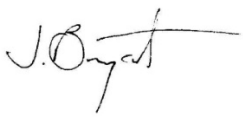
REVIEW OF ENVIRONMENTAL FACTORS (REF)
ROAD SAFETY AND PEDESTRIAN ACCESS IMPROVEMENTS
INTERSECTION OF JACOBS DRIVE AND SUSSEX INLET ROAD
SUSSEX INLET

Contents

Document control

Item	Details
Project	Road safety and pedestrian access improvements – intersection of Sussex Inlet Road and Jacobs Drive, Sussex Inlet
Client/Proponent	City Services, Shoalhaven City Council
Prepared By	City Services, Shoalhaven City Council

Document status

Version	Author / Reviewer*	Name	Signed	Date
V1.0	Author	Geoff Young		21/6/2022
	Reviewer	Jeff Bryant		29/06/2022

*Review and endorsement statement:

“I certify that I have reviewed and endorsed the contents of this REF document and, to the best of my knowledge, it is in accordance with the EP&A Act, the EP&A Regulation and the Guidelines approved under clause 170 of the EP&A Regulation, and the information it contains is neither false nor misleading”.

Assessment and approvals overview

Item	Details
Assessment type	Division 5.1 (EP&A Act) - Review of Environmental Factors (REF)
Proponent	Shoalhaven City Council
Determining authority / authorities	Shoalhaven City Council
Required approvals (consents, licences and permits)	Nil
Required publication	Yes

1. PROPOSAL AND LOCATION

1.1 Overview

The proposed activity is to improve road safety, and public transport and pedestrian access at the Sussex Inlet Road and Jacobs Drive intersection, Sussex Inlet. The aim of the project is to improve footpath connectivity, accessibility requirements and public transport infrastructure and will include:

- construction of concrete footpaths, kerb ramps and associated batters
- kerb and gutter construction
- installation of pedestrian traffic island
- reconstruction of some existing pavement
- modification to the existing stormwater system
- construction of pavement for bus layovers / bus stops
- installation of bus shelter
- construction of two vehicle crossings from the road to private property.

Refer to Figure 2 below and Appendix A for design plans.

Works would also involve the implementation of prescribed safeguards and mitigation measures (refer to Section 7).

Shoalhaven City Council (SCC) is the proponent and the determining authority under Part 5 of the EP&A Act. The environmental assessment of the proposed activity and associated environmental impacts has been undertaken in the context of Clause 171 of the *Environmental Planning and Assessment Regulation 2021*. In doing so, this Review of Environmental Factors (REF) helps to fulfil the requirements of Section 5.5 of the Act that SCC examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

1.2 Background, need, and alternatives

The revitalisation of the intersection is required for both vehicular and pedestrian safety; particularly embarking and disembarking from the existing unformed and narrow bus layovers. The design by CHRISP Consulting (Appendix A) has limited impacts to utilities, public lands, and native vegetation. No suitable alternatives to the proposal have been identified.

1.3 Location

The proposed activity would be undertaken predominantly within the Sussex Inlet and Jacobs Drive road reserves (Figure 1 and Figure 2 below). A small area of earthen batter south of the proposed bus shelter will extend onto Lot 145 DP 1190108 which is owned by SCC in freehold title. It is uncategorised Community Land without an adopted Plan of Management.

Figure 1 Site location

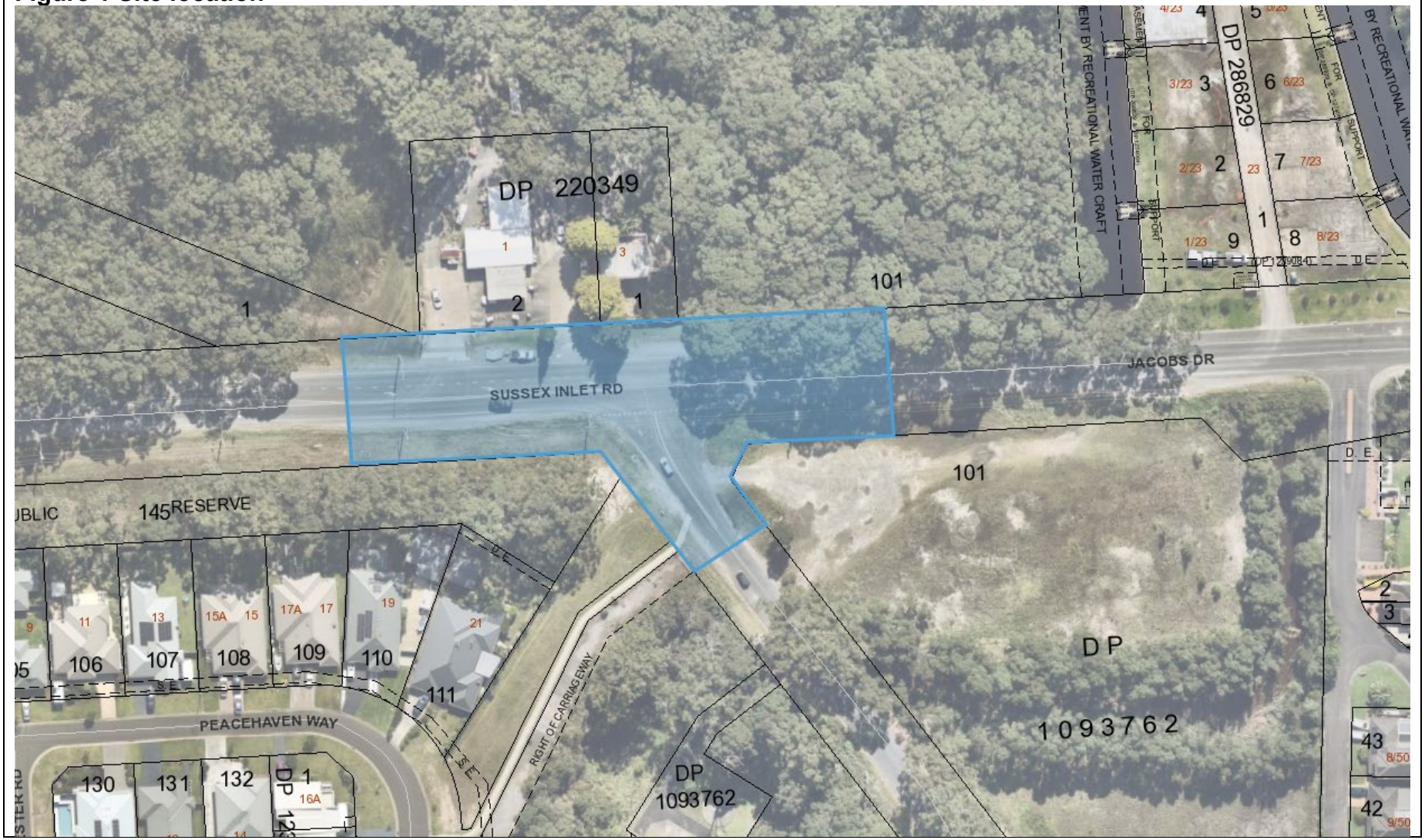
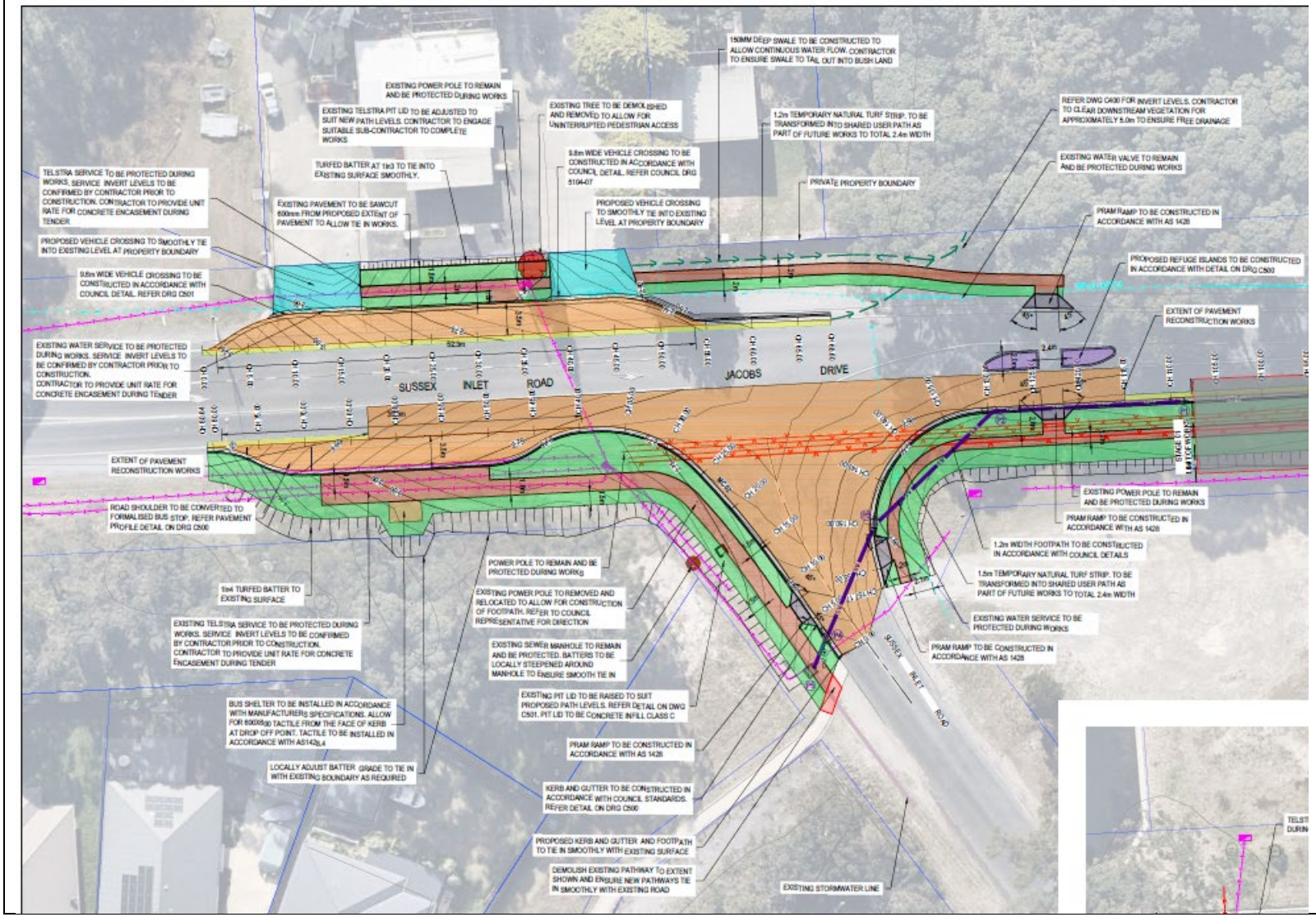


Figure 2 Site Works Plan



2. EXISTING ENVIRONMENT

Photos of the site are provided below.

The site of the proposed activity is public road and roadside. The roadside is highly disturbed and, except for native bushland to the northeast of the intersection, contains predominantly exotic grasses, herbs and forbs.

The bushland to the northeast of the intersection is Open Forest dominated by Bangalay *Eucalyptus botryoides* and Blackbutt *E.pilularis.* This vegetation extends slightly into the road and within a small area (~70m^2) of the proposed activity. In this area, vegetation that would be impacted include up to six Blackbutt saplings, Black Sheoak *Allocasuarina littoralis,* Sydney Golden Wattle *Acacia longifolia,* Sunshine Wattle *A. terminalis,* Prickly Moses *A.ulicifolia,* Sweet Pittosporum *Pittosporum undulatum,* Bracken *Pteridium esculentum,* Blady Grass *Imperata cylindrica,* and Spiny-head Mat-rush *Lomandra longifolia.* Although the vegetation composition is similar to the endangered ecological community (EEC) *Bangalay Sand Forest of the Sydney Basin and South East Corner Bioregions,* the vegetation on the site does not occur on sand and therefore does not comprise the EEC.

No threatened flora nor suitable habitat for locally occurring threatened orchid species was identified on site during site environmental examinations.

No Glossy Black Cockatoo (*Calyptorhynchus lathami*) feed trees (e.g. *Allocasuarina littoralis* with characteristic chewed cones), nor Yellow-bellied Glider (*Petaurus australis*) feed trees (e.g. e.g. *Corymbia gummifera* or *Eucalyptus punctata* with v-shaped feeding scars) occur within or in close proximity to the site. No signs of potential threatened fauna use of the site (e.g. bandicoot diggings, owl white-wash or other threatened fauna scats) were noted.

There are no hollow-bearing trees in the area that would be affected by the proposed activity.

Of relevance to the activity:

- the site is mapped as flood prone
- the site is mapped as Class 2 on the Acid Sulfate Soils Map of the Shoalhaven Local Environmental Plan 2014.

These factors are addressed in Section 3 of this REF.

Photo 1: Blackbutt – Bangalay Open Forest to the northeast of the intersection – a small area adjacent to the road would be impacted

Photo 2: The intersection looking east with the proposed bus layover in the foreground

Photo 3: North of the intersection where bus layover, concrete paths and new vehicle crossing would be constructed

Photo 4: The intersection looking west

3. ASSESSMENT OF LIKELY IMPACTS ON THE ENVIRONMENT

3.1 Impacts associated with the proposal

Direct and indirect impacts on vegetation and other habitat as a result of the proposal

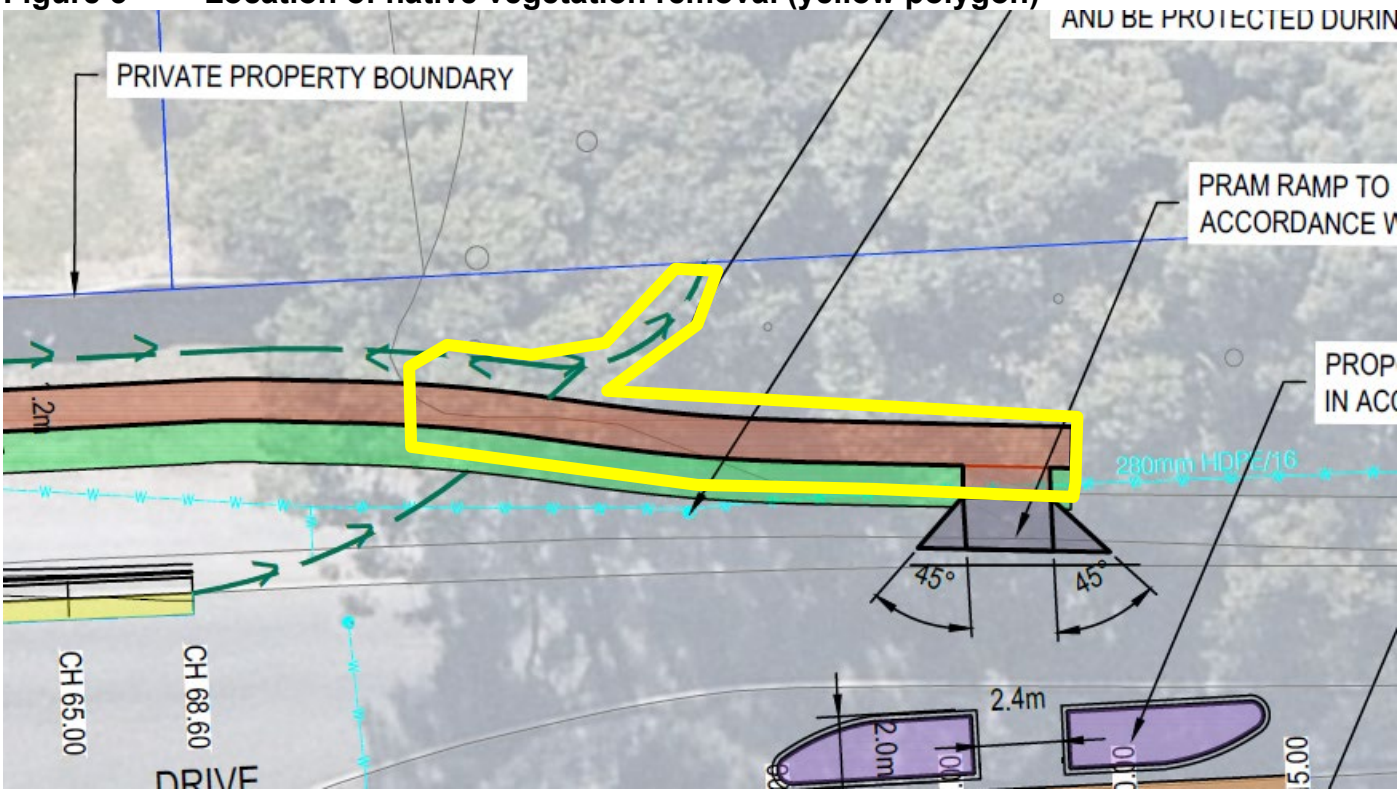
Approximately 70m^2 of native vegetation to the northeast of the intersection would be removed for the path and associated batter and drainage swale (Figure 3 below). Photos of this vegetation is provided in Section 2 and comprises open forest dominated by Bangalay *Eucalyptus botryoides* and Blackbutt *E.pilularis.* In this area, vegetation that would be impacted include up to six Blackbutt saplings, Black Sheoak *Allocasuarina littoralis,* Sydney Golden Wattle *Acacia longifolia,* Sunshine Wattle *A. terminalis,* Prickly Moses *A.ulicifolia,* Sweet Pittosporum *Pittosporum undulatum,* Bracken *Pteridium esculentum,* Blady Grass *Imperata cylindrica,* and Spiny-head Mat-rush *Lomandra longifolia.* Although the vegetation composition is similar to the endangered ecological community (EEC) *Bangalay Sand Forest of the Sydney Basin and South East Corner Bioregions,* the vegetation on the site does not occur on sand and therefore dose not comprise the EEC.

