dangerous chemicals, and read about our investigation of the issue.

The EPA is leading an investigation program to assess the legacy of PFAS use across NSW. With the assistance of the NSW PFAS Technical Advisory Group, which includes NSW Health, Department of Primary Industries and the Office of Environment and Heritage, we provide impacted residents with tailored, precautionary dietary advice to help them reduce any exposure to PFAS.

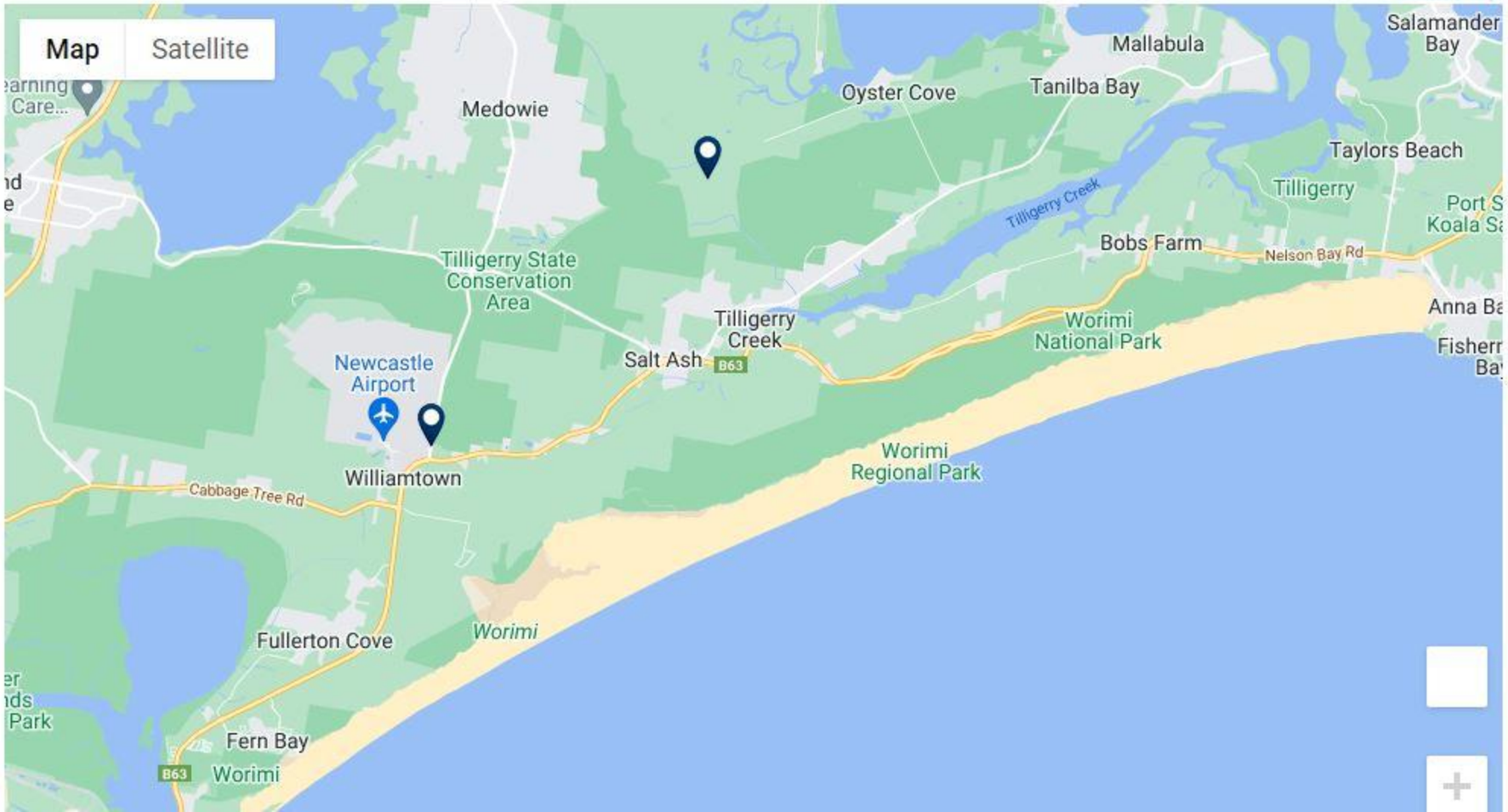
Current investigations are focused on sites where it is likely that large quantities of PFAS have been used. The EPA is currently investigating PFAS at these sites:

Map view | List view

Filter by: No filter set

Showing 2 of 49 sites

Reset map



Contaminated land

Managing contaminated land

Notified and regulated contaminated land

NSW site auditor scheme

Statutory guidelines

Non-statutory guidance documents

Underground petroleum storage systems

PFAS investigation program

PFAS investigation process

PFAS investigation program FAQs

Regulation of PFAS firefighting foams

Other contamination issues

The NSW Government PFAS Investigation Program

View a map of the sites in NSW that may be contaminated with PFAS, learn how to reduce your exposure to these dangerous chemicals, and read about our investigation of the issue.

The EPA is leading an investigation program to assess the legacy of PFAS use across NSW. With the assistance of the NSW PFAS Technical Advisory Group, which includes NSW Health, Department of Primary Industries and the Office of Environment and Heritage, we provide impacted residents with tailored, precautionary dietary advice to help them reduce any exposure to PFAS.

Current investigations are focused on sites where it is likely that large quantities of PFAS have been used. The EPA is currently investigating PFAS at these sites:

Map view | List view

Clear filters

☑ Only show sites within current map view

Showing 2 of 49 sites

	Organisation	Address	Status
	filter by organisation	**filter by address*	☑ PFAS investigation site
	Salt Ash weapons range more information	Salt Ash NSW	PFAS investigation site
	Williamtown RAAF Base more information	49 Medowie Road, Williamtown, 2314	PFAS investigation site

Tags: PFAS

APPENDIX G:

Section 10.7 Certificate

PORT STEPHENS COUNCIL

ABN 16 744 377 876

PLANNING CERTIFICATE PURSUANT TO SECTION 10.7 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

APPLICANT DETAILS:

Libby Betz
2 Murray Dwyer Cct
mayfield west
New South Wales 2304

Reference: **NEW22P Bobs Farm**

Issue Date: **14/10/2022**

PROPERTY DESCRIPTION:

4029 Nelson Bay Road BOBS FARM NSW 2316 Parcel No: 15250
LOT: 3622 DP: 622485

Disclaimer
Information contained in this certificate relates only to the land for which this certificate is issued on the day it is issued. This information is provided in good faith and Council shall not incur any liability in respect of any such advice. Council relies on state agencies for advice and accordingly can only provide that information in accordance with the advice. Verification of the currency of agency advice should occur. For further information, please contact Council by telephoning (02) 4980 0255 or email plancert@portstephens.nsw.gov.au.

Title Information
Title information shown on this Planning Certificate is provided from Council's records and may not conform to information shown on the current Certificate of Title. Easements, restrictions as to user, rights of way and other similar information shown on the title of the land are not provided on this planning certificate.

Inspection of the land
The Council has made no inspection of the land for the purposes of this Planning Certificate.

PART A: INFORMATION PROVIDED UNDER SECTION 10.7(2)

Matters contained in this certificate apply only to the land on the date of issue.

1. Names of relevant planning instruments and development control plans

(1) The name of each environmental planning instrument and development control plan that applies to the development on the land.

State Environmental Planning Policies

The relevant chapters of each State Environmental Planning Policy that apply to the land are listed below:

State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
All chapters

State Environmental Planning Policy (Housing) 2021
All chapters

State Environmental Planning Policy (Building Sustainability Index BASIX) 2004
All chapters

State Environmental Planning Policy No 65 – Design Quality of Residential Apartment Development
All chapters

State Environmental Planning Policy (Planning Systems) 2021
Chapter 2 State and regional development
Chapter 3 Concurrences and consents

State Environmental Planning Policy (Precincts - Regional) 2021
Chapter 2 State significant precincts

State Environmental Planning Policy (Primary Production) 2021
Chapter 2 Primary production and rural development

State Environmental Planning Policy (Resources and Energy) 2021
Chapter 2 Mining, petroleum production and extractive industries

State Environmental Planning Policy (Transport and Infrastructure) 2021
Chapter 2 Infrastructure
Chapter 3 Educational establishments and childcare facilities

State Environmental Planning Policy (Resilience and Hazards) 2021
Chapter 3 Hazardous and offensive development
Chapter 4 Remediation of land
Chapter 2 Coastal management 2018

State Environmental Planning Policy (Biodiversity and Conservation) 2021
Chapter 7 Canal estate development
Chapter 3 Koala habitat protection 2020

Local Environmental Plan
Port Stephens Local Environmental Plan 2013

Development Control Plans
The name of each development control plan that applies to the carrying out of development on the land.

Port Stephens Development Control Plan 2014.

(2) The name of each proposed environmental planning instrument and draft development control plan, which is or has been subject to community consultation or public exhibition under the Act, that will apply to the carrying out of development on the land (unless it has been more than 3 years since the end of the public exhibition period or if the Secretary has notified the council that the making of the proposed instrument has been deferred indefinitely or has not been approved).

Draft State Environmental Planning Policies
No draft State Environmental Planning Policies affect the site the subject of this Certificate.

Draft Local Environmental Plan
No draft Local Environmental Plans currently exist which affect the site the subject of this certificate.

Draft Development Control Plan
The name of each draft development control plan that applies to the carrying out of development on the land.

No draft development control plan applies to the carrying out of development on the land.

2. Zoning and land use under relevant planning instruments
For each environmental planning instrument or proposed instrument referred to in clause 1 (other than a State Environmental Planning Policy or proposed State Environmental Planning Policy).

a) The identity of the zone –

RU2 Rural Landscape
The land is zoned RU2 Rural Landscape under the provisions of Part 2 in the Port Stephens Local Environmental Plan 2013.

b) The purposes for which development in the zone –

ITEM 2 - May be carried out without development consent
Extensive agriculture; Home occupations; Intensive plant agriculture
ITEM 3 - May be carried out with development consent
Agriculture; Airstrips; Animal boarding or training establishments; Aquaculture; Artisan food and drink industries; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Cellar door premises; Cemeteries; Centre-based child care facilities; Charter and tourism boating facilities; Community facilities; Correctional centres; Crematoria; Dual occupancies; Dwelling houses; Eco-tourist facilities; Environmental facilities; Environmental protection works; Extractive industries; Farm buildings; Flood

mitigation works; Forestry; Function centres; Garden centres; Group homes; Helipads; High technology industries; Home-based child care; Home businesses; Home industries; Information and education facilities; Jetties; Landscaping material supplies; Plant nurseries; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Research stations; Respite day care centres; Restaurants or cafes; Roads; Roadside stalls; Rural industries; Rural supplies; Secondary dwellings; Tourist and visitor accommodation; Turf farming; Veterinary hospitals; Water recreation structures; Water supply systems

ITEM 4 - Is prohibited

Backpackers' accommodation; Hotel or motel accommodation; Serviced apartments; Any other development not specified in item 2 or 3

c) Additional permitted uses

The land subject of this certificate is not not listed in Schedule 1 - Additional Permitted Uses in the Local Environmental Plan 2013.

d) Development standards for the erection of a dwelling house

Clause 4.2B in the Port Stephens Local Environmental Plan 2013 includes a development standard that fixes a minimum land dimension for the erection of a dwelling-house. This clause applies to the land. The minimum lot size for the erection of a dwelling-house is identified on the Lot Size Map.

e) Whether the land is an area of oustanding biodiversity value

No, the land is not identified in an area of oustanding biodiversity value under the *Biodiversity Conservation Act 2016.*

f) Whether the land is in a conservation area

The land is not located within a heritage conservation area under the Port Stephens Local Environmental Plan 2013.

g) Whether an item of environmental heritage is located on the land

The land is not identified as containing an item of environmental heritage significance under the provisions in Port Stephens Local Environmental Plan 2013.

3. Contributions Plans

(1) The name of each contributions plan applying to the land

Port Stephens Local Infrastructure Contributions Plan 2020.

(2) The land is not in a special contributions area under the Act, Division 7.1.

Note. These documents specify development contributions required towards the cost of providing additional community services or facilities if a property is developed. They are available on request from Council or can be viewed www.portstephens.nsw.gov.au.

4. Complying Development

(1) Whether or not the land to which the certificate relates is land on which complying development may be carried out under *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*?

Housing Code
Complying development under the General Housing Code MAY be carried out on the land.

Inland Code
Complying development under the Inland Code MAY be carried out on the land.

Rural Housing Code
Complying development under the Rural Housing Code MAY be carried out on the land.

Low Rise Medium Density Code
Complying development under the Low Rise Medium Density Housing Code MAY be carried out on the land.

Greenfield Housing Code
Complying development under the Greenfield Housing Code MAY be carried out on the land.

Housing Alterations Code
Complying development under the Housing Alterations Code MAY be carried out on the land.

General Development Code
Complying development under the General Development Code MAY be carried out on the land.

Commercial and Industrial Alterations Code
Complying development under the Commercial and Industrial alterations Code MAY be carried out on the land.

Commercial and Industrial (New Buildings and Additions) Code
Complying development under the Commercial and Industrial (New Buildings and Additions) Code MAY be carried out on the land.

Container Recycling Facilities Code
Complying development under the Container Recycling Facilities code MAY be carried out on the land.

Subdivisions Code
Complying development under the Subdivision Code MAY be carried out on the land.

Demolition Code
Complying development under the Demolition Code MAY be carried out on the land.

Fire Safety Code
Complying development under the Fire Safety Code MAY be carried out on the land.

(2) If complying development may not be carried on the land under the above codes, it is because of the provisions of Clauses 1.17A(1)(c) to (e), (2), (3), or (4), 1.18(1)(c3) or 1.19 of the *State Environmental Planning Policy (Exempt and Compying Development Codes) 2008*.
Council does not have sufficient information to ascertain the reason why complying development may not be carried out under the Policy. Contact Councils duty officer on (02) 4988 0255 for any enquiries relating to the reason why complying development may not be carried out on the land.

(3) If the land is a lot to which the Housing Code, Rural Housing Code, Low Rise Medium Density Housing Code, Greenfield Housing Code, Housing Alterations Code, General Development Code, or Commercial and Industrial (New Buildings and Additions) Code (within the meaning of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008* applies, complying development may be carried out on any part of the lot that is not affected by the provisions of clauses 1.17A(1)(c) to (e), (2), (3) or (4), 1.18(1)(c3) or 1.19 of that Policy.

(4) There are no variations to the exempt development codes under clause 1.12 of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008* in relation to the land.

5. Exempt development

(1) Whether the land is on land which exempt development may be carried out under each of the exempt development codes under the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.*

Division 1 General Code
Exempt development under the General Exempt Development Code MAY be carried out on the land.

Division 2 Advertising and Signage Code
Exempt development under the Advertising and Signage Code MAY be carried out on the land.

Division 3 Temporary Uses and Structures Code
Exempt development under the Temporary Uses and Structures Code MAY be carried out on the land.

Note: Clause 1.16(1)(c) specifies that exempt development must not be carried out on land that is, or on which there is, an item that is listed on the State Heritage Register under the *Heritage Act 1977*, or that is subject to an interim heritage order under that Act
Council does not have sufficient information to ascertain whether the land is listed on the State Heritage Register under the *Heritage Act 1977*, or subject to an interim heritage order under that Act.

Note: If the land is a lot to which the General Code, Advertising and Signage Code, and Temporary Uses Code (within the meaning of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008)* applies, exempt development may be carried out on any part of the lot that is not affected by the provisions of clause 1.16(1)(b1)–(d) or 1.16A of that Polcy.

6. Affected building notices and building product rectification orders

(1) Whether nor not the council is aware that –

a) There is any affected building notice in force in relation to the land

There is no affected building notice in force in respect of the land.

b) A building product rectification order is in force in relation to the land that has not been fully complied with

No

c) Any notice of intention to make a building product rectification order has been given in respect of the land and is outstanding.

No

Note: In this section, *affected building notice* has the same meaning as in the *Building Products (Safety) Act 2017*, Part 4. *Building product rectification order* has the same meaning as in the *Building Products (Safety) Act 2017.*

7. Land reserved for acquisition

Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in section 1 makes provision in relation to the acquisition of the land by a public authority, as referred to in Section 3.15 of the *Environmental Planning and Assessment Act 1979 (the Act).*

The Port Stephens Local Environmental Plan 2013 DOES NOT provide for the acquisition of this land, or part thereof, by a public authority as referred to in Section 3.15 of the Act.

8. Road widening and road realignment

Council's records indicate that the land the subject of this Certificate is not affected by any road widening or road realignment under:- (1) Section 25 of the Roads Act 1993; or (2) any environmental planning instrument; or (3) any resolution of the Council.

9. Flood related development controls information

No part of the land is within the flood planning area, or between the flood planning area and the probable maximum flood, and therefore IS NOT subject to flood related development controls.

10. Council and other public authority policies on hazard risk restrictions

Whether the land is affected by an adopted policy that restricts the development of the land because of the likelihood of land slip, bushfire, tidal innundation, subsidence, acid suflate soils, contamination, aircraft noise, salinity, coastal hazards, sea level rise or any other risk (other than flooding)

Council's records indicate that the land subject of this certificate IS NOT affected by RAAF Base Williamtown & Salt Ash Air Weapons Range 2025 Australian Noise Exposure Forecast (10th August 2011).

11. Bush fire prone land

Whether or not some, all, or none of the land is bush fire prone land.

All of the land is identified as bush fire prone land in Council's records. Further details of any applicable restrictions on development of the land may be obtained on application to Council. For further information, please contact Council's Duty Officer by telephoning 49880115.

12. Loose-fill asbestos insulation

Whether or not the land includes any residential premises (as defined in Division 1A of Part 8 of the *Home Building Act 1989*) that are listed on a register of residential premises that contain or have contained loose-fill asbestos insulation.

No, the land does not include any residential dwelling identified on the Loose-Fill Asbestos Insulation Register as containing loose-fill asbestos ceiling insulation. For further information, please contact Department of Fair Trading by telephoning 13 77 88 or go to their website at www.fairtrading.nsw.gov.au.

13. Mine Subsidence

Whether or not the land is proclaimed to be a mine subsidence district, within the meaning of the the *Coal Mine Subsidence Compensation Act 2017*.

No, the land is not within a proclaimed or declared mine subsidence district.

14. Paper subdivison information

(1) The name of any development plan adopted by a relevant authority that applies to the land or is proposed to be subject to a consent ballot.
(2) The date of any subdivision order that applies to the land
(3) Words and expressions used in this clause have the same meaning as they have in Part 16C of *Environmental Planning and Assessment Regulation 2021*.

Not applicable.

15. Property vegetation plans

If the land is land to which a property vegetation plan under the *Native Vegetation Act 2003* (and that continues in force) applies, a statement to that effect (but only if the council has been notified of the existence of the plan by the person or body that approved the plan under that Act).

No, Council has not been notified of any Property Vegetation Plans under the Native Vegetation Act 2003 (and that continues in force) that affect the land to which this certificate applies.

16. Biodiversity stewardship sites

If the land is a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the *Biodiversity Conservation Act 2016*, a statement to that effect (but only if the council has been notified of the existence of the agreement by the Chief Executive of the Office of Environment and Heritage).

No, Council has not been notified that the land is a biodiversity stewardship site.

Note. Biodiversity stewardship agreements include biobanking agreements under the *Threatened Species Conservation Act 1995*, Part 7A that are taken to be biodiversity stewardship agreements under the *Biodiversity Conservation Act 2016*, Part 5.

17. Biodiversity certified land

If the land is biodiversity certified land under Part 8 of the *Biodiversity Conservation Act 2016*, a statement to that effect.

No, Council has not been notified that the land is biodiversity certified land.

Note. Biodiversity certified land includes land certified under the *Threatened Species Conservation Act 1995*, Part 7AA that is taken to be certified under the *Biodiversity Conservation Act 2016*, Part 8.

18. Orders under *Trees (Disputes Between Neighbours) Act 2006*

Whether an order has been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land (but only if the council has been notified of the order).

The land is NOT affected by an order under the Trees (Dispute Between Neighbours) Act 2006 (of which Council is aware).

19. Annual charges under *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works

If the *Coastal Management Act 2016* applies to the council, whether the owner, or a previous owner, of the land has given written consent to the land being subject to annual charges under the *Local Government Act 1993*, section 496B, for coastal protection services that relate to existing coastal protection works.

No, the land is not subject to annual charges under section 496B of the *Local Government Act 1993* for coastal protection services relating to existing coastal protection works to which the owner (or any previous owner) of the land has consented.