No threatened flora nor suitable habitat for locally occurring threatened orchid species was identified on site during vegetation surveys.

No Glossy Black Cockatoo (*Calyptorhynchus lathami*) feed trees (e.g. *Allocasuarina littoralis* with characteristic chewed cones), nor Yellow-bellied Glider (*Petaurus australis*) feed trees (e.g. e.g. *Corymbia gummifera* or *Eucalyptus punctata* with v-shaped feeding scars) occur within or in close proximity to the site. No signs of potential threatened fauna use of the site (e.g. bandicoot diggings, owl white-wash or other threatened fauna scats) were noted.

No hollow-bearing trees or other important habitat features shall be removed.

Figure 3 Location of native vegetation removal (yellow polygon)



3.2 Threatened species impact assessment (NSW)

Section 1.7 of the EP&A Act 1979 applies the provisions of Part 7 of the NSW *Biodiversity Conservation Act 2016* and Part 7A of the *NSW Fisheries Management Act 1994* that relate to the operation of the Act in connection with the terrestrial and aquatic environment. Each are addressed below.

3.2.1 Part 7A *Fisheries Management Act 1994*

Part 7A relates to threatened species conservation. Section 220ZZ provides a "7-Part test of significance" to determine whether a proposed action is likely to significantly affect threatened species, populations or ecological communities and thereby require a species impact statement (SIS). As the proposed activity does not affect waterways and waterland, consideration and assessment under this Part is not necessary.

3.2.2 Part 7 *Biodiversity Conservation Act 2016*

An assessment of the potential for NSW threatened flora and fauna species occurring on-site or otherwise being impacted by the proposal was undertaken (refer to Appendix B). No species were assessed to be likely to occur at the site. There is a possibility that some wide-ranging and mobile threatened species may occasionally be present *e.g.* microchiropteran bats, Grey-headed Flying-fox *Pteropus poliocephalus,* Powerful Owl *Ninox strenua*, and Little Lorikeet *Glossopsitta pusilla.* The proposed activity, however, would have no effect on these species (refer to Appendix B). Further assessment is not necessary.

3.3 Indigenous heritage

Under Section 86 of the NSW *National Parks and Wildlife Act 1974* (NPW Act) it is an offence to disturb, damage, or destroy any Aboriginal object without an Aboriginal Heritage Impact Permit (AHIP). The Act, however, provides that if a person who exercises 'due diligence' in determining that their actions will not harm Aboriginal objects has a defence against prosecution if they later unknowingly harm an object without an AHIP (Section 87(2) of the Act). To effect this, the NSW Department of Environment, Climate Change and Water have prepared the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wale*s (hereafter referred to as the 'Due Diligence Guidelines') to assist individuals and organisations to exercise due diligence when carrying out activities that may harm Aboriginal objects and to determine whether they should apply for an AHIP.

An on-site search of the proposed work conducted on the 4 June 2022 site did not locate any aboriginal objects.

A search on the Aboriginal Heritage Information Management System (AHIMS) on 14 June 2022 indicated that there are no recorded Aboriginal sites or places in the vicinity of the proposal (refer to AHIMS report below in Figure 4 below).

The Due Diligence Guidelines (DECC 2006) define disturbed land as follows:

> *"Land is disturbed if it has been the subject of a human activity that has changed the land's surface, being changes that remain clear and observable. Examples include ploughing, construction of rural infrastructure (such as dams and fences), construction of roads, trails and tracks (including fire trails and tracks and walking tracks), clearing vegetation, construction of buildings and the erection of other structures, construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, stormwater drainage and other similar infrastructure) and construction of earthworks."*

The site of the proposed works is within a disturbed and modified road reserve which has been subject to clearing, excavation and filling, construction and maintenance of the roads, as well as underground and aboveground services and utilities. As such, it is reasonable to conclude that there is a low probability of objects occurring in area.

As the proposal would occur on disturbed land and would not impact any recorded Aboriginal sites or places, the Due Diligence Guidelines requires no further assessment. An AHIP is not required and the activity can proceed with caution.

Figure 4 Results of AHIMS Aboriginal heritage search

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : sussex and Jacob
Client Service ID : 691845

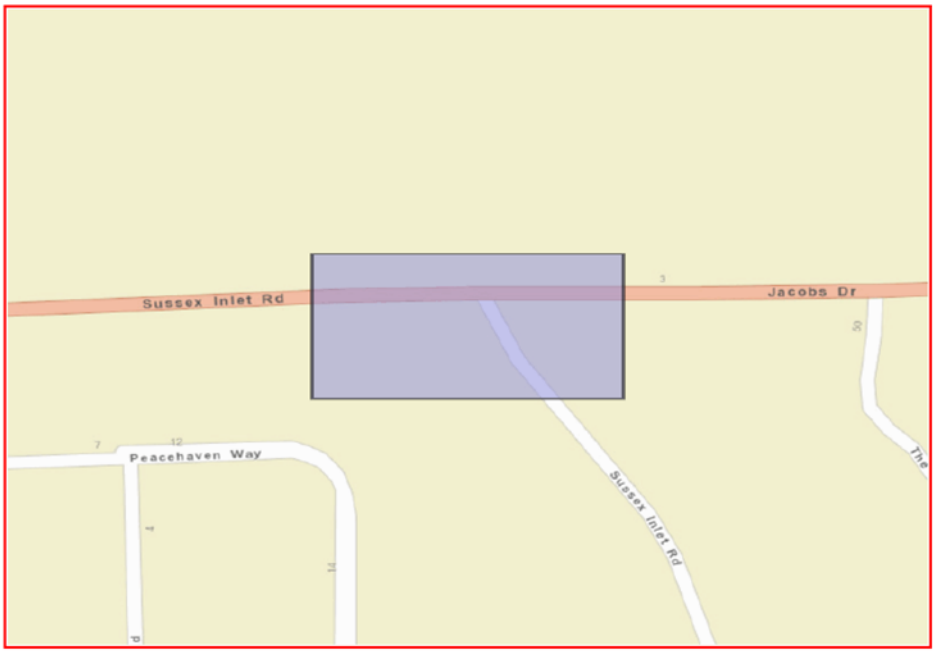
Shoalhaven City Council - Nowra
PO Box 42 Bridge Rd
Nowra New South Wales 2541
Attention: Geoffrey Young
Email: geoff.young@shoalhaven.nsw.gov.au

Date: 14 June 2022

Dear Sir or Madam:

AHIMS Web Service search for the following area at Datum :GDA, Zone : 56, Eastings : 279900.0 - 280031.0, Northings : 6106648.0 - 6106717.0 with a Buffer of 0 meters, conducted by Geoffrey Young on 14 June 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. *

3.4 Non-indigenous heritage

No items of local heritage significance or any items on the State Heritage Register or listed in the Shoalhaven Local Environmental Plan occur in close proximity to the site such that the proposed works might impact them.

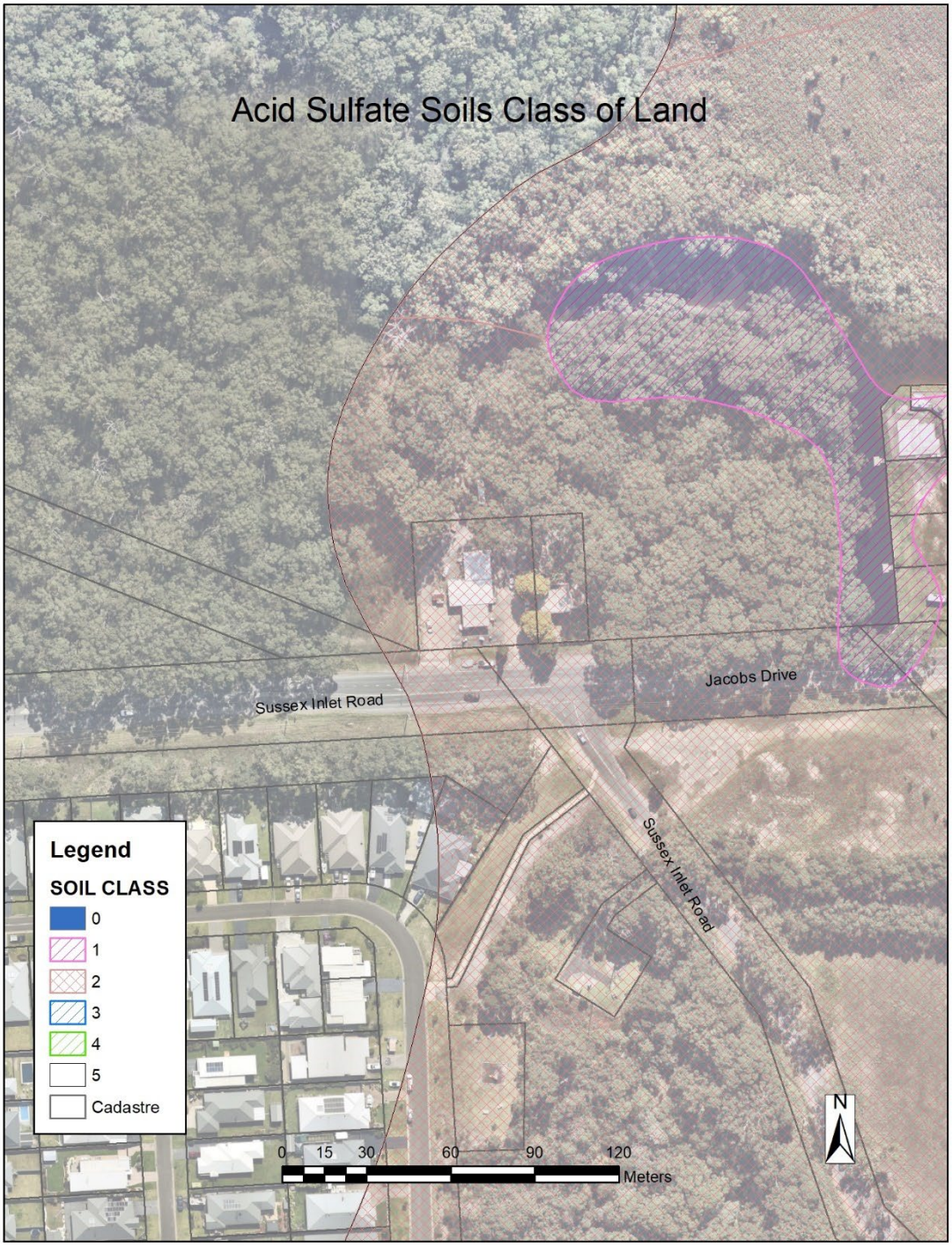
3.5 Acid Sulfate Soils

The site and surrounding land is mapped as Class 2 Acid Sulfate Soils (Figure 5 below).

In a class 2 area, acid sulfate soils are likely to be found below the natural ground surface. As it is likely that excavation of natural ground would occur, an acid sulfate soils (ASS) assessment and

management plan shall be prepared and implemented. The ASS assessment and management plan shall be prepared in accordance with the Acid Sulfate Soils Manual (ASSMAC 1998).

Figure 5 Acid Sulfate Soils Map

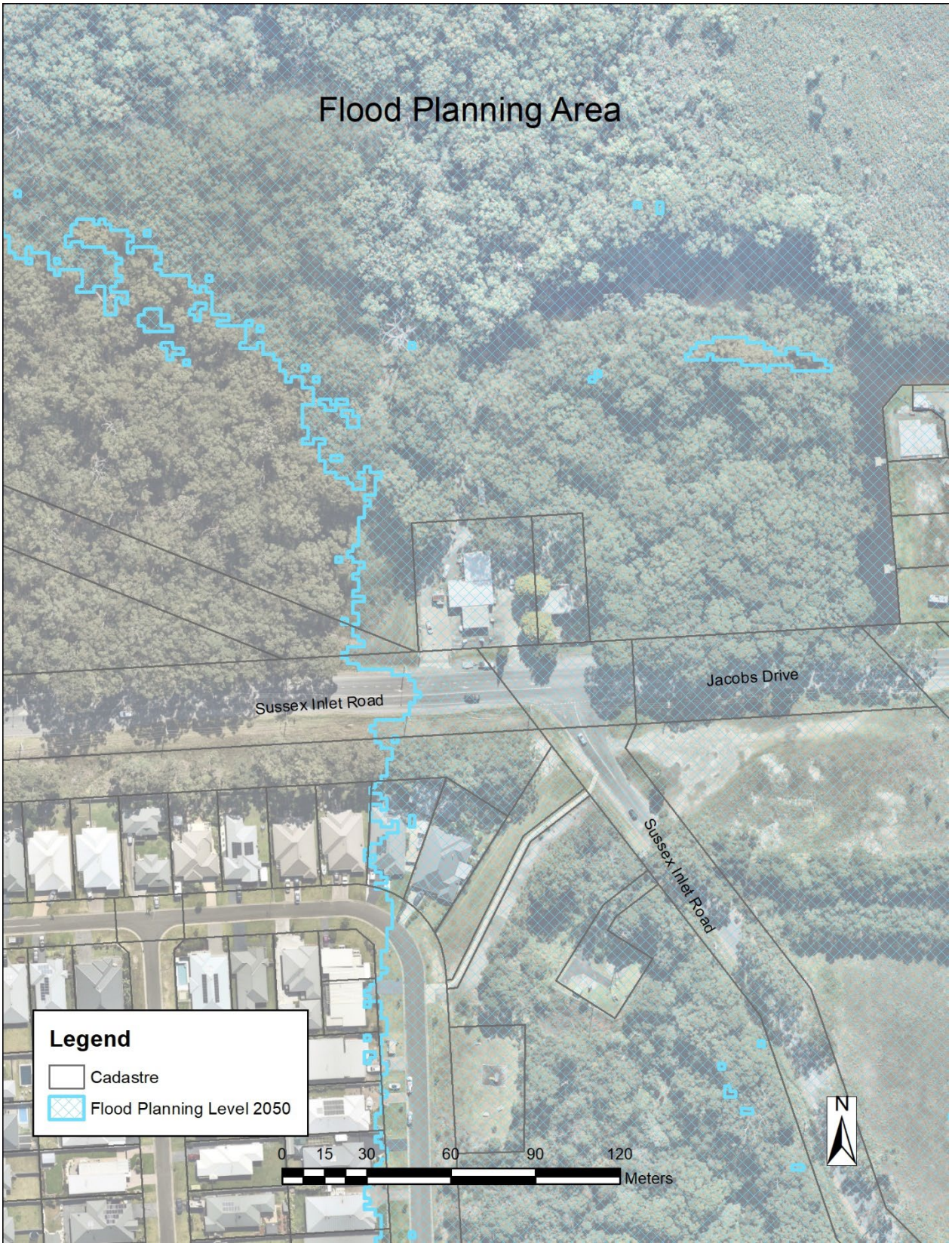


3.6 Flooding

The site of the proposed activity is on the edge of the flood planning area as mapped by Shoalhaven City Council (Figure 6 below). The proposed activity however is unlikely to change flood patterns other than to a minor and localised extent. The road and paths and pedestrian

islands are only going to be elevated a minor and insignificant extent. No further consideration is necessary.

Figure 6 Flood Prone Area



3.7 EP&A Regulation – Clause 171 matters of consideration

Clause 171(2) of the *Environmental Planning and Assessment Regulation 2021* lists the factors to be taken into account when consideration is being given to the likely impact of an activity on the environment under Part 5 of the EP&A Act. The following assessment in Table 1 below deals with each of the factors in relation to the proposed activity.

Table 1: Clause 171(2) Factors For Consideration

Does the proposal:	Assessment	Reason
a) Have any environmental impact on a community?	Positive	The purpose of the proposed activity is to improved traffic and pedestrian safety particularly that associated with the use of public (bus) transport. The proposed activity would not have any impact on other community services and infrastructure such as power, waste water, waste management, educational, medical or social services.
b) Cause any transformation of a locality?	Negligible	The locality would remain a road intersection, road verge and associated structures.
c) Have any environmental impact on the ecosystem of the locality?	Low adverse	An assessment provided in Appendix B concludes that the proposed activity would not have a significant impact upon threatened species or endangered ecological communities. No significant habitat features would be removed or otherwise impacted. No food resources critical to the survival of a particular species would be removed. Aquatic ecosystems are not likely to be affected by the proposed activity and there is not likely to be any long-term or long-lasting impact through the input of sediment and nutrient into the ecosystem. Environmental safeguards and mitigation measures (Section 7) would be employed to minimise risk of impacts.
d) Cause a diminution of the aesthetic, recreational, scientific or other environmental quality or value of a locality?	Low adverse	In the context of the locality, the visual impact of the activity would be minimal. Removal of vegetation and habitat will be minimal, occurring on existing edges and not resulting in significant fragmentation of habitat. The area that would be affected by the proposed activity has no significant value in terms of science or other environmental qualities. The proposed activity would have no impact on these values.
e) Have any effect on a locality, place	Negligible	The site of the proposed activity has no significant aesthetic, architectural, cultural, historical, scientific or

Does the proposal:	Assessment	Reason
or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific, or social significance or other special value for present or future generations?		social values. As such, the proposed activity would have no impact on these items. No items in the vicinity of the work site which are listed on the State Heritage Register and the Shoalhaven Local Environmental Plan would be impacted by the proposal. The site is not within an Aboriginal Place declared under the *National Parks and Wildlife Act 1974.* In accordance with the NSW Department of Environment, Climate Change and Water's Due Diligence Code of Practice, the proposed activity does not require an Aboriginal Heritage Impact Permit as the activity is unlikely to harm an Aboriginal artefact (refer to Section 3.4).
f) Have any impact on the habitat of protected fauna (within the meaning of the Biodiversity Conservation Act 2016)?	Low adverse	A small area of marginal fauna habitat will be removed by the activity. No important habitat will be removed or otherwise impacted. The potential impact is therefore considered to be insignificant or inconsequential. The proposed activity would not have a significant impact upon threatened fauna (refer to Section 3.2 of this REF). The specified environmental mitigation measures (Section 7) would mitigate indirect impacts to fauna and habitat.
g) Cause any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?	Negligible	There are no species likely to rely on the site of the proposed works to the extent that modification would put them further in danger.
h) Have any long-term effects on the environment?	Negligible	Works would be relatively short term and the noise generated will occur during normal working hours. There are no sensitive receivers in the vicinity of the proposed works. The proposed activity would not use hazardous substances or use or generate chemicals which may build up residues in the environment. The possible impacts have been discussed in detail under Section 3. Refer also to the conclusions and recommendations in Section 7.
i) Cause any degradation of the quality of the environment?	Low-adverse	Aquatic ecosystems are not likely to be affected by the proposed activity and there is not likely to be any long-term or long-lasting impact through the input of sediment and nutrient into the ecosystem.

Does the proposal:	Assessment	Reason
		The proposal would not intentionally introduce noxious weeds, vermin, or feral animals into the area or contaminate the soil. Environmental safeguards and mitigation measures (Section 7) would be employed to minimise risk of impacts.
j) Cause any risk to the safety of the environment?	Negligible	The proposed activity would not involve hazardous wastes and would not lead to increased bushfire or landslip risks. The activity is not going to adversely affect flood or tidal regimes, or exacerbate flooding risks. The activity is not anticipated to adversely affect flood behaviour or exacerbate flooding risks.
k) Cause any reduction in the range of beneficial uses of the environment?	Positive	The site and local environment will remain relatively unchanged. The site use as a road and intersection would be improved.
l) Cause any pollution of the environment?	Low adverse	The proposal would involve a temporary and local increase in noise during the construction phase due to the use of machinery. However this will not affect any sensitive receivers such as residential areas, schools, childcare centres and hospitals. Sediment and erosion control in accordance with the Blue Book will be implemented to minimise movement of sediment into the creek from the embankments. It is unlikely that the activity (including the environmental impact mitigation measures) would result in water or air pollution, spillages, dust, odours, vibration or radiation. The proposal does not involve the use, storage or transportation of hazardous substances or the generation of chemicals which may build up residues in the environment. An acid sulfate soil assessment and management plan shall be prepared and implemented for excavation works below natural ground.
m) Have any environmental problems associated with the disposal of waste?	Negligible	The waste that would be disposed off-site can be recycled or re-used in accordance with resource recovery exemptions or taken to a licensed waste facility. An acid sulfate soils would be treated and disposed of in accordance with the acid sulfate soil management plan. There would be no trackable waste, hazardous waste, liquid waste, or restricted solid waste as described in the NSW *Protection of the Environment Operations Act 1997*.

Does the proposal:	Assessment	Reason
n) Cause any increased demands on resources (natural or otherwise) which are, or are likely to become, in short supply?	Negligible	The amount of resources that would be used are not considered significant and would not increase demands on current resources such that they would become in short supply.
o) Have any cumulative environmental effect with other existing or likely future activities?	Negligible	The assessed low adverse or negligible impacts of the proposal are not likely to interact. Mitigation measures (Section 7) shall be implemented to minimise the risk of cumulative environmental effects. The current proposal would not significantly affect habitat connectivity or reduce any significant vegetation.
p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions	Negligible	The proposed activity would have no effect on coastal processes including those projected under climate change conditions.
q) applicable local strategic planning statements, regional strategic plans or district plans made under the Act, Division 3.1	Positive	The proposed activity meets Planning Priority 2 (Delivering Infrastructure) of the *Shoalhaven 2040* Strategic Land-use Planning Statement particularly "*CW2.3 delivery and maintenance of a safe and efficient road and active transport network*" https://doc.shoalhaven.nsw.gov.au/displaydoc.aspx?record=D20/437277 The proposed activity is not inconsistent with the Illawarra Shoalhaven Regional Plan 2041 https://www.planning.nsw.gov.au/-/media/Files/DPE/Plans-and-policies/Plans-for-your-area/Regional-plans/Illawarra-Shoalhaven-Regional-Plan-05-21.pdf
r) other relevant environmental factors	n/a	Environmental factors have been addressed in Section 3 of this REF.

4. PERMISSIBILITY

4.1 Environmental Planning & Assessment Act 1979

Section 4.1 (Development that does not need consent) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) states that:

> *"If an environmental planning instrument provides that specified development may be carried out without the need for development consent, a person may carry the development out, in accordance with the instrument, on land to which the provision applies."*

In this regard, Section 2.108(1) of the NSW *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Infrastructure SEPP) states "*development for the purpose of a road or road infrastructure facilities may be carried out by or on behalf of a public authority without consent on any land*." Road infrastructure facilities includes "*bus stops and bus shelters*" and "*bus layovers that are integrated or associated with roads*" (refer to Section 2.107 of the SEPP). Clause 2.108 of the Infrastructure SEPP therefore applies, and the proposal does not require development consent.

As the proposal does not require development consent, and as it constitutes an 'activity' for the purposes of Part 5 of the EP&A Act, being carried out by (or on behalf of) a public authority, environmental assessment under Part 5 of the EP&A Act is required. This REF provides this assessment.

4.2 Other

A summary of other relevant legislation and permissibility is provided in Table 2 below.

Table 2: Summary of other relevant legislation and permissibility

NSW STATE LEGISLATION
***Environmental Planning and Assessment Act 1979* (EP&A Act)**
Permissible √ Not permissible ☐
Justification: The Transport and Infrastructure SEPP provides for the proposed works to be undertaken without development consent (refer above). In circumstances where development consent is not required, the environmental assessment provisions outlined in Part 5 of the Act are required to be complied with. This REF fulfils this requirement.
Shoalhaven Local Environmental Plan 2014 (SLEP)
Permissible √ Not permissible ☐
Justification: Under the SLEP the proposed activity may have required development consent. The provisions of SEPP Infrastructure, however, prevail over the SLEP where there is an inconsistency by virtue of Section 3.28 of the EP&A Act. Consequently, development consent is not required.

Protection of the Environment Operations Act 1997
Permissible √ Not permissible ☐
Justification: The proposed activity does not constitute scheduled development work or scheduled activities as listed in Schedule 1 of the Act. The proposed activity therefore does not require an environmental protection licence.
***National Parks and Wildlife Act 1974* (NP&W Act)**
Permissible √ Not permissible ☐
Justification: • The proposed activity would not encroach into National Park estate. • The Act provides the basis for the legal protection and management of Aboriginal sites in NSW. Under Sections 86 and 90 of the Act it is an offence to disturb an Aboriginal object or knowlingly destroy or damage, or cause the destruction or damage to, an Aboriginal object or place, except in accordance with a permit of consent under section 87 and 90 of the Act. • As there are no recorded sites or visible objects and as the site is on 'disturbed land', the Due Diligence Guidelines requires no further assessment as it is reasonable to conclude that there is a low probability of objects occurring in the area of the proposed activity and an AHIP is not required. Refer to Section 3.3 of this REF for more information.
Heritage Act 1977
Permissible √ Not permissible ☐
Justification: • The proposed activity would not disturb an item of state heritage significance. • The Act also provides statutory protection to relics, archaeological deposits, artefacts or deposits. Section 139 to 146 of the Act require that excavation that is likely to contain, or is believed may contain, archaeological relics is undertaken in accordance with an excavation permit issued by the Heritage Council. The Act defines an archaeological relic as "*any deposit, artefact, object or material evidence that:* *a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement; or* b) *is of state and local heritage significance"* As the site has little to no archaeological potential, a permit is not required.
Biodiversity Conservation Act 2016
Permissible √ Not permissible ☐
Justification: • The proposed activity is unlikely to have a significant impact on species and communities listed in the schedules of the Act (refer to Section 3.2 of this REF).

- The proposed development is not within an area declared to be of "outstanding biodiversity value" as defined in the Act.
- The design and mitigation measures (Section 7) would ensure that no *serious and irreversible impacts on biodiversity values* (as defined by the BC Act) occur at the site of the proposed activity.

The proposed activity therefore is not deemed to be *likely to significantly affect threatened species* and an environmental impact statement (EIS) or a Biodiversity Development Assessment Report (BDAR) is not required.

It is also a defence to a prosecution for an offence under Part 2 of the Act (harming animals, picking plants, damaging the habitat of threatened species or ecological communities *etc*) if the work was essential for the carrying out of an activity by a determining authority within the meaning of Part 5 of the Environmental Planning and Assessment Act 1979 after compliance with that Part. The activity will not remove vegetation that is listed under Schedule 1 Threatened Species, Schedule 2 Threatened ecological communities and Schedule 6 Protected Plants. Therefore the activity is considered permissible as this REF has been prepared and determined in accordance with the EP&A Act.

Roads Act 1993

Permissible √ Not permissible ☐

Justification:

- Section 71 provides that a roads authority can carry out road work on any public road for which it is the roads authority. SCC is the roads authority for both Sussex Inlet Road and Jacob Drive.
- Sussex Inlet Road and Jacob Drive are not a "classified roads" to which Section 75 (*Public authorities to notify TfNSW of proposal to carry out road work on classified roads)* applies.
- Section 88 provides that a roads authority can remove or lop any tree or other vegetation that is on or overhanging a public road if, in its opinion, it is necessary to do so for the purpose of carrying out road work or removing a traffic hazard.
- Section 94 allows a roads authoirty to carry out drainage work in or on any land in the vicinity of a road in order to drain or protect that road.

Local Government Act 1993

Permissible √ Not permissible ☐

Justification:

- The proposed activity would be undertaken predominantly within the Sussex Inlet and Jacobs Drive road reserves. A small area of batter south of the proposed bus shelter will extend onto Lot 145 DP 1190108 which is owned by SCC in freehold title. It is community landwithout an adopted Plan of Management. Under Section 44 of the NSW Local Government 1993, pending the adoption of a plan of management, "*the nature and use of the land must not be changed*". As the proposed activity would not change the nature and use of this property, it is considered compliant with the Act.

Water Management Act 2000
Permissible √ Not permissible ☐
Justification: • Local councils are exempt from s.91E(1) of the Act in relation to all controlled activites that they carry out in, on or under waterfront land (by virtue of clause 41 of the *Water Management (General) Regulation 2018).* • The proposal would not interfere with the aquifer and therefore an interference licence is not required (s.91F).
State Environmental Planning Policy (Hazards and Resilience) 2021
Permissible √ Not permissible ☐
Justification: • The site is mapped as Coastal Use Area and Coastal Environment Area for the purpose of the SEPP. The development controls relevant to these mapped areas do not apply to development that can be carried out without consent. • There are no areas mapped by this SEPP as coastal wetlands, littoral rainforest and coastal vulnerability areas in the proposed activity area.
COMMONWEALTH LEGISLATION
Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EP&BC Act)
Permissible √ Not permissible ☐
Justification: The proposed activity would not be undertaken on Commonwealth land and no matters of National Environmental Significance are likely to be significantly impacted by the proposed activity. The proposed activity is therefore not a controlled action and does not require commonwealth referral.
Commonwealth *Native Title Act 1993*
Permissible √ Not permissible ☐
Justification: • Works would occur entirely within a freehold land owned by Shoalhaven City Council and a gazetted road reserve, for which Council is the roads authority and on freehold title land. It is anticipated that Native Title has been extinguished as a Past Act (Section 228 and 229). No procedural rights are applicable.

5. CONSULTATION WITH GOVERNMENT AGENCIES

5.1 Transport and Infrastructure SEPP

Section 2.10 – Consultation with councils - development with impacts on council-related infrastructure or services

No impacts to stormwater management systems, sewerage systems, water infrastructure, public places, nor excavation of footpaths, such as described under Section 2.10 (1) would occur.

The proposal would temporarily impact the form and function of a public road for which Council who is undertaking the works, is also the road authority.

Consultation under Section 2.10 is therefore not required.

Section 2.11 – Consultation with councils - development with impacts on local heritage

No impacts to any local heritage item would occur. Consultation under Section 2.11 is therefore not required.

Section 2.12 – Consultation with councils - development with impacts on flood liable land

The proposed activity would be on flood liable land. The proposed activity however is unlikely to change flood patterns other than to a minor and localised extent. The road and paths and pedestrian islands are only going to be elevated a minor and insignificant extent. Notification to SCC's Flood Engineers is therefore not considered necessary.

Section 2.13 – Consultation with State Emergency Service (SES) - development with impacts on flood liable land

The proposed activity would be on flood liable land. In accordance with Section 2.13, a notice of intention was forwarded to the NSW SES on the 10 August 2022 (D22/335275). A response was received on the 17 August 2022 (D22/352298). The response states:

> *"The NSW State Emergency Service (NSW SES) has received the proposed upgrade using the information provided with the proposal and the flood risk information (e.g. local flood Plan, flood studies etc) available to the NSW SES. Based on this review the proposed works appear to have minimal impact to NSW SES response operations.*
>
> *St Georges Basin Flood Study 2022 indicates that this section of road is prone to flooding below the 1%AEP flood. NSW SES therefore encourages Shoalhaven City Council to:*
>
> - *consider the impact of flooding at the site and on the infrastructure and surrounding community.*
> - *pursue, if relevant, site design that minimises any risk to the community.*
> - *Ensure people using the site are aware of the flood risk during and after the upgrade, for example by using signage.*
>
> *If the construction phase of the upgrades causes disruption to the operation of the road, this may impact the ability for emergency vehicles to use this route. The NSW SES requests that notification be provided where there are likely to be significant delays in the operation of roads affected by the upgrades"*

With regard to the recommendations by SES, SCC will continue to manage the site and community in accordance with the SCC flood risk management program https://www.shoalhaven.nsw.gov.au/For-Residents/Our-Environment/Flooding-Fire/Flood-Risk-in-the-Shoalhaven .

The recommendation relating to notification of significant delays and disruptions is included in the environmental impact measures and safeguards for the project listed in Section 7 of this REF.

Section 2.14 – Consultation with councils - development with impacts on certain land within the coastal zone

The proposal would not occur within a coastal vulnerability area. Consultation is therefore not required.