Note. "existing coastal protection works" are works to reduce the impact of coastal hazards on land (such as seawalls, revetments, groynes and beach nourishment) that existed before the commencement of section 553B of the *Local Government Act 1993.*

20. Western Sydney Aerotropolis

Not applicable to the Port Stephens Local Government Area.

21. Development consent conditions for seniors housing

If State Environmental Planning Policy (Housing) 2021, Chapter 3, Part 5 applies to the land, any conditions of a development consent granted after 11 October 2007 in relation to the land that are of the kind set out in that Policy, section 88(2).

Council is unable to provide site-specific information on any conditions of a development consent granted after 11 October 2007 in relation to Clause 88(2) of the *State Environmental Planning Policy (Housing) 2021*, that may apply to the land.

22. Site compatibility certificates and development consent conditions for affordable rental housing

(1) Whether there is a current site compatibility certificate under *State Environmental Planning Policy (Housing) 2021,* or a former site compatibility certificate (of which Council ia aware) in relation to proposed development on the land.

Council is not aware of a current site compatibility certificate issued under *State Environmental Planning Policy (Housing) 2021.*

(2) If State *Environmental Planning Policy (Housing) 2021*, Chapter 2, Part 2, Division 1 or 5 applies to the land, a statement setting out terms of a kind referred to in the Policy, clause 21(1) or 40(1).

The land is not affected by any terms of a kind (of which Council is aware) referred to in Chapter 2, Part 2, Division 1 or clause 21(1) or 40(1) of *State Environmental Planning Policy (Housing) 2021* in respect of development on the land.

Additional matters

Note. The following matters are prescribed by section 59 (2) of the Contaminated Land Management Act 1997 as additional matters to be specified in a planning certificate:

(a) Whether or not the land to which the certificate relates is significantly contaminated land within the meaning of that Act.
(b) Whether or not the land to which the certificate relates is subject to a management order within the meaning of that Act.
(c) Whether or not the land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of the Act.
(d) Whether or not the land to which this certificate relates is subject to an ongoing maintenance order within the meaning of that Act.
(e) Whether or not the land to which the certificate relates is the subject of a site audit statement within the meaning of that Act – if a copy of such statement has been provided at any time to the local authority issuing the certificate.

There are no prescribed matters under section 59(2) of the Contaminated Land Management Act 1997 to be disclosed.

PART B: INFORMATION PROVIDED UNDER SECTION 10.7(5)

This information is provided in accordance with section 10.7(5) of the *Environmental Planning and Assessment Act 1979*. Section 10.7(6) states that Council shall not incur any liability in respect of advice provided in good faith pursuant to section 10.7(5) of the Act. If this information is to be relied upon, it should be independently checked.

Heritage
Port Stephens Council must take into consideration the likely effect of proposed development on the heritage significance of a heritage item, heritage conservation area, archaeological site or potential archaeological site, and on its setting, when determining an application for consent to carry out development on land in its vicinity. Please contact Council's Development Assessment and Compliance Section by telephoning 49880115.

Aboriginal Archaeology
When determining a development application on known or potential archaeological sites of both Aboriginal and non-Aboriginal heritage significance, Port Stephens Council must consider an assessment of how the proposed development would affect the conservation of the site and any relic known or reasonably likely to be located at the site. Please contact Council's Development Assessment and Compliance Section on 49880115 for more information.

Aircraft Noise
All areas of the Port Stephens Local Government area may be affected by aircraft noise from time to time. RAAF Base Williamtown – Newcastle Airport and Salt Ash Air Weapons Range are located within the Port Stephens Local

Government Area. Further information can be obtained from the Commonwealth Department of Defence website and from the Port Stephens Council Strategy and Environment Section and you are advised to make further enquiries.

Koala Habitat
Parts of the Port Stephens Local government Area are affected by Koala Habitat and subject to the Port Stephens Comprehensive Koala Plan of Management 2002 made under State Environmental Planning Proposal No. 44. Further information can be obtained from Council's Strategy & Environment Section on 49880326 or email plancert@portstephens.nsw.gov.au.

Invasive Species
Parts of the Port Stephens Local Government Area contain plants that pose a risk according to the *Biosecurity Act 2015* which may restrict the use of the land. For further information please contact Council's Strategy & Environment Section on 4988 0326 or email weeds@portstephens.nsw.gov.au

Development consents relating to the land
Please contact Customer Relations on (02) 4988 0255, for any enquiries regarding development consent over the land in the past 5 years.

Issued by Port Stephens Council Development Services Group,
on behalf of **Tim Crosdale, General Manager**

Attachment 11 – Preliminary Acid Sulfate Soil Assessment

1 November 2022

Hometown Australia Holdings
C/- ADW Johnson Pty Ltd
5 Pioneer Avenue
Tuggerah NSW 2259

Attention: Ms Stephanie van Dissel

Dear Stephanie

RE: PROPOSED REZONE AND EXTENSION OF SUNRISE LIFESTYLE VILLAGE, 4029-4045 NELSON BAY ROAD, BOBS FARM, NSW, PRELIMINARY ACID SULFATE SOIL ASSESSMENT.

1 INTRODUCTION

Qualtest Laboratory NSW Pty Ltd (Qualtest) is pleased to present the findings of a Preliminary Acid Sulfate Soil (ASS) Assessment for material that may be excavated at 4029-4045 Nelson Bay Road, Bobs Farm, NSW (the site). The site is proposed for extension of the existing Sunrise Lifestyle Village, following rezoning. The site location is shown on Figure 1, attached.

The Port Stephens Local Environmental Plan (LEP) 2013 maps the site as Class 4 ASS which requires development consent and an ASS Management Plan (ASSMP) for "*Works more than 2 metres below the natural ground surface. Works by which the watertable is likely to be lowered more than 2 metres below the natural ground surface.*"

For the purpose of the rezoning and as the proposed depth of excavations is not currently known, a preliminary assessment to 2.0m below ground surface was carried out on the site. Once the proposed depth of excavation is known, if it is greater than 2m further assessment would be required.

The ASS assessment has been completed in accordance with the ASSMAC (1998) Acid Sulfate Soil Manual and the relevant National ASS Guidance (Sullivan et al 2018). Reference is also made to Dear et al (2014) Queensland Acid Sulfate Soil Technical Manual - Soil Management Guidelines Version 4.1.

2 OBJECTIVES

The objectives of the works were to identify if ASS was present, to a depth of approximately 2m below ground surface, on the site.

3 SCOPE OF WORKS

In order to meet the above objectives, the following works were carried out:

- Drilling of two boreholes;
- Collection of soil samples from the boreholes;
- Field screening of ASS samples, and laboratory analysis of selected samples; and

- Data assessment and preparation of this letter report.

4 SITE DESCRIPTION

The site is approximately 4.15ha and sits between Nelson Bay Road (to the south) and Trotter Road (to the north) with the Sunrise Lifestyle Village located on the western boundary. The eastern portion of the site is bounded by the intersection of Nelson Bay Road and Trotter Road. The site currently has two residential dwellings, multiple sheds, storage containers, pool and dense vegetation that surrounds the perimeter of the site.

5 TOPOGRAPHY AND DRAINAGE

Reference to the NSW Land and Property Information Spatial Information Exchange website (https://six.nsw.gov.au/wps/portal/) indicated the elevation of the site was below 10m AHD.

The site surface was generally flat. Rain falling on the site would be expected to infiltrate into the sandy site soils. Excess surface water may flow offsite to the north into an unnamed swamp, located approximately 200m north of the site. The swamp forms part of Bobs Farm Creek, located approximately 800m north of the site. Bobs Farm Creek flows into Tiligerry Creek, located approximately 2.2km north of the site.

6 REGIONAL GEOLOGY

The 1:100,000 Nelson Bay Coastal Quaternary Geological Maps indicates that the site is underlain Holocene back barrier flat: marine sand, silt, clay, gravel, shell. Some parts of the site maybe overlain with aeolian (wind derived) sand dunes.

7 HYDROGEOLOGY

Groundwater beneath the site is anticipated to be present in an unconfined aquifer within sands at depths greater than 2m below ground surface (bgs).

Groundwater flow direction is anticipated to flow to the north-north-east discharging to either Bobs Farm Creek, located approximately 800m north of the site or Tiligerry Creek, located approximately 2.2km north of the site. Tiligerry Creek flows into Port Stephens about 4.5km to the north east.

It should be noted that groundwater conditions can vary due to rainfall and other influences including regional groundwater flow, temperature, permeability, recharge areas, surface condition, and subsoil drainage.

8 FIELD WORK

Field work was carried out by an Environmental Scientist from Qualtest on 18 October 2022. Two boreholes (BH01, BH02) were drilled on the site. The borehole locations are shown in Figure 1, attached.

The boreholes were drilled using a hand auger, to depths of about 2m below ground surface (bgs). Soil samples were collected at intervals of approximately 0.5m. The samples were placed into zip-lock bags and stored in an ice filled esky during fieldwork and transport to the laboratory. Disposable nitrile gloves were used during collection of samples.

Photographs taken during fieldworks are provided below.



Photo 1 – Showing Aeolian Sand in hand auger (BH01)



Photo 2 – Showing material from hand auger (BH02)

9 SUBSURFACE CONDITIONS

Table 9.1 presents a summary of the typical soil profiles observed at the borehole locations during the field investigations, divided into representative geotechnical units. The borehole logs are also attached.

Table 9.1 – Summary of Soil Profile

Unit	Soil Description	Depth Range (m)
Topsoil	TOPSOIL: SAND – fine to coarse grained, grey.	0.0-0.15
Aeolian	SAND – fine to coarse grained, brown, pale brown, white.	0.15-2.0

Note: * End of Hole, due to collapse.

No odours and/or anthropogenic materials were observed during hand auguring.

10 ACID SULFATE SOILS

10.1 Risk Map

Reference to the Acid Sulfate Soil online database from State of NSW and Department of Planning, Industry and Environment, 2021(espade.environment.nsw.gov.au) indicates that the site is located in an area of low probability of ASS >3m below ground surface (bgs). It is noted that an area located approximately 80m to the north of the site is located within an area of high probability of ASS <1m bgs.

The Port Stephens Local Environmental Plan (LEP) 2013 maps the site as Class 4 ASS which requires development consent and an ASS Management Plan (ASSMP) for "*Works more than 2 metres below the natural ground surface. Works by which the water table is likely to be lowered more than 2 metres below the natural ground surface.*"

The site overlain on the risk map and the Port Stephens Council LEP map are presented as Figures 2 and 3, attached.