Section 2.15 – Consultation with public authorities other than councils

In consideration of the other consultation requirements specified under Section 2.15 of the Transport and Infrastructure SEPP, the proposed activity:

- would not be undertaken adjacent to land reserved under the *National Parks and Wildlife Act 1974* or land acquired under that Act
- would not be undertaken on land in Zone E1 National Parks and Nature Reserves on in a equivalent land use zone.
- does not comprise a fixed or floating structure in or over navigable waters
- would not increase the amount of artificial light in the night sky and located on land within the dark sky region as identified on the dark sky region map
- would not be undertaken within Defence communications facility buffer (only relevant to the defence communications facility near Morundah)
- would not be undertaken on land in a mine subsidence district within the meaning of the *Mine Subsidence Compensation Act 1961*

These prescribed consultation requirements therefore do not apply.

Section 2.16 – Consideration of Planning for Bush Fire Protection (PBP)

The proposed activity is not a development prescribed in this section (health services facilities, correctional centres, residential accommodation). Consideration of PBP is therefore not required.

6. COMMUNITY ENGAGEMENT

In accordance with Council's Community Engagement Policy, the proposal constitutes a *Local Area – Low Impact* activity.

The following is recommended:

- The relevant community consultative body to be notified of the proposal and expected timeframes for construction.
- The local bus companies who currently utilise the informal bus layovers shall be engaged to establish alternative drop-off / pick-up locations
- Owners and business managers of the petrol station to the north of the intersection shall be engage to determine methodologies to minimise disruptions to the business.

These engagement recommendations are reflected in the environmental impact mitigation measures and safeguards specified in Section 7 of this REF.

7. ENVIRONMENTAL SAFEGUARDS AND MEASURES TO MINIMISE IMPACTS

Safeguard / Measure	Responsibility
Works planning, approvals, consultation & notification	
1. The Sussex Inlet and Districts Community Forum shall be notified of the activity with plans and anticipated construction period provided.	SCC Project Manager (PM)
2. The owner of the petrol station adjacent to the north of the proposed activity shall be engaged to minimise disruptions to the business.	SCC PM and Construction Contractor
3. Bus companies / services currently utilising the area shall be engaged to determine suitable alternatives for pick-up and drop-offs	SCC PM and Construction Contractor
4. An acid sulfate soil assessment shall be undertaken and where necessary a management plan shall be prepared and implemented for any excavation within natural ground.	SCC PM and Construction Contractor
5. A construction and environmental management plan (CEMP) shall be prepared to ensure compliance with environmental legislation and conditions of this REF. It is also to detail erosion and sediment controls to be installed and maintained.	Construction Contractor
6. A traffic management and control plan shall be prepared for the project. If closures and significant delays are expected the bus companies and emergency services shall be notified (SES, Ambulance, RFS, Fire and Rescue NSW)	SCC PM and Construction Contractor
Site Establishment	
7. The boundary of the adjacent private land on the north-eastern side of the intersection (Lot 101 DP 1239084) shall be clearly demarcated (on-site and on plans) and all contractors and sub-contractors are to be made aware of the limit of works.	SCC PM and Construction Contractor
8. An appropriate traffic management plan shall be developed and implemented to minimise disruption and reduce risk of incident at the site during works.	Project Manager; Site Manager; Construction Contractor
9. Erosion and sediment controls in accordance with the 'Blue Book' (Landcom 2004) shall be installed and maintained to prevent the entry of sediment into waterways i.e. water	Site Manager; Construction Contractor

Safeguard / Measure	Responsibility
diversion, minimising disturbance, erosion control, sediment capture and rapid re-establishment. Erosion and sediment controls shall be maintained in good working order for the duration of the works and subsequently until the site has been stabilised and the risk of erosion is minimal.	
Construction works	
10. If engineering fill originating from waste processing is imported to the site, all conditions prescribed in the applicable Resource Recovery Exemptions shall be complied with, including: • ensuring the producer of the waste has complied with the applicable Order such as testing and validation • ensuring the material has met all chemical and other material requirements specified in the applicable Order • keeping a written record of the following for a period of six years: o the quantity of material received o the name and address of the supplier	Site Manager; Contractor;
11. If Virgin Excavated Natural Material (VENM) is taken to the site (*i.e.* without chemical testing and validation): a. the material must meet the definition of VENM. b. the supplier must fill out and complete the *VENM Certificate* (http://www.epa.nsw.gov.au/waste/virgin-material.htm) c. The completed *VENM Certificate* shall be kept for at least six years and provided to the EPA upon any request.	Site Manager; Contractor;
12. Vegetation removal shall be undertaken only to the extent required to carry out the works and establishment of the site compound.	Project Manager; Site Manager; Construction Contractor
13. The drainage tail-out into the bushland east of the petrol station shall be monitored by SCC environmental operations officer to ensure no loss of mature trees.	Project Manager; Site Manager; Construction Contractor

Safeguard / Measure	Responsibility
14. Table drains and drainage swales shall be immediately stabilised using turf, grass seed, or rolled erosion control product such as jute netting. Turf and grass shall be maintained until establishment.	Project Manager; Site Manager; Construction Contractor
15. In the event that any wildlife be significantly disturbed or injured during works, Council's Environmental Officers are to be contacted on 4429 3405, or if unavailable, Wildlife Rescue – South Coast should be contacted on 0418 427 214, to rescue and relocate the animal(s).	Site Supervisor; Contractor;
16. Staff working at the site will be instructed to stop work immediately on identification of any suspected Aboriginal heritage artefact. If any objects are found, NSW Department of Planning, Industry and Environment (ph:131 555) shall be contacted.	Site Supervisor; Contractor
Post construction	
17. An asset form must be trimmed to file 44574E on commissioning of the assets in Accordance with POL15/8 Asset Accounting Policy section 3.1.4 and POL16/79 Asset Management Policy section 3.3.	SCC Project Manager

8. SIGNIFICANCE EVALUATION & DECISION STATEMENT

This Review of Environmental Factors has assessed the likely environmental impacts, in the context of Part 5 of the *Environmental Planning and Assessment Act 1979*, of a proposal by Shoalhaven City Council to undertake road safety and pedestrian access improvements at the Sussex Inlet Road and Jacobs Drive, Sussex Inlet

In consideration of the proposal as described in Section 1, in accordance with any design plans referred to in this report, and assuming the implementation of all proposed safeguards and mitigation measures (Section 7), it is determined that:

1. It is unlikely that there will be any significant environmental impact as a result of the proposed work and an Environmental Impact Statement is not required for the proposed works.
2. The proposed activity will not be carried out in a declared area of outstanding biodiversity value and is not likely to significantly affect threatened species, populations or ecological communities, or their habitats and a Species Impact Statement / BDAR is not required.
3. No additional statutory approvals, licences, permits and external government consultations are required.
4. The proposed activity may proceed.

In accepting and adopting this REF, Shoalhaven City Council commits to ensuring the implementation of the proposed safeguards and mitigation measures identified in this report (Section 7) to minimise and/or prevent detrimental environmental impacts.

Determined by:

Craig Exton
Manager – Technical Services
Shoalhaven City Council Date: 9 September 2022

9. REFERENCES

ASSMAC (Acid Sulfate Soils Management Advisory Committee) 1998 *Acid Sulfate Soils Manual.* ISBN 0 7347 0000 8

CHRISP Consulting 2022 *Design Report – Bus Shelter and Roadside – Sussex Inlet Road, Sussex Inlet.* Unpublished report for Shoalhaven City Council

DECCW (Department of Environment, Climate Change and Water, NSW) 2010 Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales. Available at: https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0005/634694/Policy-and-guidelines-for-fish-habitat.pdf

APPENDIX A – The Activity

DRAWING INDEX	
DRAWING NUMBER	DRAWING TITLE
C100	DRAWING INDEX AND LOCALITY PLAN
C200	PRESERVATION OF SURVEY INFRASTRUCTURE PLAN
C300	SITEWORKS PLAN
C400	ALIGNMENT PLAN
C410	DESIGN SETOUT TABLES
C420	SETOUT PLAN
C500	GENERAL DETAILS - SHEET 01 OF 02
C501	GENERAL DETAILS - SHEET 02 OF 02
C600	KERB RETURN LONG SECTIONS
C601	STORMWATER DRAINAGE LONG SECTION PLAN
C700	MC01 CROSS SECTIONS - SHEET 01 OF 03
C701	MC01 CROSS SECTIONS - SHEET 02 OF 03
C702	MC01 CROSS SECTIONS - SHEET 03 OF 03
C703	MC02 CROSS SECTIONS - SHEET 01 OF 02
C704	MC02 CROSS SECTIONS - SHEET 02 OF 02
C705	MC03 CROSS SECTIONS
C800	SIGNAGE & LINEMARKING PLAN
C900	SWEPT PATHS PLAN

SHOALHAVEN CITY COUNCIL

JACOBS DRIVE & SUSSEX INLET ROAD INTERSECTION UPGRADE

CIVIL WORKS

LOCALITY PLAN
N.T.S

FOR CONSTRUCTION

REV	DATE	REVISION DESCRIPTION
A	29.10.2021	ISSUE FOR 50% REVIEW
B	03.02.2022	ISSUE FOR 80% REVIEW
C	18.03.2022	ISSUE FOR FINAL COMMENT
D	27.04.2022	ISSUE FOR CONSTRUCTION

TITLE	NAME
DRAWN	BK
DESIGNED	BK
DRG CHECK	AL
DESIGN CHECK	AL
APPROVED	CP

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MANAGER | TECHNICAL SERVICES

DATE

PLAN REFERENCE 10063.76

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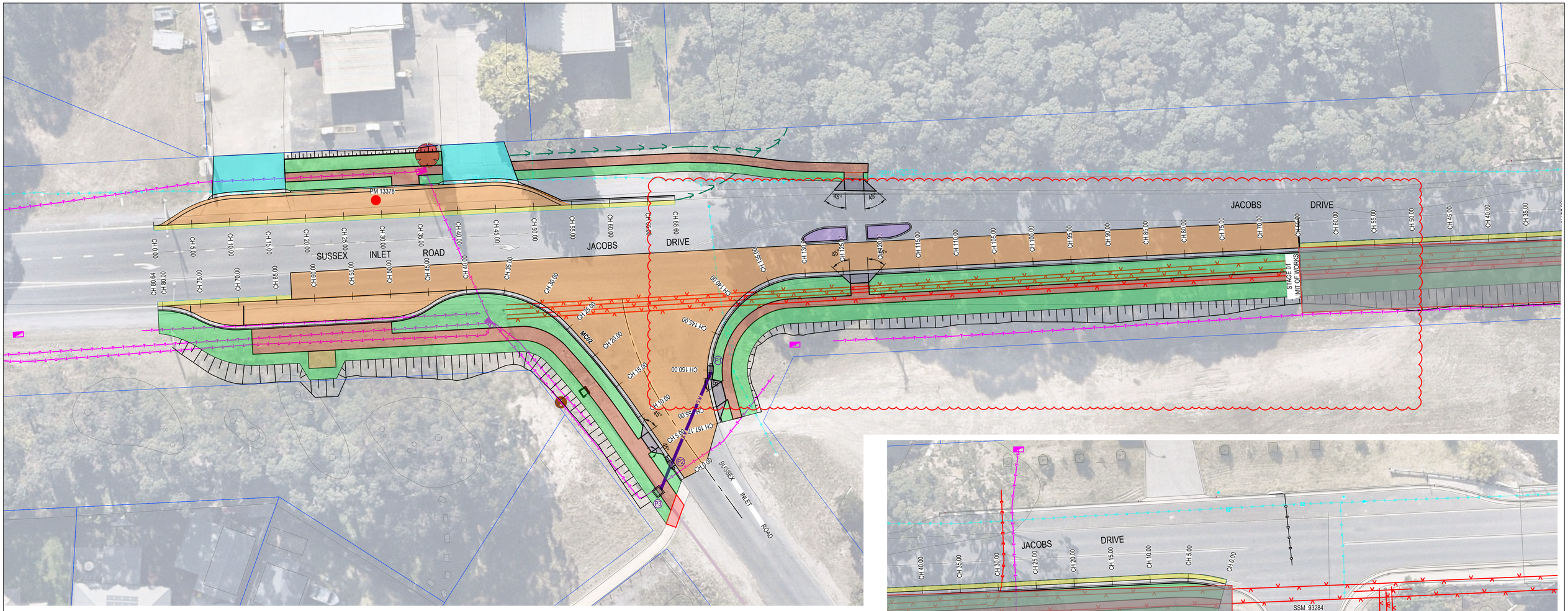
JACOBS DRIVE & SUSSEX INLET ROAD INTERSECTION UPGRADES

CLIENT
SHOALHAVEN CITY COUNCIL

DRAWING INDEX AND LOCALITY PLAN

JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	N.T.S	C100	D



INFRASTRUCTURE MARK SCHEDULE

MARK ID	SOURCE/PLAN	MGA GRID COORDINATES		ACCURACY (m)	DATE	STATUS	PROJECT IMPACT	COMMENTS
		MGA EASTING	MGA NORTHING					
PM 13378 FD	SCIMS	279941.2	6106704.15	-	1/08/2018	EXISTING	TO BE DESTROYED	CONTRACTOR IS TO ALLOW FOR THE SURVEY MARK TO BE RECONSTRUCTED BEHIND NEW KERB AND GUTTER AND ADEQUATELY DOCUMENTED WITHIN THE RELEVANT GOVERNMENT DATABASES AND TO THE SATISFACTION OF THE AUTHORITY BODIES
SSM 93284 FD	SCIMS	280138.0	6106695.7	-	1/08/2018	EXISTING	SAFE	-

DISCLAIMER:-
THIS DRAWING HIGHLIGHTS SURVEY INFRASTRUCTURE IN THE GENERAL VICINITY OF THE PROPOSED CONSTRUCTION FOOTPRINT. THE PURPOSE IS TO ASSIST THE CONTRACTOR TO CARE, PROTECT AND PRESERVE SURVEY INFRASTRUCTURE AS REQUIRED UNDER NSW REGULATIONS.
THE SURVEY INFRASTRUCTURE MARKS SHOWN HAVE BEEN SURVEYED AND/OR CALCULATED FROM THE DEPOSITED PLANS AND THE STATE CONTROL NETWORK AND SHOULD BE VERIFIED FOR COMPLETENESS.
THE SUPPLIED COORDINATES VARY IN ACCURACY AND SHALL BE VERIFIED BY A LAND SURVEYOR AS DEFINED UNDER THE SURVEYING AND SPATIAL INFORMATION ACT PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITY WITHIN OR NEAR THE CONSTRUCTION LIMITS.
PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES THAT MAY AFFECT THE SURVEY INFRASTRUCTURE, CONTACT THE NSW DEPARTMENT OF LAND AND PROPERTY INFORMATION TO OBTAIN THE SURVEYOR GENERAL'S AUTHORITY. COMPLY WITH SURVEYOR GENERAL'S DIRECTIONS No. 11 "PRESERVATION OF SURVEY INFRASTRUCTURE".
PERMANENT SURVEY AND CADASTRAL REFERENCE MARKS ARE PROTECTED UNDER SECTION 24 OF THE SURVEYED AND SPATIAL INFORMATION ACT. REFER TO AN APPLICATION UNDER SECTION 88 OF THE SURVEYING AND SPATIAL INFORMATION REGULATION FOR THE PROCESS TO REMOVE OR OBLITERATE MARKS.
THE CONSTRUCTION FOOTPRINT DOES NOT EXTEND TO ASSOCIATED WORKS SUCH AS, BUT NOT LIMITED TO, UTILITY ADJUSTMENTS, TEMPORARY ACCESS TRACKS, STOCKPILES, ENVIRONMENTAL CONSTRAINTS/LIMITS, TRAFFIC CONTROL OR SITE COMPOUNDS.

DISCLAIMER FOR DETAIL SURVEYS:-
THE SURVEY FROM WHICH THIS MODEL WAS CREATED WAS CARRIED OUT TO COMPLY WITH THE REQUIREMENTS OF THE CLIENT, AS DEFINED IN THE SURVEY INSTRUCTION. ANY PERSON OR ORGANISATION WHO RELIES ON THIS SURVEY FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT WAS CARRIED OUT, DOES SO AT THEIR OWN RISK.
SURVEY CONTROL INFORMATION IS REGARDED AS SUITABLE FOR THE SURVEY AND CORRECT AT THE TIME OF THE SURVEY, BUT SHOULD BE VERIFIED BEFORE BEING USED. ANY PUBLIC UTILITIES AND SERVICES SHOWN IN THIS MODEL HAVE BEEN LOCATED BY USING VISIBLE SURFACE FEATURES ONLY AND COMPLY WITH THE REQUIREMENTS SPECIFIED BY THE CLIENT IN THE SCOPE OF WORKS.
A FULL INVESTIGATION OF SUBSURFACE UTILITIES, INCLUDING A 'CLASS A' LOCATION SURVEY (REFER TO AUSTRALIAN STANDARD AS5488), MAY BE REQUIRED BEFORE CARRYING OUT ANY DESIGN OR CONSTRUCTION ACTIVITY IN OR NEAR THE SURVEYED AREA.