10.2 Occurrence

Acid sulfate soils can form in a number of geologic and geomorphic landscapes provided there is a source of iron, sulfate and soil bacteria. Coastal Acid Sulfate Soils (CASS) have formed along the east coast of Australia, since the last glacial period (19,000 to 18,000 years ago), when sea levels were around 120m to 130m below today's levels.

Sea levels rose rapidly to about 7,000 years ago, reaching a height about 1.0m above the present day mean sea level (0.0m AHD), at which time they stabilised. Since that time there has been a slow accumulation of coastal sediments within the intertidal zone, including saline wetlands, salt marshes and as bottom sediments in embayments, coastal rivers, estuaries and coastal lakes. This accumulation is still occurring today.

CASS are found along most of the coast of mainland Australia, generally found below about 5m AHD where tidal ranges are large, such as northern Queensland. Along coastal areas with

smaller tidal ranges, it is rare to find significant accumulations of CASS above about 2m AHD (Simpson et al 2018).

The formation of sulfidic sediments is a natural part of the sulfur cycle where sulfates from sea water, in combination with iron and sulfate reducing bacteria (SRB), combine to produce reduced inorganic sulphides (RIS). RIS can include iron disulfides (FeS2), pyrite and marcasite, monosulfides (FeS) and elemental sulfur (S8) (Sullivan et al 2018). Provided these sediments remain in an anoxic state (saturated) they are benign (Dear et al 2014, Sullivan et al 2018).

10.3 Action Criteria

In order to assess the presence of ASS, the laboratory results were compared to Action Criteria from ASSMAC (1998) Acid Sulfate Soil Manual.

The ASSMAC (1998) action levels are based on oxidisable sulfur concentrations for three differing soil textures. There are separate action levels depending on the amount of soil disturbed as a result of the proposed works. For this project it has been assumed that less than 1000 tonnes of ASS would be disturbed. The applicable action levels are indicated below in Table 10.1.

Table 10.1 – ASSMAC (1998) Action Criteria

Texture Category	Approx. Clay Content (%)	Action Criteria	
		Net Acidity (S_{CR}/S_{POS}) (%)	Net Acidity (mot H+/tonne)
Coarse	<5%	0.03	18
Medium	5 to 40%	0.06	36
Fine	>40%	0.1	62

10.4 Field Screening

Field screening of the ten samples collected was carried out by an experienced Qualtest Environmental Scientist, at our Mayfield West laboratory. The field screening sheets are attached, and a summary of the results provided in Table 10.2 below.

Table 10.2 – Results of Field Screening Tests

Sample ID	pH_F	pH_{FOX}	Reaction
BH01 0.1-0.2	6.32	4.65	None Observed
BH01 0.4-0.5	6.52	4.72	None Observed
BH01 0.9-1.0	7.00	4.75	None Observed
BH01 1.4-1.5	6.95	4.79	None Observed
BH01 1.9-2.0	6.92	4.67	None Observed
BH02 0.1-0.2	6.40	3.96	None Observed
BH02 0.4-0.5	6.77	3.80	None Observed
BH02 0.9-1.0	7.22	3.75	None Observed
BH02 1.4-1.5	6.90	4.12	None Observed
BH02 1.9-2.0	6.93	3.88	None Observed

A pH_{FOX} around 3.5 or lower, can sometimes indicate a potential for reduced inorganic sulphides (RIS) to be present within the soils. None of the screened samples recorded a pH_{FOX} below 3.5.

10.5 Laboratory Results

Based on the results of the field screening, as a conservative measure, two samples were selected for laboratory analysis. The sample was dispatched to NATA accredited laboratory Eurofins MGT for Chromium Reducible Sulfur (CRS) testing. The laboratory reports are attached.

Table 10.3: Laboratory Results

Sample ID	Description	pH_{KCL}	TAA (mol H+/t)	Scr (%S)	Net Acidity (%S)
BH02 0.4-0.5	SAND: fine to coarse grained, brown.	5.1	4.8	<0.005	0.013
BH02 0.9-1.0	SAND: fine to coarse grained, pale brown.	5.0	5.9	<0.005	0.014
Action Criteria*		**-**	**18**	**0.03**	**0.03**

***ASSMAC (1998), Acid Sulfate Soil Manual, Table 4.4 – Action Criteria for coarse textured soil, <1000 tonnes*

The laboratory results showed Titratable Actual Acidity (TAA) below the adopted criteria of 18mol H+/tonne in each sample tested, and Chromium Reducible Sulfur (Scr) and Net Acidity below the adopted criteria of 0.03%S in each sample tested.

11 CONCLUSION AND RECOMMENDATIONS

ASS were not considered to be present in the soils to the depth investigated (2.0m) based on field observations and results of the laboratory analysis.

The field screening indicated that ASS were unlikely to be present. This was confirmed by the results of the laboratory testing which showed concentrations of net acidity, and Chromium Reducible Sulfur below the action criteria in each sample tested.

Based on the results of the assessment, an ASS Management Plan is not required for excavation to 2.0m bgs. It is noted that ASS may be present in soils deeper than 2.0m. If deeper excavations are proposed, further assessment at depth would be required.

12 LIMITATIONS

The findings presented in the report and used as the basis for recommendations presented herein were obtained using industry accepted practices and standards. To our knowledge, they represent a reasonable interpretation of the general conditions of the site. However, it is noted that under no circumstances, can it be considered that these finding represent the actual state of the site at all points. A suitable qualified geotechnical engineer/environmental scientist should be contacted if the subsurface conditions encountered during earthworks differ from those described.

Data and opinions contained within the report may not be used in other contexts or for any other purposes without prior review and agreement by Qualtest. If this report is reproduced, it must be in full.

If you have any further questions regarding this report, please do not hesitate to contact the undersigned.

For and on behalf of Qualtest Laboratory (NSW) Pty Ltd.



Libby Betz
Senior Environmental Scientist

Attachments:

Figure 1 – Site and Sampling Locations
Figure 2 – ASS Risk Map
Figure 3 – ASS Class Map – Lake Macquarie LEP
Borehole Logs
Field Screening Results
Laboratory Reports

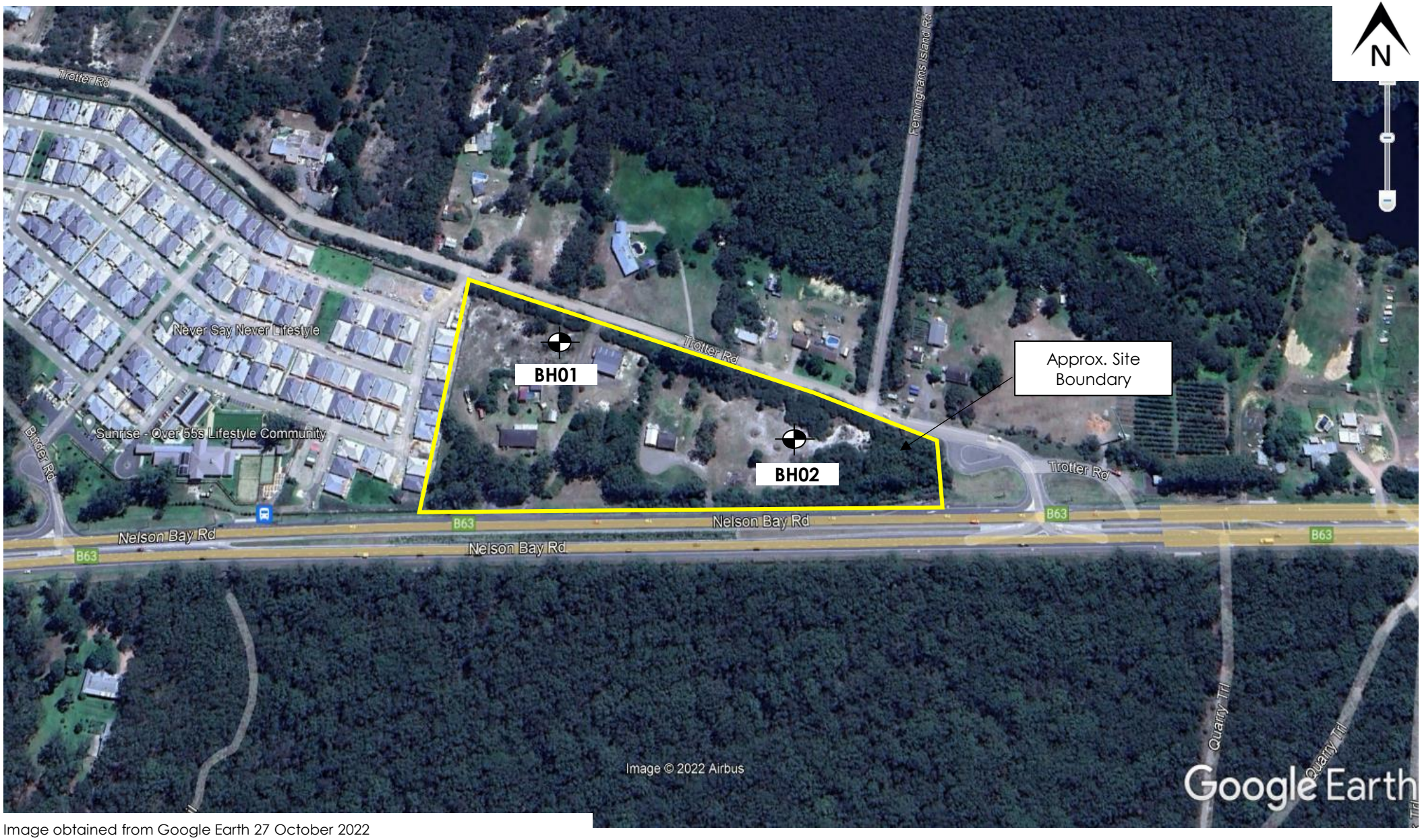


Image obtained from Google Earth 27 October 2022

Qualtest LABORATORY (NSW) PTY LTD

Client:	HOMETOWN AUSTRALIA HOLDINGS	Drawing No:	FIGURE 1
Project:	ACID SULFATE SOIL ASSESSMENT	Project No:	NEW22P-0199-AB
Location:	4029-4045 NELSON BAY ROAD, BOBS FARM, NSW	Scale:	N.T.S.
Title:	SITE LOCATION	Date:	27/10/2022