LEGEND
- SAFE
- VULNERABLE
- TO BE DESTROYED
- ALREADY GONE
- NEW (PROPOSED)

Shoalhaven City Council
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MANAGER | TECHNICAL SERVICES
DATE
PLAN REFERENCE 10063.77

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SCALE 1:250 2.5 0 2.5 5 AT A1

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REV	DATE	REVISION DESCRIPTION
A	27.04.2021	ISSUE FOR CONSTRUCTION
B	14.06.2021	ISSUE FOR CONSTRUCTION

TITLE	NAME
DRAWN	BK
DESIGNED	BK
DRG CHECK	AL
DESIGN CHECK	AL
APPROVED	CP

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N

JACOBS DRIVE & SUSSEX INLET ROAD INTERSECTION UPGRADES
CLIENT
SHOALHAVEN CITY COUNCIL
PRESERVATION OF SURVEY INFRASTRUCTURE PLAN

JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	1:250	C200	B

EXISTING POWER POLE TO REMAIN AND BE PROTECTED DURING WORKS

EXISTING TELSTRA PIT LID TO BE ADJUSTED TO SUIT NEW PATH LEVELS. CONTRACTOR TO ENGAGE SUITABLE SUB-CONTRACTOR TO COMPLETE WORKS

150MM DEEP SWALE TO BE CONSTRUCTED TO ALLOW CONTINUOUS WATER FLOW. CONTRACTOR TO ENSURE SWALE TO TAIL OUT INTO BUSH LAND

EXISTING TREE TO BE DEMOLISHED AND REMOVED TO ALLOW FOR UNINTERRUPTED PEDESTRIAN ACCESS

1.2m TEMPORARY NATURAL TURF STRIP. TO BE TRANSFORMED INTO SHARED USER PATH AS PART OF FUTURE WORKS TO TOTAL 2.4m WIDTH

REFER DWG C400 FOR INVERT LEVELS. CONTRACTOR TO CLEAR DOWNSTREAM VEGETATION FOR APPROXIMATELY 5.0m TO ENSURE FREE DRAINAGE

EXISTING WATER VALVE TO REMAIN AND BE PROTECTED DURING WORKS

9.8m WIDE VEHICLE CROSSING TO BE CONSTRUCTED IN ACCORDANCE WITH COUNCIL DETAIL. REFER COUNCIL DRG 5104-07

TURFED BATTER AT 1in3 TO TIE INTO EXISTING SURFACE SMOOTHLY.

PRIVATE PROPERTY BOUNDARY

TELSTRA SERVICE TO BE PROTECTED DURING WORKS. SERVICE INVERT LEVELS TO BE CONFIRMED BY CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR TO PROVIDE UNIT RATE FOR CONCRETE ENCASEMENT DURING TENDER

EXISTING PAVEMENT TO BE SAWCUT 600mm FROM PROPOSED EXTENT OF PAVEMENT TO ALLOW TIE IN WORKS.

PROPOSED VEHICLE CROSSING TO SMOOTHLY TIE INTO EXISTING LEVEL AT PROPERTY BOUNDARY

PRAM RAMP TO BE CONSTRUCTED IN ACCORDANCE WITH AS 1428

AREA WITHIN SHADED EXTENT IS DEFINED AS STAGE 02. STAGE 02 IS TO BE DESIGNED / CONSTRUCTED AT A LATER DATE.

PROPOSED VEHICLE CROSSING TO SMOOTHLY TIE INTO EXISTING LEVEL AT PROPERTY BOUNDARY

PROPOSED REFUGE ISLANDS TO BE CONSTRUCTED IN ACCORDANCE WITH DETAIL ON DRG C500

9.6m WIDE VEHICLE CROSSING TO BE CONSTRUCTED IN ACCORDANCE WITH COUNCIL DETAIL. REFER DRG C501

EXTENT OF PAVEMENT RECONSTRUCTION WORKS

EXISTING WATER SERVICE TO BE PROTECTED DURING WORKS.
WATERMAIN HAS BEEN DETERMINED TO BE AT A DEPTH 600 - 700MM BENEATH SURFACE LEVEL. NO CONCRETE ENCASEMENT WILL BE REQUIRED.

JACOBS DRIVE

SUSSEX INLET ROAD

EXTENT OF PAVEMENT RECONSTRUCTION WORKS

ROAD SHOULDER TO BE CONVERTED TO FORMALISED BUS STOP. REFER PAVEMENT PROFILE DETAIL ON DRG C500

EXISTING POWER POLE TO REMAIN AND BE PROTECTED DURING WORKS

PRAM RAMP TO BE CONSTRUCTED IN ACCORDANCE WITH AS 1428

POWER POLE TO REMAIN AND BE PROTECTED DURING FUTURE WORKS

1.2m WIDTH FOOTPATH TO BE CONSTRUCTED IN ACCORDANCE WITH COUNCIL DETAILS

POWER POLE TO REMAIN AND BE PROTECTED DURING WORKS

1.5m TEMPORARY NATURAL TURF STRIP. TO BE TRANSFORMED INTO SHARED USER PATH AS PART OF FUTURE WORKS TO TOTAL 2.4m WIDTH

1in4 TURFED BATTER TO EXISTING SURFACE

EXISTING POWER POLE TO REMOVED AND RELOCATED TO ALLOW FOR CONSTRUCTION OF FOOTPATH. REFER TO COUNCIL REPRESENTATIVE FOR DIRECTION

EXISTING WATER SERVICE TO BE PROTECTED DURING WORKS

EXISTING TELSTRA SERVICE TO BE PROTECTED DURING WORKS. SERVICE INVERT LEVELS TO BE CONFIRMED BY CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR TO PROVIDE UNIT RATE FOR CONCRETE ENCASEMENT DURING TENDER

PRAM RAMP TO BE CONSTRUCTED IN ACCORDANCE WITH AS 1428

EXISTING SEWER MANHOLE TO REMAIN AND BE PROTECTED. BATTERS TO BE LOCALLY STEEPENED AROUND MANHOLE TO ENSURE SMOOTH TIE IN

BUS SHELTER TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS. ALLOW FOR 600X600 TACTILE FROM THE FACE OF KERB AT DROP OFF POINT. TACTILE TO BE INSTALLED IN ACCORDANCE WITH AS1428.4

EXISTING PIT LID TO BE RAISED TO SUIT PROPOSED PATH LEVELS. REFER DETAIL ON DWG C501. PIT LID TO BE CONCRETE INFILL CLASS C

LOCALLY ADJUST BATTER GRADE TO TIE IN WITH EXISTING BOUNDARY AS REQUIRED

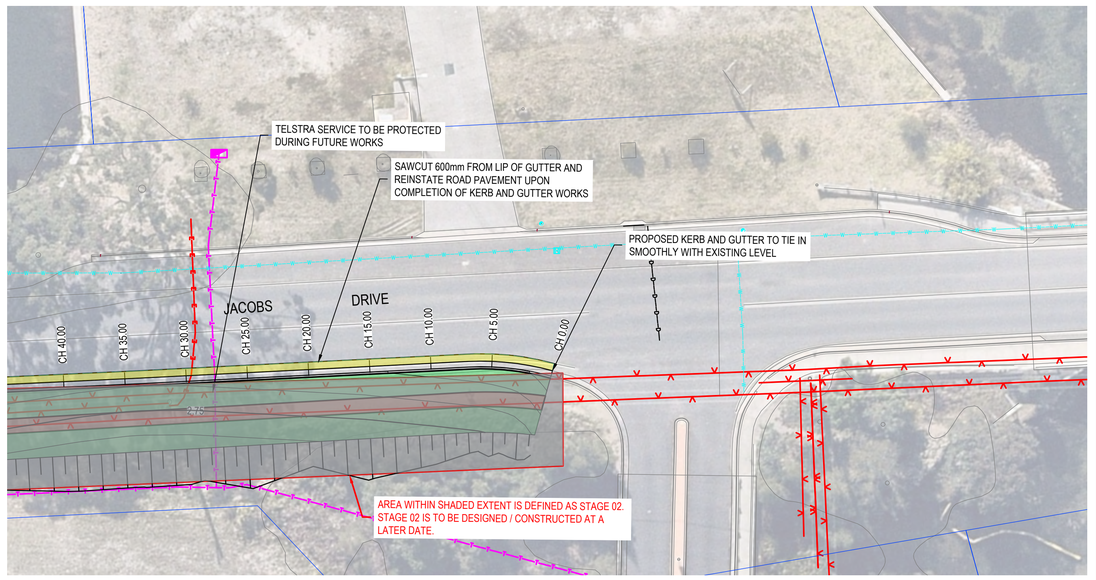
PRAM RAMP TO BE CONSTRUCTED IN ACCORDANCE WITH AS 1428

KERB AND GUTTER TO BE CONSTRUCTED IN ACCORDANCE WITH COUNCIL STANDARDS. REFER DETAIL ON DRG C500

PROPOSED KERB AND GUTTER AND FOOTPATH TO TIE IN SMOOTHLY WITH EXISTING SURFACE

DEMOLISH EXISTING PATHWAY TO EXTENT SHOWN AND ENSURE NEW PATHWAYS TIE IN SMOOTHLY WITH EXISTING ROAD

EXISTING STORMWATER LINE



LEGEND - PROPOSED

- 2.00 — MAJOR CONTOUR (0.25m INTERVALS)
- 2.10 — MINOR CONTOUR (0.05m INTERVALS)
- EDGE OF BITUMEN
- SAWCUT LINE
- MC01 — ROAD CONTROL CENTRELINE

LEGEND - EXISTING

- W — EXISTING UNDERGROUND WATER MAIN
- D — EXISTING STORMWATER PIPE
- S — EXISTING UNDERGROUND SEWER LINE
- E — EXISTING UNDERGROUND ELECTRICAL SERVICE
- T — EXISTING UNDERGROUND PIPE NETWORKS COMMS LINE
- EXISTING OVERHEAD WIRE

PAVEMENT LEGEND

- PAVEMENT TYPE 01 — VEHICLE CROSSOVER. REFER DRG C501
- PAVEMENT TYPE 02 — ROAD ASPHALT PAVEMENT. REFER DRG C500
- PAVEMENT TYPE 03 — CONCRETE FOOTPATH. REFER DRG C500
- PAVEMENT TYPE 04 — GRASS VERGE (TURFED)
- PAVEMENT TYPE 05 — CONCRETE MEDIAN ISLAND
- PAVEMENT TYPE 06 — 600mm ASPHALT REINSTATEMENT
- PAVEMENT TYPE 07 — BUS SHELTER CONCRETE PAD 150mm THICKNESS, 32MPA WITH CENTRAL SL102 (50 COVER TYP.)

Shoalhaven City Council

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MANAGER | TECHNICAL SERVICES

DATE

PLAN REFERENCE 10063.78

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A	29.10.2021	ISSUE FOR 50% REVIEW
B	03.02.2022	ISSUE FOR 80% REVIEW
C	18.03.2022	ISSUE FOR FINAL COMMENT
D	27.04.2022	ISSUE FOR CONSTRUCTION
E	14.06.2022	ISSUE FOR CONSTRUCTION

TITLE	NAME
DRAWN	BK
DESIGNED	BK
DRG CHECK	AL
DESIGN CHECK	AL
APPROVED	CP

FOR CONSTRUCTION

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JACOBS DRIVE & SUSSEX INLET ROAD INTERSECTION UPGRADES

CLIENT
SHOALHAVEN CITY COUNCIL

SITEWORKS PLAN

JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	1:250	C300	E

VERGE TO GRADE AT 1% AWAY FROM ROAD FRONTAGE TOWARDS SWALE

SWALE INV RL 2.06

SWALE INV RL 2.03

SWALE INV RL 1.98

SWALE INV RL 1.95

SWALE INV RL 2.23

RL 2.86

INV RL 2.98

RL 2.74

INV RL 2.79

9.6m

RL 2.49

INV RL 2.57

RL 2.47

9.8m

INV RL 2.50

RL 2.42

RL 2.43

RL 2.44

RL 2.13

RL 2.16

RL 2.10

RL 2.13

RL 2.14

RL 2.12

RL 2.32

RL 2.53

RL 2.35

RL 2.36

RL 2.50

RL 2.35

AREA WITHIN SHADED EXTENT IS DEFINED AS STAGE 02. STAGE 02 IS TO BE CONSTRUCTED AT A LATER STAGE IN ACCORDANCE WITH COUNCIL CONSTRUCTION PROGRAM

MC03

SUSSEX INLET ROAD

JACOBS DRIVE

CH 0.00 CH 5.00 CH 10.00 CH 15.00 CH 20.00 CH 25.00 CH 30.00 CH 35.00 CH 40.00 CH 45.00 CH 50.00 CH 55.00 CH 60.00 CH 65.00 CH 68.86

CH 80.64 CH 80.00 CH 75.00 CH 70.00 CH 65.00 CH 60.00 CH 55.00 CH 50.00 CH 45.00 CH 40.00 CH 35.00 CH 30.00

CH 25.00 CH 20.00 CH 15.00 CH 10.00 CH 5.00 CH 0.00

CH 140.00 CH 145.00 CH 150.00 CH 155.00 CH 157.17

MC01

MC02

8°

27°

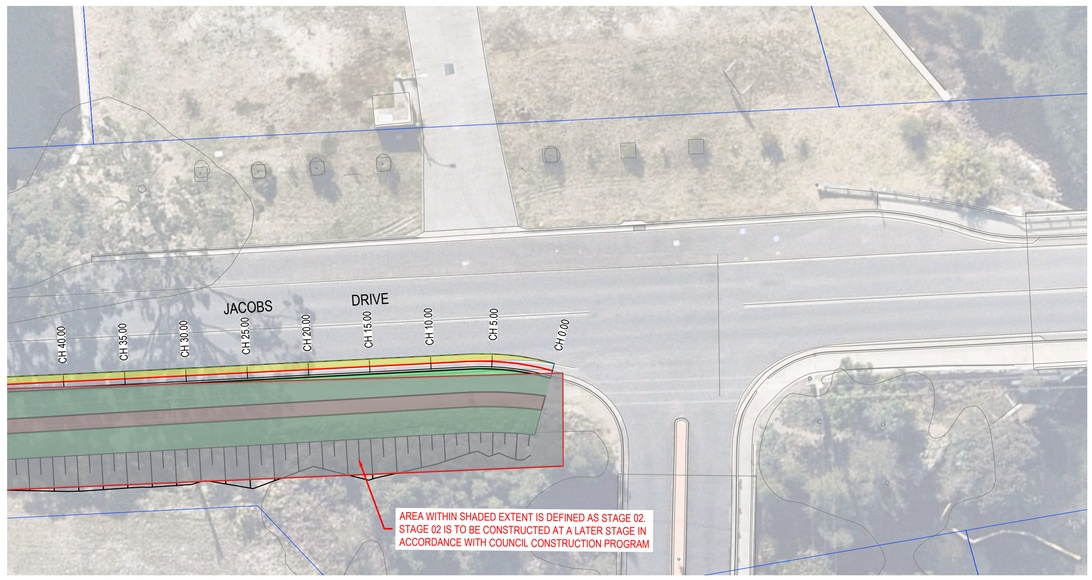
17°

11°

JACOBS DRIVE

CH 135.00 CH 130.00 CH 125.00 CH 120.00 CH 115.00 CH 110.00 CH 105.00 CH 100.00 CH 95.00 CH 90.00 CH 85.00 CH 80.00 CH 75.00 CH 70.00 CH 68.86 CH 65.00 CH 60.00 CH 55.00 CH 50.00 CH 45.00 CH 40.00 CH 35.00

STAGE 01 LIMIT OF WORKS



FOR CONSTRUCTION

JACOBS DRIVE & SUSSEX INLET ROAD INTERSECTION UPGRADES

CLIENT

SHOALHAVEN CITY COUNCIL

ALIGNMENT PLAN

Shoalhaven City Council

APPROVED

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DATE

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TITLE	NAME
DRAWN	BK
DESIGNED	BK
DRG CHECK	AL
DESIGN CHECK	AL
APPROVED	CP

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JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	1:250	C400	D

SETOUT TABLE - MC01

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	280127.450	6106699.940	2.460	284°39'09.45"			
TC	0.390	280127.070	6106700.040	2.470	284°39'09.45"			
IP 2	3.340	280124.200	6106700.790	2.500		R = -21.000	5.890	16°04'52.95"
CT	6.290	280121.240	6106700.720	2.510	268°34'16.51"			
IP 3	6.910	280120.610	6106700.700	2.520				
IP 4	33.880	280093.680	6106699.330	2.590				
IP 5	62.430	280065.170	6106698.010	2.540				
TC	130.530	279997.150	6106694.510	2.400	267°03'17.65"			
IP 6	142.080	279981.180	6106693.690	2.380		R = -13.000	23.100	101°48'39.80"
CT	153.630	279985.250	6106678.220	2.300	165°14'37.85"			
IP 7	157.170	279986.150	6106674.790	2.270	165°14'37.85"			