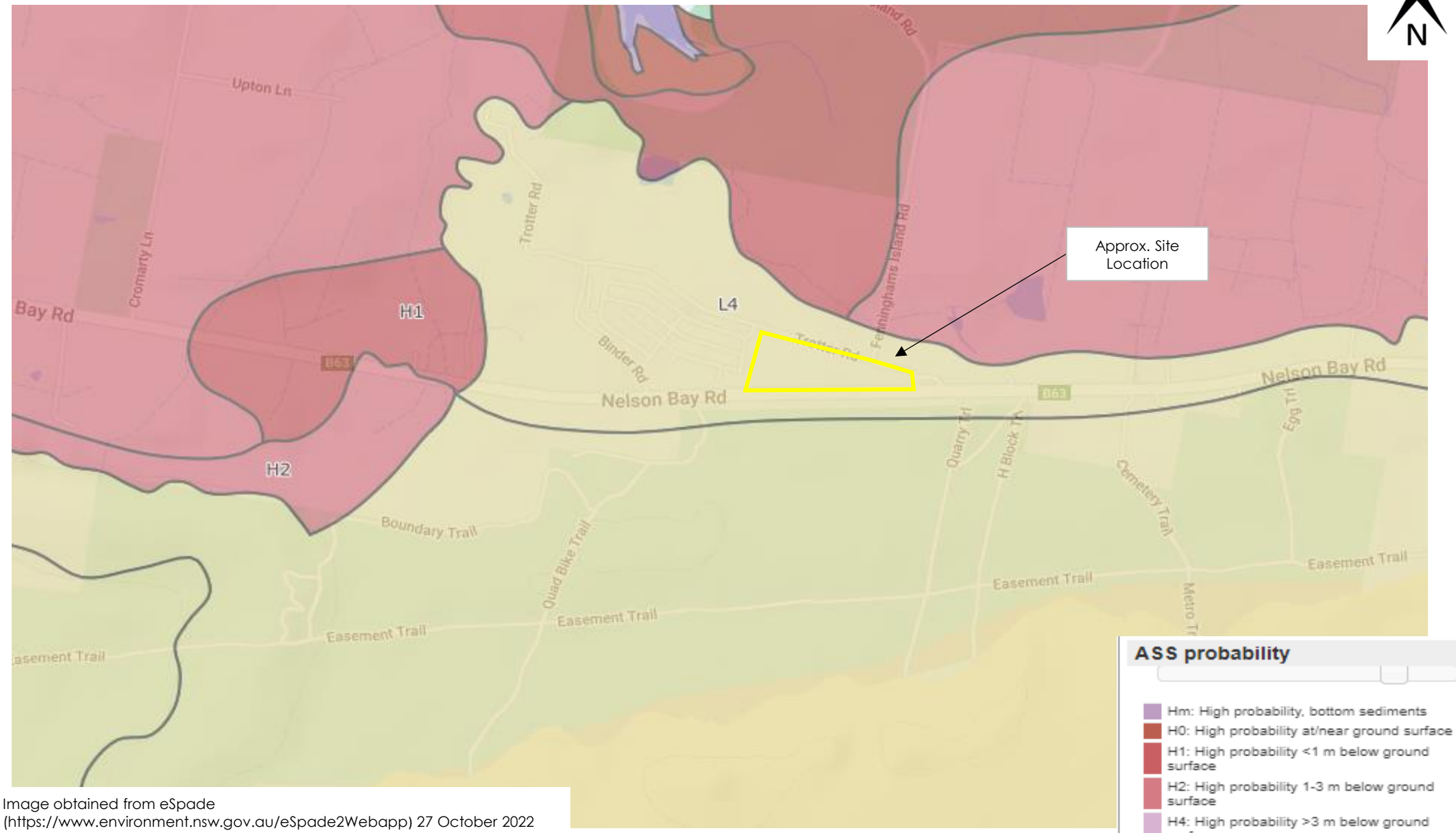


Image obtained from eSpade (https://www.environment.nsw.gov.au/eSpade2Webapp) 27 October 2022

Qualtest LABORATORY (NSW) PTY LTD

Client:	HOMETOWN AUSTRALIA HOLDINGS	Drawing No:	FIGURE 2
Project:	ACID SULFATE SOIL ASSESSMENT	Project No:	NEW22P-0199-AB
Location:	4029-4045 NELSON BAY ROAD, BOBS FARM, NSW	Scale:	N.T.S.
Title:	ASS PROBABILITY	Date:	27/10/2022



Qualtest LABORATORY (NSW) PTY LTD

Client:	HOMETOWN AUSTRALIA HOLDINGS	Drawing No:	FIGURE 3
Project:	ACID SULFATE SOIL ASSESSMENT	Project No:	NEW22P-0199-AB
Location:	4029-4045 NELSON BAY ROAD, BOBS FARM, NSW	Scale:	N.T.S.
Title:	ASS LEP CLASSIFICATION	Date:	27/10/2022

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH01

CLIENT: Hometown Australia Holdings
PAGE: 1 OF 1
PROJECT: ASS Assessment
JOB NO: NEW22P-0199
LOCATION: 4029 Nelson Bay Road, Bobs Farm
LOGGED BY: TH
DATE: 18/10/22

DRILL TYPE: HAND AUGER
SURFACE RL:
BOREHOLE DIAMETER: 50 mm
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
HA	Not Encountered	0.10m ASS 0.20m 0.40m ASS 0.50m 0.90m ASS 1.00m 1.40m ASS 1.50m 1.90m ASS 2.00m		0.5 1.0 1.5 2.0		SM SP	TOPSOIL: Gravelly Silty SAND - fine to coarse grained, grey-brown, fines of low plasticity, fine to coarse grained angular gravel. 0.15m SAND - fine to coarse grained, pale brown to brown. 2.00m Hole Terminated at 2.00 m	M				TOPSOIL AEOLIAN DEPOSITS

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

QT LIB 1.1.GLB Log NON-CORED BOREHOLE - TEST PIT NEW22P-0199 - BOREHOLE LOGS - ENVIRO.GPJ <<DrawingFile>> 01/11/2022 10:08 10.02.00.04 Datgel Lab and In Situ Tool

ENGINEERING LOG - BOREHOLE

CLIENT: Hometown Australia Holdings
PROJECT: ASS Assessment
LOCATION: 4029 Nelson Bay Road, Bobs Farm

BOREHOLE NO: BH02
PAGE: 1 OF 1
JOB NO: NEW22P-0199
LOGGED BY: TH
DATE: 18/10/22

DRILL TYPE: HAND AUGER
BOREHOLE DIAMETER: 50 mm
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
HA	Not Encountered	0.10m ASS 0.20m				SP	TOPSOIL: SAND - fine to coarse grained, grey.					TOPSOIL
							0.15m SAND - fine to coarse grained, brown.					AEOLIAN DEPOSITS
		0.40m ASS 0.50m		0.5			Becoming pale brown.					
		0.90m ASS 1.00m		1.0		SP		M				
		1.40m ASS 1.50m		1.5			Becoming white and brown.					
		1.90m ASS 2.00m		2.0			2.00m Hole Terminated at 2.00 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

QT LIB 1.1.GLB Log NON-CORED BOREHOLE - TEST PIT NEW22P-0199 - BOREHOLE LOGS - ENVIRO.GPJ <<DrawingFile>> 01/11/2022 10:09 10.02.00.04 Datgel Lab and In Situ Tool

Qualtest
LABORATORY (NSW) PTY LTD

2 Murray Dwyer Cicruit Mayfield West NSW 2304
T: 02 4968 4468
E: admin@qualtest.com.au
W: www.qualtest.com.au
ABN: 98 153 268 896

Acid Sulfate Soil Screening Test Report

Client:	Hometown Australia Holdings	Date Tested:	18.10.2022	Project No:	NEW22P-0199
Project:	ASS Assessment	Tested By:	TH	Sheet No:	1 of 1
Location:	4029 Nelson Bay Road, Bobs Farm	Date Sampled:	18.10.2022		

Hydrogen peroxide pH prior to use (4.5 to 5.5): 5.2 Hydrogen peroxide temperature prior to use: 20.2

Sample Location	Sample Depth	Soil Description	pH_F (pH in 1:5 Soil: Deionised Water)	pH_{FOX} (oxidation in 30% hydrogen peroxide)										pH change (pH_F - pH_{FOX})	Additional Observations / Comments (e.g. presence of shells or organics)
				Duration (minutes)	pH_{FOX}	Temperature During Oxidation	Colour Before Oxidation	Colour After Oxidation	Effervescence				Sulfurous Odour		
									None Observed	Slight	Moderate	Vigorous			
BH01	0.1-0.2	Sand	**6.32**	15	**4.65**	21	Dark brown	Dark brown	/				No	1.67	No odour, no organics
BH01	0.4-0.5	Sand	**6.52**	15	**4.72**	20	Brown	Brown	/				No	1.80	No odour, no organics
BH01	0.9-1.0	Sand	**7.00**	15	**4.75**	20	Brown	Brown	/				No	2.25	No odour, no organics
BH01	1.4-1.5	Sand	**6.95**	15	**4.79**	20	Brown	Brown	/				No	2.16	No odour, no organics
BH01	1.9-2.0	Sand	**6.92**	15	**4.67**	20	Brown	Brown	/				No	2.25	No odour, no organics
BH02	0.1-0.2	Sand	**6.40**	15	**3.96**	20	Dark brown	Dark brown	/				No	2.44	No odour, no organics
BH02	0.4-0.5	Sand	**6.77**	15	**3.80**	20	Brown	Brown	/				No	2.97	No odour, no organics
BH02	0.9-1.0	Sand	**7.22**	15	**3.75**	20	Brown	Brown	/				No	3.47	No odour, no organics
BH02	1.4-1.5	Sand	**6.90**	15	**4.12**	20	Pale brown	Pale brown	/				No	2.78	No odour, no organics
BH02	1.9-2.0	Sand	**6.93**	15	**3.88**	20	Pale brown	Pale brown	/				No	3.05	No odour, no organics

Explanatory Notes:

Acid Sulfate Soil (ASS) screening provides an early indication of the likely presence of actual or potential ASS, and should be followed by analytical testing if screening results are of concern. As a guide:

- $pH_F \leq 4$ is indicative of actual ASS.
- $pH_F > 4$ and < 5.5 are acid and may be the result of some previous or limited oxidation of sulfites, but is not confirmatory of actual ASS.
- Potential positive reactions include one or more of the following:
  - Change in colour of the soil from grey tones to brown tones
  - Effervescence
  - The release of sulfurous odours
  - A substantial depression in pH_{FOX} below pH_F
  - $pH_{FOX} < 3.5$

CHAIN OF CUSTODY RECORD

Eurofins | Environment Testing ABN 50 005 085 521

☐ Sydney Laboratory
Unit F3 Bld.F 16 Mars Road Lane Cove West NSW 2066
02 9900 8400 EnviroSampleNSW@eurofins.com

☐ Brisbane Laboratory
Unit 1 21 Smallwood Place Murarrie QLD 4172
07 3902 4600 EnviroSampleQLD@eurofins.com

☐ Perth Laboratory
Unit 2 91 Leach Highway Kewdale WA 6105
08 9251 9600 EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory
6 Monterey Road Dandenong South VIC 3175
03 8564 5000 EnviroSampleVic@eurofins.com

Company	Qualtest	Project №	NEW22P-HTAH/NEW22P-0199	Project Manager	Libby Betz
Address	2 Murray Dwyer Circuit, Mayfield West NSW 2304	Project Name	Bobs Farm	EDD Format (ESdat, EQuIS etc)	Excel
Contact Name	Libby Betz				
Phone №	432189418				
Special Directions	Samples have job number listed as NEW22P-HTAH, please report as NEW22P-0199.				
Purchase Order					
Quote ID №	180622QUAN-3				

Sampler(s)	Libby Betz
Handed over by	
Email for Invoice	accounts@qualtest.com.au
Email for Results	libbybetz@qualtest.com.au emmacoleman@qualtest.com.au tomhall@qualtest.com.au billysnow@qualtest.com.au

Analyses — Where metals are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing.

Containers — Change container type & size if necessary.

Required Turnaround Time (TAT) — Default will be 5 days if not ticked.

♦Surcharge will apply
☐ Overnight (reporting by 9am)♦
☐ Same day♦ ☐ 1 day♦
☐ 2 days♦ ☐ 3 days♦
☑ 5 days (Standard)
☐ Other( )

№	Client Sample ID	Sampled Date/Time dd/mm/yy hh:mm	Matrix Solid (S) Water (W)	Chromium Reducible Suite	500mL Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	BH01_0.1-0.2	18/10/22	Soil										
2	BH01-0.4-0.5	18/10/22	Soil										
3	BH01-0.9-1.0	18/10/22	Soil										
4	BH01_1.4-1.5	18/10/22	Soil										
5	BH01-1.9-2.0	18/10/22	Soil										
6	BH02_0.1-0.2	18/10/22	Soil										
7	BH02-0.4-0.5	18/10/22	Soil	X									
8	BH02-0.9-1.0	18/10/22	Soil	X									
9	BH02_1.4-1.5	18/10/22	Soil										
10	BH02-1.9-2.0	18/10/22	Soil										
	Total Counts			2									

Method of Shipment	☐ Courier (#)	☐ Hand Delivered	☐ Postal	Name	Libby Betz	Signature	EBetz	Date	19/10/2022	Time	
Laboratory Use Only	Received By	Jaidyn Sloggett	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date	19/10/22	Time	2:10PM	Temperature	14.7
	Received By		SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date		Time		Report №	933971

Submission of samples to the laboratory will be deemed as acceptance of Eurofins | Environment Testing Standard Terms and Conditions unless agreed otherwise. A copy is available on request.

QS3009_R10 Modified by: Dr. R Symons Approved by: G. Jackson Approved on: 6 August 2019

eurofins | Environment Testing

www.eurofins.com.au EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	4/52 Industrial Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield East NSW 2304
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	PO Box 60 Wickham 2293
Tel: +61 3 8564 5000	Tel: +61 3 8564 5000	Tel: +61 2 9900 8400	Tel: +61 2 6113 8091	Tel: +61 7 3902 4600	Tel: +61 2 4968 8448
NATA# 1261 Site# 1254	NATA# 1261 Site# 1254	NATA# 1261 Site# 18217		NATA# 1261 Site# 20794	NATA# 1261 Site# 25079

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
Tel: +61 8 6253 4444
NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland	Christchurch
35 O'Rorke Road	43 Detroit Drive
Penrose,	Rolleston,
Auckland 1061	Christchurch 7675
Tel: +64 9 526 45 51	Tel: 0800 856 450
IANZ# 1327	IANZ# 1290

Sample Receipt Advice

Company name:	Qualtest
Contact name:	Libby Betz
Project name:	BOBS FARM
Project ID:	NEW22P-HTAH/NEW22P-0199
Turnaround time:	5 Day
Date/Time received	Oct 19, 2022 2:10 PM
Eurofins reference	933971

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
✗	Split sample sent to requested external lab.
✗	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Andrew Black on phone : (+61) 2 9900 8490 or by email: AndrewBlack@eurofins.com

Results will be delivered electronically via email to Libby Betz - libbybetz@qualtest.com.au.

Note: A copy of these results will also be delivered to the general Qualtest email address.

Qualtest
2 Murray Dwyer Circuit
Mayfield West
NSW 2304

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: **Libby Betz**

Report **933971-S**
Project name BOBS FARM
Project ID NEW22P-HTAH/NEW22P-0199
Received Date Oct 19, 2022

Client Sample ID			**BH02_0.4-0.5**	**BH02_0.9-1.0**
Sample Matrix			**Soil**	**Soil**
Eurofins Sample No.			**B22-Oc0045298**	**B22-Oc0045299**
Date Sampled			**Oct 18, 2022**	**Oct 18, 2022**
Test/Reference	LOR	Unit		
Actual Acidity (NLM-3.2)				
pH-KCL (NLM-3.1)	0.1	pH Units	5.1	5.0
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	0.008	0.009
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	4.8	5.9
Potential Acidity - Chromium Reducible Sulfur				
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)[S04]	0.005	% S	< 0.005	< 0.005
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	< 3	< 3
Extractable Sulfur				
Sulfur - KCl Extractable	0.005	% S	N/A	N/A
HCl Extractable Sulfur	0.005	% S	N/A	N/A
Retained Acidity (S-NAS)				
Net Acid soluble sulfur (SNAS) NLM-4.1	0.02	% S	N/A	N/A
Net Acid soluble sulfur (s-SNAS) NLM-4.1[S02]	0.02	% S	N/A	N/A
Net Acid soluble sulfur (a-SNAS) NLM-4.1	10	mol H+/t	N/A	N/A
HCl Extractable Sulfur Correction Factor	1	factor	2.0	2.0
Acid Neutralising Capacity (ANCbt)				
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	N/A	N/A
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2)[S03]	0.02	% S	N/A	N/A
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	N/A	N/A
ANC Fineness Factor		factor	1.5	1.5
Net Acidity (Including ANC)				
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	< 0.02	< 0.02
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	< 10	< 10
CRS Suite - Liming Rate - NASSG (Including ANC)[S01]	1	kg CaCO3/t	< 1	< 1
Extraneous Material				
<2mm Fraction	0.005	g	79	44
>2mm Fraction	0.005	g	< 0.005	< 0.005
Analysed Material	0.1	%	100	100
Extraneous Material	0.1	%	< 0.1	< 0.1
% Moisture	1	%	4.8	3.7

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Chromium Reducible Sulfur Suite			
Chromium Suite	Brisbane	Oct 26, 2022	6 Week
- Method: LTM-GEN-7070 Chromium Reducible Sulfur Suite			
Extraneous Material	Brisbane	Oct 26, 2022	6 Week
- Method: LTM-GEN-7050/7070			
% Moisture	Brisbane	Oct 21, 2022	14 Days
- Method: LTM-GEN-7080 Moisture			

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne
6 Monterey Road
Dandenong South
VIC 3175
Tel: +61 3 8564 5000
NATA# 1261 Site# 1254

Geelong
19/8 Lewalan Street
Grovedale
VIC 3216
Tel: +61 3 8564 5000
NATA# 1261 Site# 1254

Sydney
179 Magowar Road
Girraween
NSW 2145
Tel: +61 2 9900 8400
NATA# 1261 Site# 18217

Canberra
Unit 1,2 Dacre Street
Mitchell
ACT 2911
Tel: +61 2 6113 8091

Brisbane
1/21 Smallwood Place
Murarrie
QLD 4172
Tel: +61 7 3902 4600
NATA# 1261 Site# 20794

Newcastle
4/52 Industrial Drive
Mayfield East NSW 2304
PO Box 60 Wickham 2293
Tel: +61 2 4968 8448
NATA# 1261 Site# 25079

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
Tel: +61 8 6253 4444
NATA# 2377 Site# 2370

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland
35 O'Rorke Road
Penrose,
Auckland 1061
Tel: +64 9 526 45 51
IANZ# 1327

Christchurch
43 Detroit Drive
Rolleston,
Christchurch 7675
Tel: 0800 856 450
IANZ# 1290

Company Name: Qualtest
Address: 2 Murray Dwyer Circuit
Mayfield West
NSW 2304

Project Name: BOBS FARM
Project ID: NEW22P-HTAH/NEW22P-0199

Order No.: N/A
Report #: 933971
Phone: 02 4968 4468
Fax: 02 4960 9775

Received: Oct 19, 2022 2:10 PM
Due: Oct 26, 2022
Priority: 5 Day
Contact Name: Libby Betz