SETOUT TABLE - MC02

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	279981.830	6106667.600	2.340	325°22'08.46"			
IP 2	11.860	279975.090	6106677.360	2.540				
IP 3	18.720	279971.120	6106682.970	2.580		R = -89.090	13.720	8°49'14.53"
IP 4	25.580	279966.340	6106687.910	2.610				
IP 5	32.020	279961.560	6106692.840	2.660		R = -15.000	12.870	49°09'59.54"
CT	38.450	279954.710	6106692.450	2.710	266°44'43.22"			
IP 6	54.240	279938.950	6106691.550	2.850				
IP 7	80.640	279912.580	6106690.190	3.310	267°03'18.57"			

SETOUT TABLE - MC03

PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING
IP 1	0.000	279912.040	6106700.770		87°06'39.53"
IP 2	29.710	279941.720	6106702.270	2.750	
IP 3	53.860	279965.830	6106703.490	2.550	
IP 4	54.870	279966.850	6106703.540	2.540	
IP 5	68.610	279980.570	6106704.150	2.440	87°27'07.11"

Shoalhaven City Council

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DATE

PLAN REFERENCE 10063.80

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SCALE 1:250 2.5 0 2.5 5 AT A1

REV	DATE	REVISION DESCRIPTION
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JACOBS DRIVE & SUSSEX INLET ROAD INTERSECTION UPGRADES

CLIENT
SHOALHAVEN CITY COUNCIL

DESIGN SETOUT TABLES

JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	N.T.S	C410	C

EASTING: 279943.36
NORTHING: 6106706.04

EASTING: 279946.96
NORTHING: 6106706.22

EASTING: 279919.90
NORTHING: 6106709.93

EASTING: 279929.17
NORTHING: 6106710.39

EASTING: 279949.76
NORTHING: 6106711.38

EASTING: 279958.09
NORTHING: 6106711.84

EASTING: 279963.44
NORTHING: 6106709.44

EASTING: 279971.16
NORTHING: 6106707.42

EASTING: 279977.91
NORTHING: 6106710.16

EASTING: 279998.91
NORTHING: 6106709.12

EASTING: 280002.81
NORTHING: 6106707.83

EASTING: 280002.81
NORTHING: 6106706.95

EASTING: 280005.97
NORTHING: 6106708.96

EASTING: 280005.31
NORTHING: 6106707.78

EASTING: 280005.33
NORTHING: 6106706.89

9.6m

9.8m

6°

6°

EASTING: 279912.38
NORTHING: 6106693.69

MC03

EASTING: 279930.01
NORTHING: 6106694.60

SUSSEX INLET ROAD

22m

23m

EASTING: 279961.73
NORTHING: 6106696.35

DRIVE

JACOBS DRIVE

REFER TO INSET THIS PAGE
FOR ISLAND SETOUT DETAIL

STAGE 01
LIMIT OF WORKS

EASTING: 279930.19
NORTHING: 6106691.10

EASTING: 279973.51
NORTHING: 6106691.08

EASTING: 279974.52
NORTHING: 6106687.29

MC01

MC02

EASTING: 279981.01
NORTHING: 6106676.58

EASTING: 280006.04
NORTHING: 6106693.32

EASTING: 280003.66
NORTHING: 6106693.20

EASTING: 279985.28
NORTHING: 6106681.89

EASTING: 279986.70
NORTHING: 6106680.30

EASTING: 279985.61
NORTHING: 6106679.55

EASTING: 279987.31
NORTHING: 6106677.81

EASTING: 279986.21
NORTHING: 6106677.05

EASTING: 279986.76
NORTHING: 6106674.95

EASTING: 279983.51
NORTHING: 6106672.07

EASTING: 279984.48
NORTHING: 6106668.96

EASTING: 279986.26
NORTHING: 6106666.90

EASTING: 279989.31
NORTHING: 6106662.27

EASTING: 279936.03
NORTHING: 6106682.19

EASTING: 279924.90
NORTHING: 6106687.17

EASTING: 279925.07
NORTHING: 6106683.88

EASTING: 279932.46
NORTHING: 6106682.00

EASTING: 279980.03
NORTHING: 6106669.42

EASTING: 279977.47
NORTHING: 6106671.01

EASTING: 279978.37
NORTHING: 6106665.80

EASTING: 279976.11
NORTHING: 6106672.98

27°

17°

11°

8°

SUSSEX INLET ROAD

EASTING: 279997.29
NORTHING: 6106699.05

EASTING: 280005.61
NORTHING: 6106700.94

EASTING: 280011.06
NORTHING: 6106701.17

EASTING: 280011.50
NORTHING: 6106700.23

EASTING: 280008.64
NORTHING: 6106699.07

EASTING: 280005.69
NORTHING: 6106698.94

EASTING: 280003.20
NORTHING: 6106700.78

EASTING: 280003.32
NORTHING: 6106698.79

EASTING: 280000.24
NORTHING: 6106700.61

DRIVE

INSET

JACOBS DRIVE

AREA WITHIN SHADED EXTENT IS DEFINED AS STAGE 02.
STAGE 02 IS TO BE CONSTRUCTED AT A LATER STAGE IN
ACCORDANCE WITH COUNCIL CONSTRUCTION PROGRAM

FOR CONSTRUCTION

Shoalhaven City Council

APPROVED

CRAIG EXTON
MANAGER | TECHNICAL SERVICES

DATE

PLAN REFERENCE 10063.81

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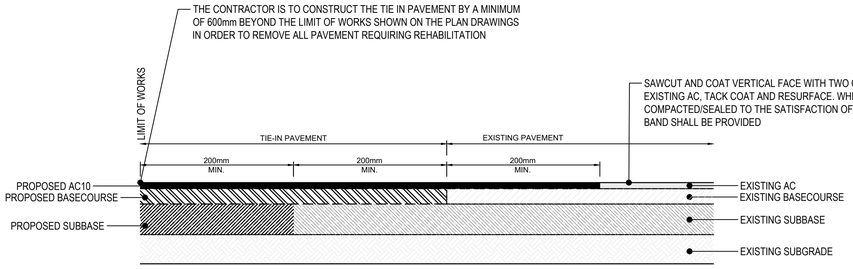
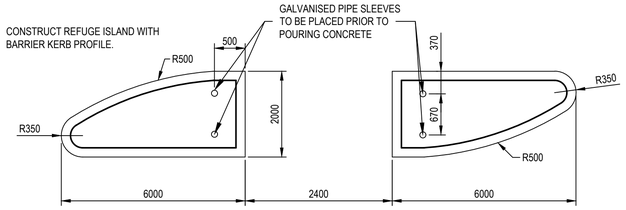
SETOUT PLAN

JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	1:250	C420	C



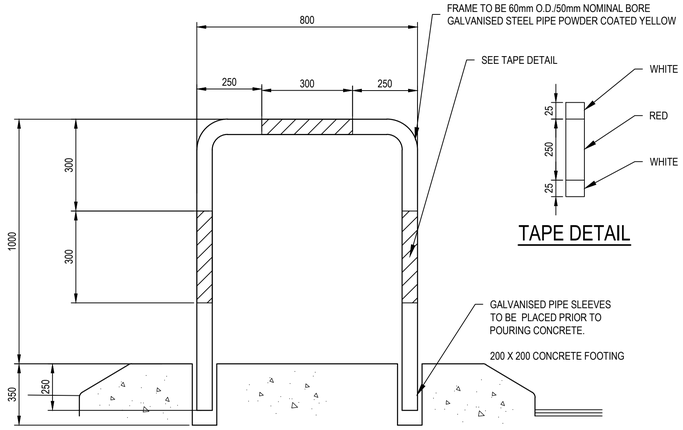
PAVEMENT TIE IN DETAIL

NTS



REFUGE ISLAND DETAIL

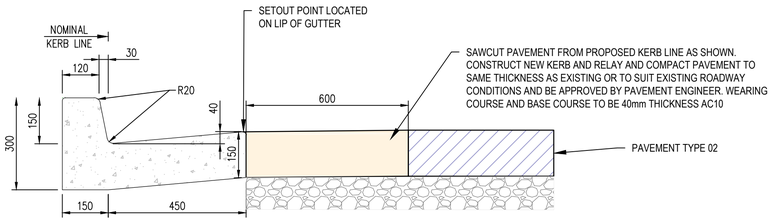
SCALE 1 : 50



GRAB RAIL DETAIL

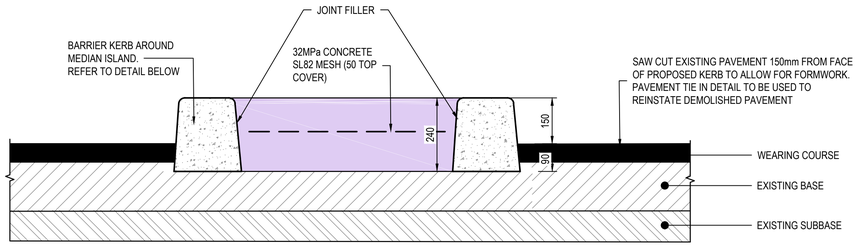
SCALE 1 : 10

TAPE DETAIL



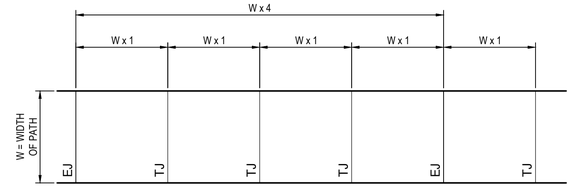
KERB & GUTTER

[Council Standard]



CONCRETE MEDIAN / ISLAND

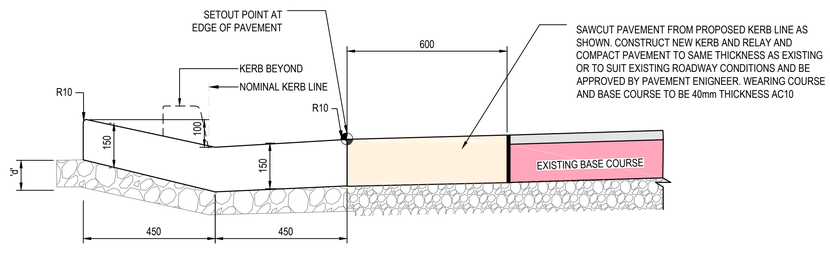
SCALE 1:10
NOTE:
RAISED MEDIANS AND TRAFFIC ISLANDS



FOOTPATH NOTE
CONCRETE TO HAVE BROOM FINISH WITH SMOOTH TROWELLED EDGES.
TJ - FOOTPATH TOOLED JOINT. REFER DETAIL
EJ - FOOTPATH EXPANSION JOINT. REFER DETAIL

TYPICAL JOINT PLAN FOR FOOTPATHS

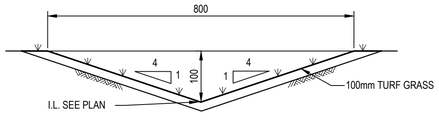
NTS



VEHICLE CROSSING

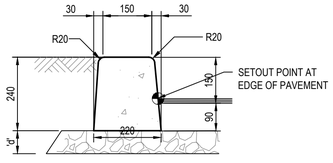
SCALE 1:10

SHOWN AS 'VC' ON PLAN
NOTE:
'd' = SUBBASE THICKNESS TO MATCH DEPTH OF PAVEMENT SUBBASE, BUT NOT LESS THAN 75



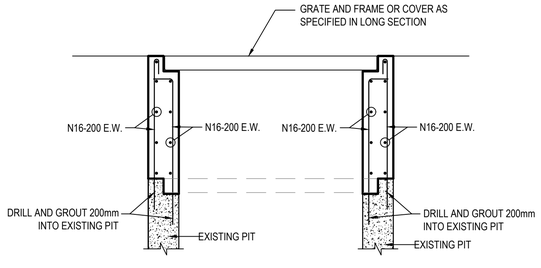
TYPICAL SECTION THROUGH GRASS LINED SWALE

N.T.S.



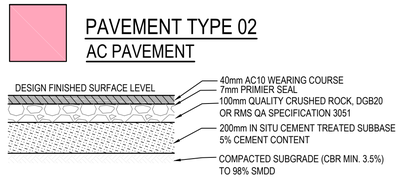
BARRIER KERB AT TRAFFIC ISLANDS

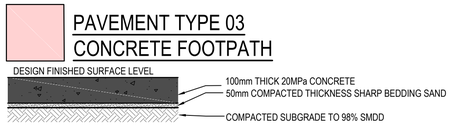
SCALE 1:10
NOTE:
'd' = SUBBASE THICKNESS TO MATCH DEPTH OF PAVEMENT SUBBASE, BUT NOT LESS THAN 75