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						HOLD	Chromium Reducible Sulfur Suite	Moisture Set
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	BH02_0.4-0.5	Oct 18, 2022		Soil	B22-Oc0045298		X	X
2	BH02_0.9-1.0	Oct 18, 2022		Soil	B22-Oc0045299		X	X
3	BH01_0.1-0.2	Oct 18, 2022		Soil	B22-Oc0045300	X		
4	BH01_0.4-0.5	Oct 18, 2022		Soil	B22-Oc0045301	X		
5	BH01_0.9-1.0	Oct 18, 2022		Soil	B22-Oc0045302	X		
6	BH01_1.4-1.5	Oct 18, 2022		Soil	B22-Oc0045303	X		
7	BH01_1.9-2.0	Oct 18, 2022		Soil	B22-Oc0045304	X		
8	BH02_0.1-0.2	Oct 18, 2022		Soil	B22-Oc0045305	X		
9	BH02_1.4-1.5	Oct 18, 2022		Soil	B22-Oc0045306	X		
10	BH02_1.9-2.0	Oct 18, 2022		Soil	B22-Oc0045307	X		
Test Counts						8	2	2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
µg/L: micrograms per litre
ppm: parts per million
ppb: parts per billion
%: Percentage
org/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Actual Acidity (NLM-3.2)							
pH-KCL (NLM-3.1)	%	98			80-120	Pass	
Titratable Actual Acidity (NLM-3.2)	%	96			80-120	Pass	
LCS - % Recovery							
Potential Acidity - Chromium Reducible Sulfur							
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)	%	99			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Actual Acidity (NLM-3.2)				Result 1	Result 2	RPD			
pH-KCL (NLM-3.1)	B22-Oc0043299	NCP	pH Units	4.9	5.0	1.2	20%	Pass	
Titratable Actual Acidity (NLM-3.2)	B22-Oc0043299	NCP	% pyrite S	0.060	0.058	3.9	30%	Pass	
Titratable Actual Acidity (NLM-3.2)	B22-Oc0043299	NCP	mol H+/t	38	36	3.9	20%	Pass	
Duplicate									
Potential Acidity - Chromium Reducible Sulfur				Result 1	Result 2	RPD			
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)	B22-Oc0043299	NCP	% S	< 0.005	< 0.005	<1	20%	Pass	
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	B22-Oc0043299	NCP	mol H+/t	< 3	< 3	<1	30%	Pass	
Duplicate									
Extractable Sulfur				Result 1	Result 2	RPD			
Sulfur - KCl Extractable	B22-Oc0043299	NCP	% S	< 0.005	< 0.005	<1	30%	Pass	
HCl Extractable Sulfur	B22-Oc0043299	NCP	% S	N/A	N/A	N/A	20%	Pass	
Duplicate									
Retained Acidity (S-NAS)				Result 1	Result 2	RPD			
Net Acid soluble sulfur (SNAS) NLM-4.1	B22-Oc0043299	NCP	% S	N/A	N/A	N/A	30%	Pass	
Net Acid soluble sulfur (s-SNAS) NLM-4.1	B22-Oc0043299	NCP	% S	N/A	N/A	N/A	30%	Pass	
Net Acid soluble sulfur (a-SNAS) NLM-4.1	B22-Oc0043299	NCP	mol H+/t	N/A	N/A	N/A	30%	Pass	
Duplicate									
Acid Neutralising Capacity (ANCbt)				Result 1	Result 2	RPD			
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	B22-Oc0043299	NCP	% CaCO3	N/A	N/A	N/A	20%	Pass	
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2)	B22-Oc0043299	NCP	% S	N/A	N/A	N/A	30%	Pass	
ANC Fineness Factor	B22-Oc0043299	NCP	factor	1.5	1.5	<1	30%	Pass	
Duplicate									
Net Acidity (Including ANC)				Result 1	Result 2	RPD			
CRS Suite - Net Acidity - NASSG (Including ANC)	B22-Oc0043299	NCP	% S	0.06	0.06	3.9	30%	Pass	
CRS Suite - Net Acidity - NASSG (Including ANC)	B22-Oc0043299	NCP	mol H+/t	38	36	3.9	30%	Pass	
CRS Suite - Liming Rate - NASSG (Including ANC)	B22-Oc0043299	NCP	kg CaCO3/t	2.8	2.7	3.9	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B22-Oc0045299	CP	%	3.7	3.6	1.7	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
S01	Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil' multiply 'reported results' x 'wet bulk density of soil in t/m3'
S02	Retained Acidity is Reported when the pHKCl is less than pH 4.5
S03	Acid Neutralising Capacity is only required if the pHKCl if greater than or equal to pH 6.5
S04	Acid Sulfate Soil Samples have a 24 hour holding time unless frozen or dried within that period

Authorised by:

Bonnie Pu	Analytical Services Manager
Jonathon Angell	Senior Analyst-Sample Properties
Jonathon Angell	Senior Analyst-SPOCAS



Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

Attachment 12 – Response Table

RESPONSE TABLE TO REQUEST FOR FURTHER INFORMATION BASED ON THE SCOPING STAGE AND AGENCY COMMENTS		
Key Issue	**Response Required**	**ADWJ Response**
1. Statutory context, site history and background • Address all relevant legislation, strategic planning framework, environmental planning instruments (EPIs) (including drafts), plans, policies and guidelines. • Identify existing and proposed development standards. • Detail the site history and background which led to the proposal. • Include estimates of the timeframe for major milestones in the planning proposal pathway including request for gateway determination, exhibition and finalisation.	The planning proposal should address the relevant strategies and objectives of the draft Hunter Regional Plan 2041. Please note that the draft Plan may be finalised in the interim and the planning proposal should be updated to reflect the version at the time of lodgement.	The Planning Proposal has addressed the Draft Hunter Regional Plan 2041 under PART 3 Section B.
2. Additional Permitted Use • The planning proposal should address Ministerial direction 1.4 Site Specific Provisions.	Address in planning proposal	The Planning Proposal has addressed Ministerial Direction 1.4 Site Specific Provisions under PART 3 Section B within Table 3.
3. Aboriginal Cultural Heritage • An AHIMS search indicated no Aboriginal sites or places, but one nearby. • There is an AHIMS site very near to the proposal site (across Nelson Bay Road). The proposal site is also within 200 m of a mapped watercourse. In accordance with the 'Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales', a due diligence Aboriginal Heritage Assessment is required prior to lodgement.	Preliminary heritage assessment required. Post-Gateway consultation with Worimi LALC required.	An Aboriginal Due Diligence Assessment has been prepared by McCardle Heritage which concludes that the site does not contain any sites or potential archaeological deposits (PADs) of Aboriginal heritage significance, and as a result an Aboriginal Heritage Impact Permit (AHIP) would not be required for the future development. This conclusion was made based on the fact that the site had been previously cleared with the historic upper dune characteristics being entirely removed to make the site level for residential occupation. Full details in this regard are provided within **Attachment 2**. This has been addressed under Port Stephens CPS under PART 3 Section B within Table 1, Table 3 and Section C, Q9.
4. Traffic Impact Assessment • Site is located on a classified road, consultation with TfNSW undertaken. • TfNSW reviewed the Traffic and Parking Assessment from Intersect Traffic dated November 2021 and advised that their key concern is around the uncertainty of the timing of the new Trotter Road access.	Take TfNSW advice into consideration and address in P where possible. Post-Gateway consultation with TfNSW required.	This has been addressed under SEPP (Transport and Infrastructure) 2021 under PART 3 Section B within Table 2, Table 3 and Section C, Q9 and Q11.

5. **Biodiversity** • Preliminary Flora and Fauna Assessment and Addendum has been completed. • BCD reviewed the scoping proposal, and the relevant appendices and have no comments with respect to biodiversity and flooding.	Council recommends that the Preliminary Flora and Fauna Assessment be updated and finalised. This will need to happen prior to a future development application and provides ease for reading. Post-Gateway consultation with BCD is required.	A consolidated Streamlined Biodiversity Development Assessment Report (SBDAR) has been prepared and is provided within **Attachment 3**.
6. Contamination Preliminary site investigation and report that: • Assess the potential for contamination on the site based on current and historical site activities • Considers the suitability of the site for the purpose and/or land use for which the planning proposal envisages will be carried out in the future, and whether 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)	Preliminary contamination assessment required. Post-Gateway consultation with NSW EPA recommended.	A Preliminary Contamination Assessment (PCA) has been undertaken by Qualtest which concludes that the site is considered suitable for the purposes of a caravan park (residential). Full details in this regard are provided within **Attachment 10**. This is also addressed under SEPP (Resilience and Hazards) 2021under PART 3 Section B within Table 2, Table 3 and Section C, Q9.
7. Bushfire • Extent of any Asset Protection Zones on the site • Demonstrate consistency with the requirements of Part 4 of NSW Rural Fire Service, Planning for Bushfire Protection.	Bushfire risk assessment required. Post-Gateway consultation with NSW Rural Fire Service required.	A Strategic Bushfire Study and Bushfire Assessment Report has been undertaken by Bushfire Planning Australia (BPA) which concludes that the site will be able to meet all necessary requirements of Part 4 of NSW Rural Fire Service, Planning for Bushfire Protection. Full details in this regard are provided within **Attachment 4**. This is also addressed under PART 3 Section B within Table 3 and Section C, Q9.
8. Rural Lands • DPI reviewed the scoping proposal and noted that the subject land is Land and Soil Capability (LSC) class 6 and is highly constrained in terms of agricultural opportunities. DPI noted that the proposal is not consistent with the rural zone objectives, and requested that these references be removed.	Update planning proposal to adequately justify inconsistencies with 9.1 Ministerial Directions 9.1 Rural Zones and 9.2 Rural Lands. Post-Gateway consultation with Department of Primary Industries required.	Reference to consistency with rural zone objectives has been removed and additional justification with regards to inconsistencies with Ministerial Direction 9.2 Rural Lands has been provided. It is noted that the Planning Proposal is not inconsistent with Ministerial Direction 9.1 as it is not proposing to rezone rural zoned land.

9. Coastal Management & Flooding • Part of site is mapped as a Coastal Environmental Area and in a proximity area for a coastal wetland under SEPP (Resilience and Hazards) 2021. • The site is not identified as being flood prone but should address Ministerial direction 4.1 Flooding, including consideration of the PMF level and any potential affection on the site.	Address SEPP (Resilience and Hazards) and Ministerial direction 4.1 in planning proposal. Post-Gateway consultation with Biodiversity Conservation Division required.	A Stormwater Strategy has been undertaken by ADW Johnson which addresses stormwater management and flooding. Full details in this regard are provided within **Attachment 9**. This is also addressed under SEPP (Resilience and Hazards) 2021 under PART 3 Section B within Table 2 and Ministerial Direction 4.1.
10. Drinking Water Catchment • The site adjoins land identified as a drinking water catchment to the south of Nelson Bay Road	Post-Gateway consultation with Hunter Water required	A Stormwater Strategy has been undertaken by ADW Johnson which addresses stormwater management and concludes the future development will have no impact on the drinking water catchment. Full details in this regard are provided within **Attachment 9**. This is also addressed under Section C, Q9.
11. Stormwater Management and Water Quality • In association with items 9 and 10 above, provide a preliminary stormwater management report demonstrating how stormwater would be appropriately managed accordance with Council's requirements • Assess water quality and hydrology impacts of the development, including any downstream impacts for both surface and groundwater and any impacts on natural processes and functions.	Preliminary stormwater management and water quality report required	A Stormwater Strategy has been undertaken by ADW Johnson which addresses stormwater management and concludes that the future development is capable of achieving Council's requirements with regards to downstream impacts for both surface and groundwater and any impacts on natural processes and functions. Full details in this regard are provided within **Attachment 9**. This is also addressed under Section C, Q9.
12. Acid Sulfate Soils • Consider the *Acid Sulfate Soils Planning Guidelines* and an acid sulfate soils study	Acid sulfate soils study must be provided assessing the appropriateness of the change of land use given the presence of acid sulfate soils	A Preliminary Acid Sulfate Soil Assessment has been undertaken by Qualtest which concludes that ASS is unlikely to be present. Full details in this regard are provided within **Attachment 10**. This is also addressed under SEPP (Resilience and Hazards) 2021under PART 3 Section B within Table 3 and Section C, Q9.
13. General	Update proposed LEP maps with revised zone boundaries in line with Preliminary Flora and Fauna Assessment Addendum	Refer to Figure 12.