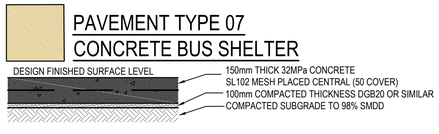


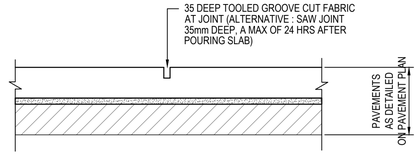
TYPICAL PIT EXTENSION DETAILS

SCALE 1:20



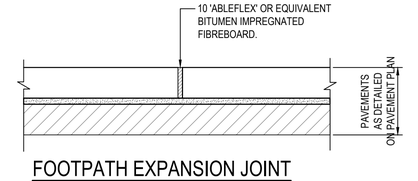






FOOTPATH TOOLED JOINT

SHOWN AS 'TJ' ON "TYPICAL JOINT PLAN FOR FOOTPATHS" DETAIL
SCALE 1:10



FOOTPATH EXPANSION JOINT

SHOWN AS 'EJ' ON "TYPICAL JOINT PLAN FOR FOOTPATHS" DETAIL
SCALE 1:10

FOR CONSTRUCTION

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PLAN REFERENCE 10063.82

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JACOBS DRIVE & SUSSEX INLET ROAD INTERSECTION UPGRADES

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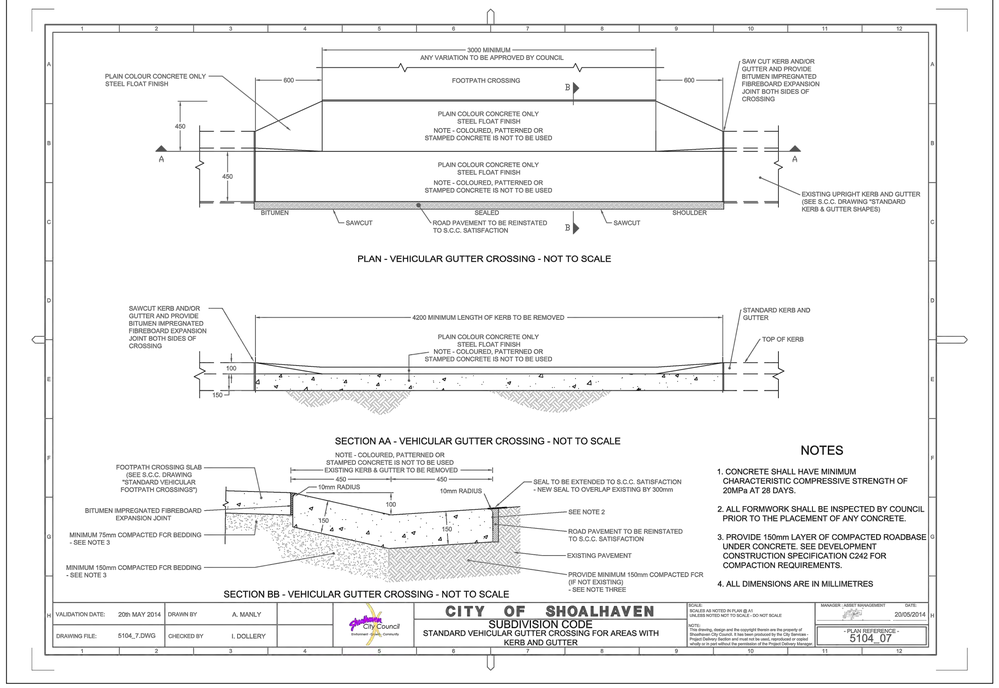
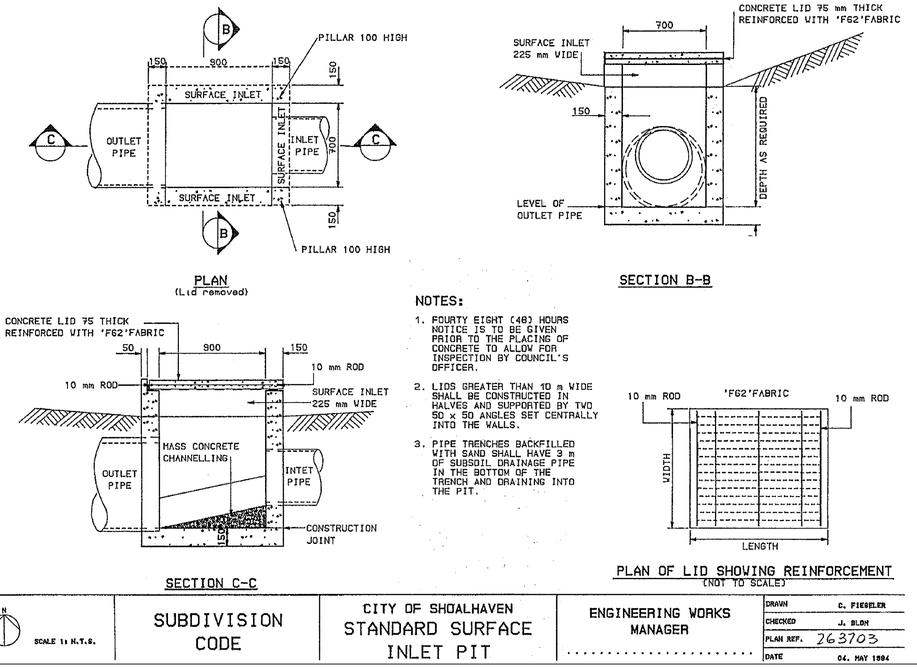
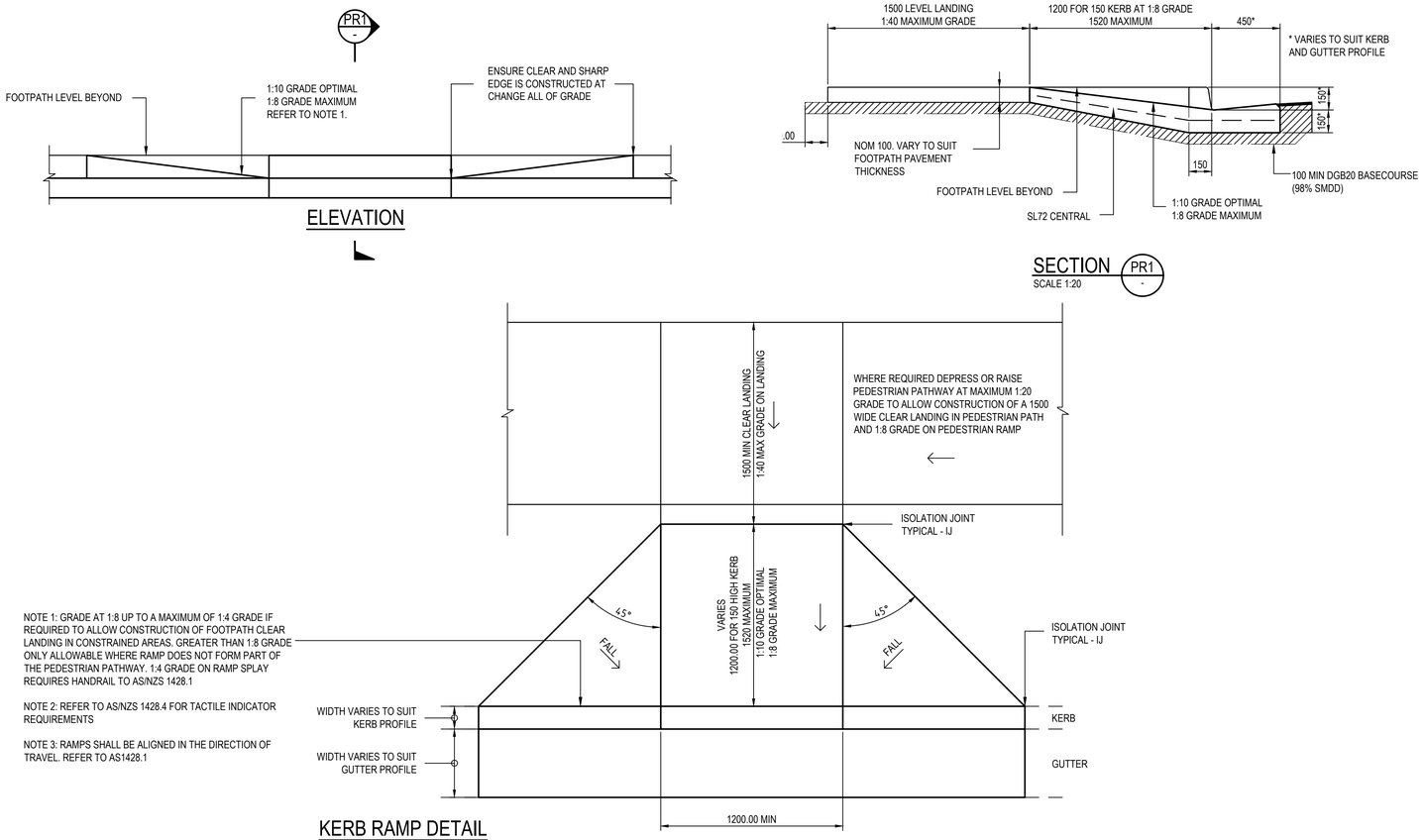
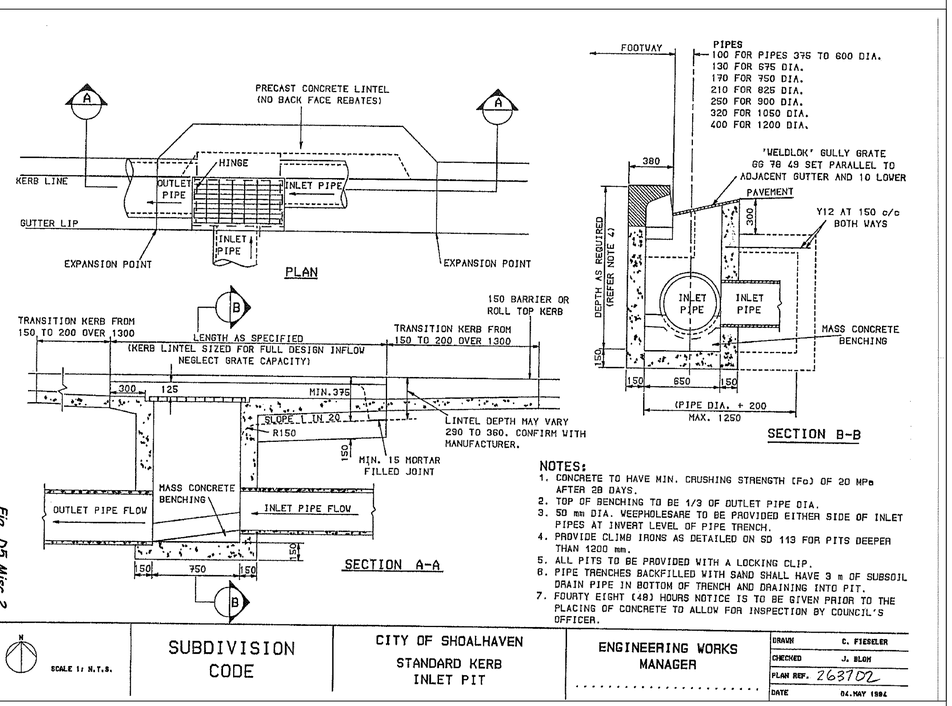
GENERAL DETAILS - SHEET 01 OF 02

JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	A.S	C500	C









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PLAN REFERENCE 10063.83

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SCALE 1:10 0.1 0 0.1 0.2 AT A1

FOR CONSTRUCTION

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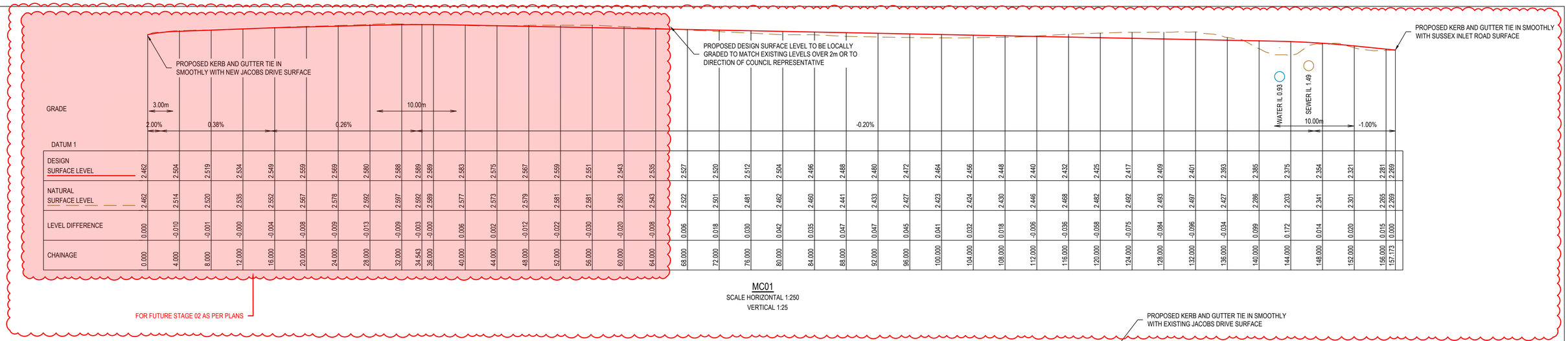
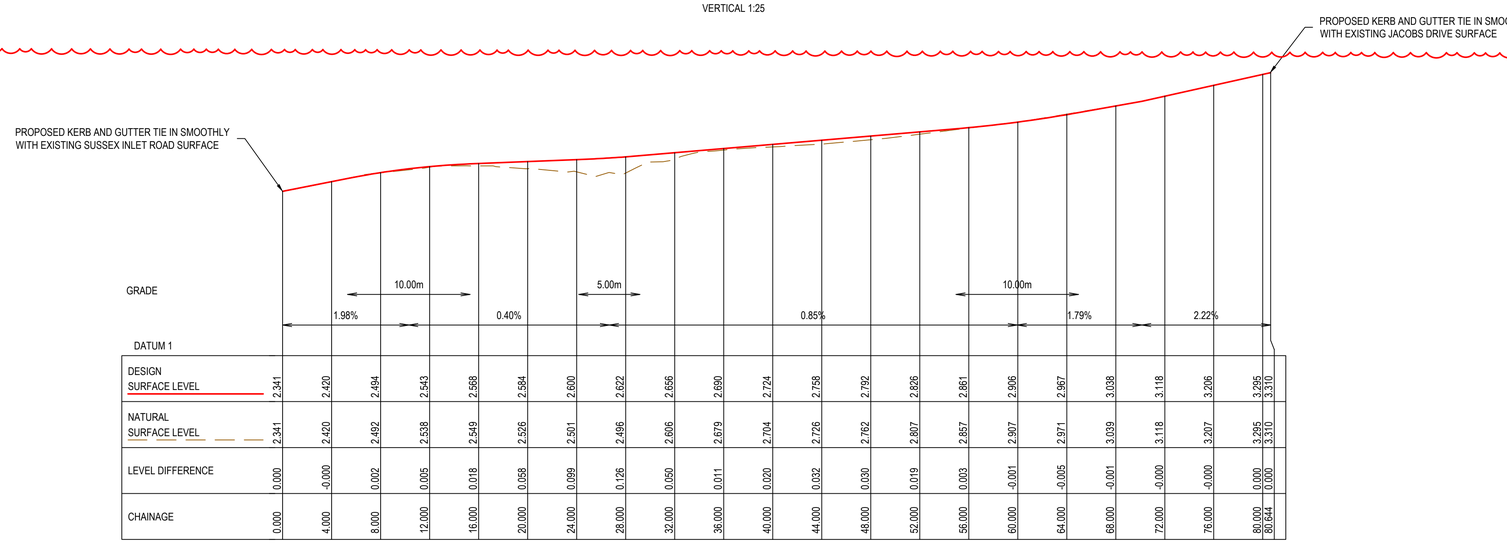
GENERAL DETAILS - SHEET 02 OF 02

JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	A.S	C501	C

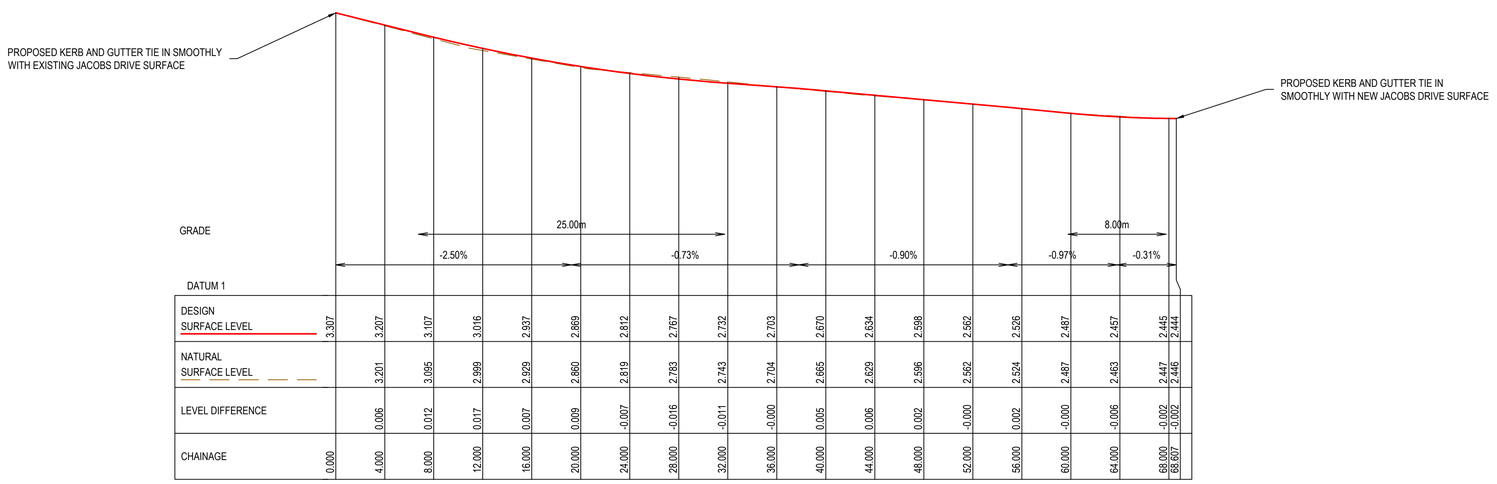


FOR FUTURE STAGE 02 AS PER PLANS

MC01
SCALE HORIZONTAL 1:250
VERTICAL 1:25



MC02
SCALE HORIZONTAL 1:250
VERTICAL 1:25



MC03
SCALE HORIZONTAL 1:250
VERTICAL 1:25

FOR CONSTRUCTION

REV	DATE	REVISION DESCRIPTION
A	29.10.2021	ISSUE FOR 50% REVIEW
B	03.02.2022	ISSUE FOR 80% REVIEW
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JACOBS DRIVE & SUSSEX INLET ROAD INTERSECTION UPGRADES

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SHOALHAVEN CITY COUNCIL

KERB RETURN LONG SECTIONS

JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	A.S	C600	E

Shoalhaven City Council
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MANAGER | TECHNICAL SERVICES
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PLAN REFERENCE 10063.84

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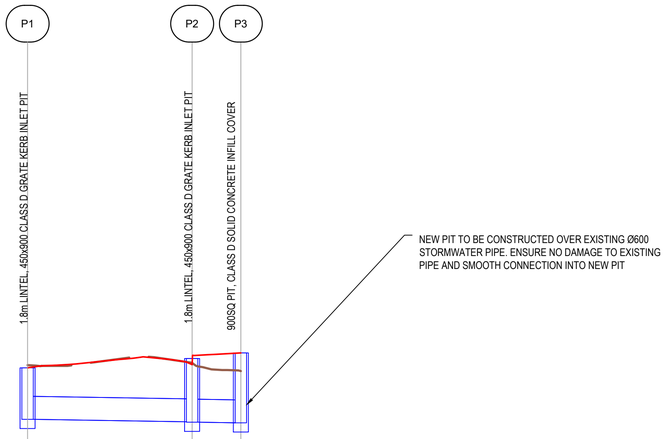