Attachment 13 – Hunter Regional Plan 2041 Compliance Table

HUNTER REGIONAL PLAN 2041	
OBJECTIVE 1: DIVERSIFY THE HUNTER'S MINING, ENERGY AND INDUSTRIAL CAPACITY	
Alternative land uses for former mine and power station sites	
 Planning proposals ***Strategy 1.1*** *Planning proposals for mine or power station sites identified as regionally significant growth areas will be supported by a place strategy which demonstrates how the proposal will:* • *maximise employment generation or will attract visitors to the region* • *make use of voids and/or site infrastructure such as rail loops, hard stand areas, power, water and road access* • *support the growth of adjoining industrial areas or settlement areas* • *enhance corridors within the landscape such as biodiversity corridors or disused infrastructure corridors* • *complement areas with special amenity value such as critical industry clusters, open space, villages and residential areas* • *have considered the existing and likely future uses of adjoining land and avoid land use conflict* • *align with any specific guidance in the district planning priorities section of this plan.*	N/A – The planning proposal is not over a mine or power station sites identified as a regionally significant growth area.
 Planning proposals ***Strategy 1.4*** *Planning proposals for new employment lands will demonstrate they:* • *are located in areas which will not result in land use conflict* • *can be adequately serviced and any biodiversity impacts are manageable* • *respond to the employment land needs identified for that local government area.*	N/A - The planning proposal does not include new employment land.

OBJECTIVE 3: CREATE A 15 MINUTE REGION MADE UP OF MIXED, MULTI-MODAL, INCLUSIVE AND VIBRANT LOCAL COMMUNITIES	
Green Infrastructure for a 15-Minute Neighbourhood	
 Planning proposals ***Strategy 3.1*** *Planning proposals that propose a residential, local centre or commercial centre zone will not prohibit the following land uses within urban core, general urban, inner suburban and general suburban contexts:* • *business premises* • *restaurants or cafes* • *take-away food and drink premises* • *neighbourhood shops and supermarkets* • *educational establishments* • *early education and care facilities* • *health services facilities* • *markets* • *community facilities* • *recreation areas*	N/A – The planning proposal does not include residential, local centre or commercial centre zones.
 Planning proposals ***Strategy 3.2*** *Planning proposals will incorporate:* • *a small neighbourhood centre if the proposed residential yield exceeds 1,500 dwellings or* • *a large neighbourhood centre if the proposed residential yield exceeds 4,000 dwellings.* *The neighbourhood centre will:* • *support a floor area informed by a local retail demand analysis* • *have enough developable area to accommodate the uses over one level with at grade parking to reduce costs* • *be located to maximise its convenience for the vast majority of residents of which it serves* • *be located in a high profile location (i.e. main arterial road or precinct with strong pedestrian traffic)* • *be supported by a walkable catchment and pedestrian friendly environment.*	N/A – The planning proposal is not of a size to warrant the provision of a neighbourhood centre.

OBJECTIVE 4: AN INTER-CONNECTED AND GLOBALLY-FOCUSED HUNTER WITHOUT CAR DEPENDENT COMMUNITIES		
Global Gateways and National Security		
 Planning proposals ***Strategy 4.10*** *Planning proposals will:* • *align with the growth of defence, aeronautics, aerospace, freight and logistics capacity at Williamtown and the Port of Newcastle, taking into consideration the Port of Newcastle Port Master Plan 2040;* • *maximise opportunities to increase capacity to manage freight through the ports/airports and provide access to new markets; and* • *protect ports and airports via assessment of the impacts of development on the port/airport to avoid land limiting their future growth.*	The subject site is approximately 18 kilometres east of the Williamtown airport and as such will not limit the future growth of this asset.	**No risk: Consistent with strategies** 
 Planning proposals ***Strategy 4.11*** *Planning proposals must not undermine the long-term capacity of inter-regional connections to meet future freight and logistics movements.*	The proposal will not undermine the long-term capacity of inter-regional connections.	**No risk: Consistent with strategies** 
 Planning proposals ***Strategy 4.13*** *Planning proposals will not allow incompatible land uses that could affect the long-term growth of defence-related assets, key strategic links and training areas.*	The subject site is approximately 18 kilometres east of the Williamtown airport and as such will not limit the future growth of defence-related assets.	**No risk: Consistent with strategies** 

OBJECTIVE 5: PLAN FOR 'NIMBLE NEIGHBOURHOODS', DIVERSE HOUSING AND SEQUENCED DEVELOPMENT		
Housing Supply		
Low to Mid Rise Housing Diversity		
 Planning proposals ***Strategy 5.3*** *Planning proposals will not prohibit the following housing typologies within residential zones that apply to urban core, general urban, inner suburban and general suburban contexts:* • *attached dwellings* • *boarding houses* • *dual occupancies* • *group homes* • *multi dwelling housing* • *secondary dwellings* • *semi-detached dwellings.*	N/A – The planning proposal does not include residential zones.	
OBJECTIVE 6: CONSERVE HERITAGE, LANDSCAPES, ENVIRONMENTALLY SENSITIVE AREAS, WATERWAYS AND DRINKING WATER CATCHMENTS		
Biodiversity Corridors		
 Planning proposals ***Strategy 6.3*** *Planning proposals will ensure the biodiversity network is protected within an appropriate conservation zone unless an alternate zone is justified following application of the avoid, minimise, offset hierarchy.*	Whilst the subject site is not located within any biodiversity corridors, it nonetheless retains a vegetation connection to provide a north/south corridor through the site which corresponds to a fauna crossing along Nelson Bay Road and Trotter Road. This land will be allocated a C2 Environmental Conservation Zone.	**No risk: Consistent with strategies** 

Planning proposals ***Strategy 6.4*** *Planning proposals should promote enterprises, housing and other uses that complement the biodiversity, scenic and water quality outcomes of biodiversity corridors. Particularly, where they can help safeguard and care for natural areas on privately owned land.*	The planning proposal will retain a vegetation connection to provide a north/south corridor through the site which corresponds to a fauna crossing along Nelson Bay Road and Trotter Road.	**No risk: Consistent with strategies** 
The Blue Grid		
Planning proposals ***Strategy 6.11*** *Planning proposals will demonstrate that development within a drinking water catchment or sensitive receiving water catchment will achieve a neutral or beneficial effect on water quality.*	A stormwater strategy has been prepared which concludes that future development stemming from the planning proposal will not adversely impact the hydrological integrity of coastal wetlands or the quality of drinking water catchments.	**No risk: Consistent with strategies** 
OBJECTIVE 7: REACH NET ZERO AND INCREASE RESILIENCE AND SUSTAINABLE INFRASTRUCTURE		
Air Quality		
Planning proposals ***Strategy 7.5*** *Planning proposals will protect sensitive land uses from sources of air pollution, such as major roads, railway lines and designated freight routes, using appropriate planning and development controls and design solutions to prevent and mitigate exposure and detrimental impacts on human health and wellbeing.*	N/A – The planning proposal does not propose a use which would have an impact on air quality, nor are there any surrounding land uses which would impact upon the planning proposal.	

Resilience and Climate Change	
OBJECTIVE 8: PLAN FOR BUSINESSES AND SERVICES AT THE HEART OF HEALTHY, PROSPEROUS AND INNOVATIVE COMMUNITIES	
Centres and Main Streets	
 Planning proposals ***Strategy 8.2*** *Planning proposals will accommodate new commercial activity in existing centres and main streets unless it forms part of a proposed new community or is an activity that supports a 15-minute neighbhourhood.*	N/A – The planning proposal does not propose any centres/main streets.
Night-Time Economy	
 Planning proposals ***Strategy 8.6*** *Planning proposals to facilitate tourism activities will:* • *demonstrate that the scale and type of tourism land use proposed can be supported by the transport network and complements the landscape setting* • *be compatible with the characteristics of the site and existing and likely future land uses in the vicinity of the site* • *demonstrate that the tourism land use would support the function of nearby tourism gateways or nodes* • *be supported by an assessment prepared in accordance with the Department of Primary Industries' Land Use Conflict Risk Assessment Guide if the use is proposed on or in the vicinity of rural zoned lands.*	N/A – The planning proposal does not propose any tourism activities.
OBJECTIVE 9: SUSTAIN AND BALANCE PRODUCTIVE RURAL LANDSCAPES	
Resources	
 Planning proposals ***Strategy 9.1*** *Planning proposals will consider the location of mineral and energy resources, mines and quarries and ensure sensitive land uses would not encroach on those*	N/A – The planning proposal is not located within proximity to any mineral and energy resources, mines and quarries.

operations. A noise study may be required to demonstrate impacts on the operations can be avoided or mitigated.	
Rural Towns and Villages	
 Planning proposals ***Strategy 9.6*** *Planning proposals to expand rural town and village growth boundaries will be supported by an assessment prepared in accordance with the Department of Primary Industries' Land Use Conflict Risk Assessment Guide to limit or avoid conflicts between residential uses and agricultural activities.*	N/A – The planning proposal does not propose to expand a rural town or village.
Equine and Viticulture	
 Planning proposals ***Strategy 9.4*** *Planning proposals for lands within or near critical industry cluster land will demonstrate they are compatible with equine and viticultural activities and:* • *complements scenic values, visual amenity and local character* • *provides suitable separation distances for sensitive uses, like tourist accommodation, having regard to spray, noise, and lighting considerations* • *considers existing and likely future agricultural and rural uses of adjoining lands and the cumulative impact of similar proposals on the locality.*	N/A – The planning proposal is not within or near critical industry cluster land.