DIAMETER		Ø375 RCP		Ø375 RCP		
GRADE		0.30%		0.30%		
DATUM		-2.0				
DEPTH TO INVERT	0.841	1.033	1.038	1.142	1.142	
INVERT LEVEL	1.458	1.417	1.412	1.400	1.400	
FINISHED SURFACE LEVEL	2.299	2.450		2.542		
NATURAL SURFACE LEVEL	2.343	2.381		2.244		
CHAINAGE	0.000	13.430		17.407		

STORMWATER LINE 01

APPROVED

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MANAGER | TECHNICAL SERVICES

DATE

PLAN REFERENCE 10063.85

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JACOBS DRIVE & SUSSEX INLET ROAD INTERSECTION UPGRADES

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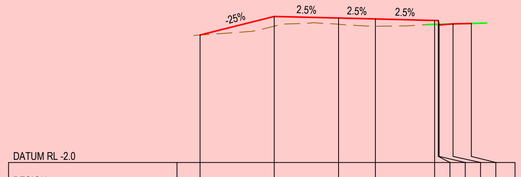
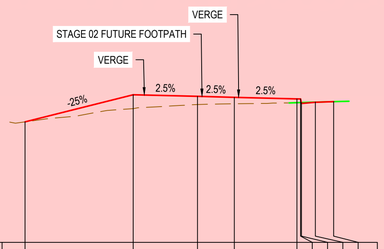
SHOALHAVEN CITY COUNCIL

STORMWATER DRAINAGE LONG SECTIONS

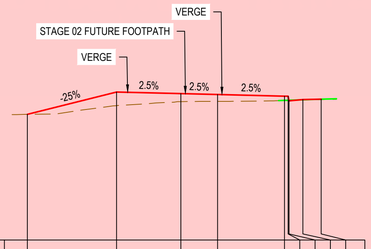
JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	1:250	C601	D



DATUM RL -2.0										
DESIGN SURFACE LEVEL	2.162	2.768	2.715	2.665	2.637	2.637	2.497	2.527	2.539	
NEW JACOBS DRIVE SURFACE LEVEL					2.507	2.510	2.511	2.523	2.539	
NATURAL SURFACE LEVEL	2.162	2.450	2.511	2.447	2.507	2.511	2.512	2.526	2.538	
OFFSET	-8.260	-5.836	-3.736	-2.536	-0.600	-0.480	-0.450	0.000	0.600	

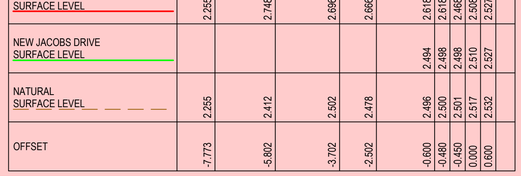


DATUM RL -2.0										
DESIGN SURFACE LEVEL	1.933	2.816	2.763	2.733	2.682	2.682	2.532	2.572	2.590	
NEW JACOBS DRIVE SURFACE LEVEL					2.557	2.560	2.561	2.573	2.590	
NATURAL SURFACE LEVEL	1.933	2.364	2.497	2.521	2.559	2.564	2.565	2.581	2.587	
OFFSET	-9.477	-5.946	-3.846	-2.646	-0.600	-0.480	-0.450	0.000	0.600	



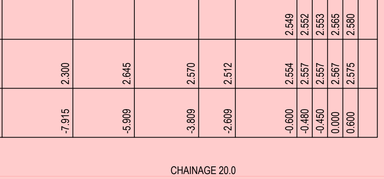
DATUM RL -2.0										
DESIGN SURFACE LEVEL	2.102	2.830	2.777	2.747	2.693	2.693	2.543	2.583	2.595	
NEW JACOBS DRIVE SURFACE LEVEL					2.557	2.561	2.562	2.576	2.595	
NATURAL SURFACE LEVEL	2.102	2.387	2.518	2.527	2.555	2.559	2.560	2.577	2.585	
OFFSET	-8.995	-6.082	-3.982	-2.782	-0.600	-0.480	-0.450	0.000	0.600	

CHAINAGE 10.0



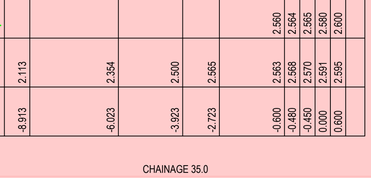
DATUM RL -2.0										
DESIGN SURFACE LEVEL	2.255	2.748	2.696	2.666	2.618	2.618	2.468	2.508	2.527	
NEW JACOBS DRIVE SURFACE LEVEL					2.494	2.498	2.498	2.510	2.527	
NATURAL SURFACE LEVEL	2.255	2.412	2.502	2.478	2.496	2.500	2.501	2.517	2.532	
OFFSET	-7.773	-5.802	-3.702	-2.502	-0.600	-0.480	-0.450	0.000	0.600	

CHAINAGE 25.0



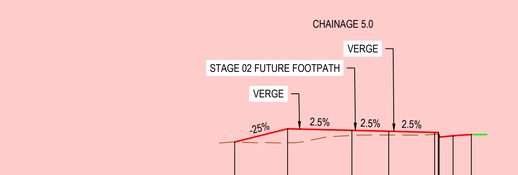
DATUM RL -2.0										
DESIGN SURFACE LEVEL	2.300	2.802	2.749	2.719	2.669	2.669	2.519	2.559	2.580	
NEW JACOBS DRIVE SURFACE LEVEL					2.549	2.552	2.553	2.565	2.580	
NATURAL SURFACE LEVEL	2.300	2.645	2.570	2.512	2.554	2.557	2.557	2.567	2.575	
OFFSET	-7.915	-5.909	-3.809	-2.609	-0.600	-0.480	-0.450	0.000	0.600	

CHAINAGE 40.0



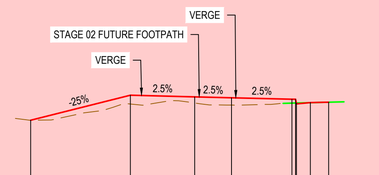
DATUM RL -2.0										
DESIGN SURFACE LEVEL	2.113	2.835	2.782	2.752	2.699	2.699	2.549	2.589	2.600	
NEW JACOBS DRIVE SURFACE LEVEL					2.560	2.564	2.565	2.580	2.600	
NATURAL SURFACE LEVEL	2.113	2.354	2.500	2.565	2.563	2.568	2.570	2.591	2.595	
OFFSET	-8.913	-6.023	-3.923	-2.723	-0.600	-0.480	-0.450	0.000	0.600	

CHAINAGE 5.0



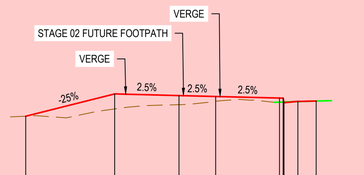
DATUM RL -1.0										
DESIGN SURFACE LEVEL	2.261	2.692	2.640	2.610	2.572	2.572	2.422	2.462	2.504	
NEW JACOBS DRIVE SURFACE LEVEL										
NATURAL SURFACE LEVEL	2.261	2.236	2.473	2.489	2.510	2.510	2.500	2.462	2.504	
OFFSET	-7.126	-5.400	-3.300	-2.100	-0.600	-0.480	-0.450	0.000	0.600	

CHAINAGE 20.0



DATUM RL -2.0										
DESIGN SURFACE LEVEL	1.973	2.787	2.735	2.705	2.656	2.656	2.506	2.546	2.561	
NEW JACOBS DRIVE SURFACE LEVEL					2.529	2.533	2.533	2.545	2.561	
NATURAL SURFACE LEVEL	1.973	2.501	2.534	2.465	2.531	2.534	2.535	2.548	2.560	
OFFSET	-9.130	-5.873	-3.773	-2.573	-0.600	-0.480	-0.450	0.000	0.600	

CHAINAGE 35.0



DATUM RL -2.0										
DESIGN SURFACE LEVEL	2.103	2.829	2.777	2.747	2.695	2.695	2.545	2.585	2.597	
NEW JACOBS DRIVE SURFACE LEVEL					2.560	2.564	2.565	2.579	2.597	
NATURAL SURFACE LEVEL	2.103	2.339	2.478	2.587	2.565	2.573	2.574	2.600	2.602	
OFFSET	-8.886	-5.982	-3.882	-2.682	-0.600	-0.480	-0.450	0.000	0.600	

CHAINAGE 0.0

CHAINAGE 15.0

CHAINAGE 30.0

FOR FUTURE STAGE 02 AS PER PLANS

FOR CONSTRUCTION

REV	DATE	REVISION DESCRIPTION
A	29.10.2021	ISSUE FOR 50% REVIEW
B	03.02.2022	ISSUE FOR 80% REVIEW
C	18.03.2022	ISSUE FOR FINAL COMMENT
D	27.04.2022	ISSUE FOR CONSTRUCTION
E	14.06.2022	ISSUE FOR CONSTRUCTION

TITLE	NAME
DRAWN	BK
DESIGNED	BK
DRG CHECK	AL
DESIGN CHECK	AL
APPROVED	CP

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Shoalhaven City Council

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CRAIG EXTON
MANAGER | TECHNICAL SERVICES

DATE

PLAN REFERENCE 10063.86

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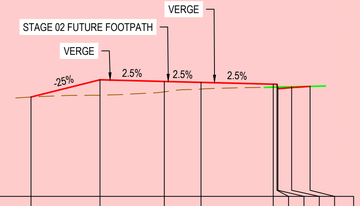
SHOALHAVEN CITY COUNCIL

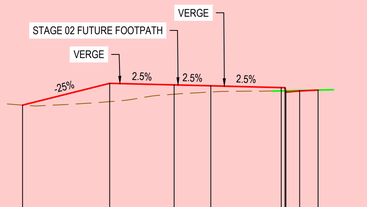
MC01 CROSS SECTIONS - SHEET 01 OF 03

JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	A.S	C700	E



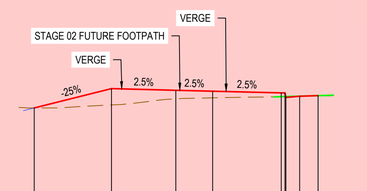
DATUM RL -1.0									
DESIGN SURFACE LEVEL	2.242	2.805	2.752	2.722	2.663	2.663	2.513	2.553	2.591
NEW JACOBS DRIVE SURFACE LEVEL					2.664	2.567	2.567	2.578	2.591
NATURAL SURFACE LEVEL	2.242	2.302	2.413	2.502	2.567	2.570	2.571	2.581	2.588
OFFSET	-8.510	-6.259	-4.159	-2.969	-0.600	-0.480	-0.450	0.000	0.600

CHAINAGE 55.0



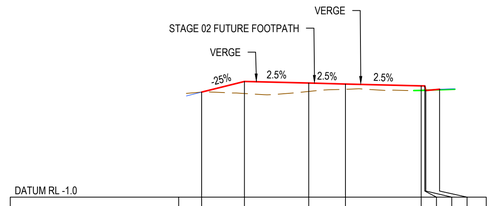
DATUM RL -2.0									
DESIGN SURFACE LEVEL	2.101	2.813	2.761	2.731	2.673	2.673	2.523	2.563	2.592
NEW JACOBS DRIVE SURFACE LEVEL					2.565	2.567	2.568	2.578	2.592
NATURAL SURFACE LEVEL	2.101	2.216	2.456	2.529	2.567	2.570	2.571	2.581	2.588
OFFSET	-9.048	-6.200	-4.100	-2.900	-0.600	-0.480	-0.450	0.000	0.600

CHAINAGE 50.0



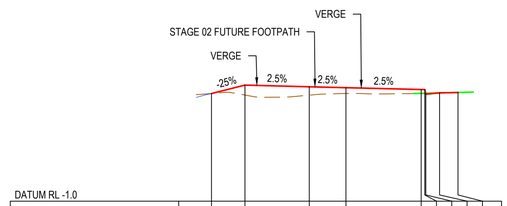
DATUM RL -2.0									
DESIGN SURFACE LEVEL	2.190	2.822	2.769	2.739	2.683	2.683	2.533	2.573	2.593
NEW JACOBS DRIVE SURFACE LEVEL					2.559	2.563	2.564	2.576	2.593
NATURAL SURFACE LEVEL	2.190	2.288	2.489	2.522	2.559	2.563	2.564	2.575	2.583
OFFSET	-8.667	-6.141	-4.041	-2.841	-0.600	-0.480	-0.450	0.000	0.600

CHAINAGE 45.0



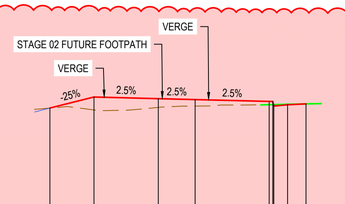
DATUM RL -1.0									
DESIGN SURFACE LEVEL	2.429	2.778	2.725	2.695	2.633	2.633	2.483	2.523	
NEW JACOBS DRIVE SURFACE LEVEL					2.488	2.492	2.493	2.507	
NATURAL SURFACE LEVEL	2.429	2.385	2.451	2.522	2.489	2.494	2.495	2.511	
OFFSET	-7.766	-6.372	-4.272	-3.072	-0.600	-0.480	-0.450	0.000	

CHAINAGE 70.0



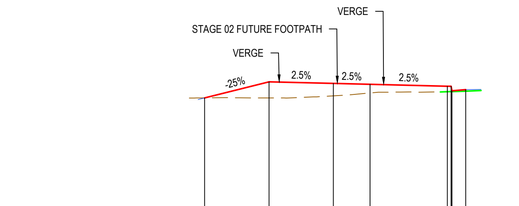
DATUM RL -1.0									
DESIGN SURFACE LEVEL	2.515	2.787	2.735	2.705	2.643	2.643	2.493	2.533	2.547
NEW JACOBS DRIVE SURFACE LEVEL					2.518	2.521	2.522	2.533	2.547
NATURAL SURFACE LEVEL	2.515	2.464	2.459	2.514	2.520	2.524	2.525	2.538	2.549
OFFSET	-7.446	-6.355	-4.255	-3.055	-0.600	-0.480	-0.450	0.000	0.600

CHAINAGE 65.0



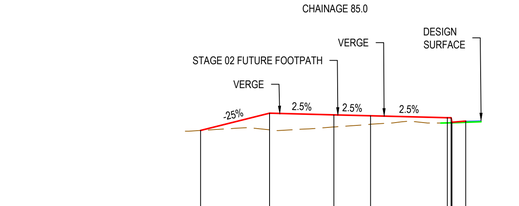
DATUM RL -1.0									
DESIGN SURFACE LEVEL	2.436	2.796	2.744	2.714	2.653	2.653	2.503	2.543	2.572
NEW JACOBS DRIVE SURFACE LEVEL					2.547	2.549	2.550	2.559	2.572
NATURAL SURFACE LEVEL	2.436	2.375	2.459	2.500	2.549	2.553	2.554	2.563	2.571
OFFSET	-7.758	-6.318	-4.218	-3.018	-0.600	-0.480	-0.450	0.000	0.600

CHAINAGE 60.0



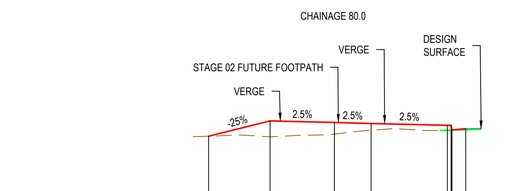
DATUM RL -2.0									
DESIGN SURFACE LEVEL	2.224	2.749	2.697	2.667	2.604	2.604	2.454	2.494	
NEW JACOBS DRIVE SURFACE LEVEL					2.424	2.428	2.429	2.445	
NATURAL SURFACE LEVEL	2.224	2.221	2.291	2.384	2.428	2.434	2.435	2.456	
OFFSET	-8.525	-6.423	-4.323	-3.123	-0.600	-0.480	-0.450	0.000	

CHAINAGE 85.0



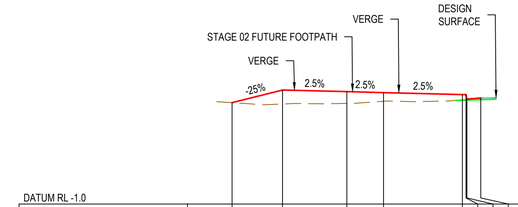
DATUM RL -2.0									
DESIGN SURFACE LEVEL	2.196	2.759	2.706	2.676	2.614	2.614	2.464	2.504	
NEW JACOBS DRIVE SURFACE LEVEL					2.444	2.448	2.449	2.463	
NATURAL SURFACE LEVEL	2.196	2.217	2.310	2.398	2.444	2.447	2.448	2.462	
OFFSET	-8.657	-6.406	-4.306	-3.106	-0.600	-0.480	-0.450	0.000	

CHAINAGE 80.0



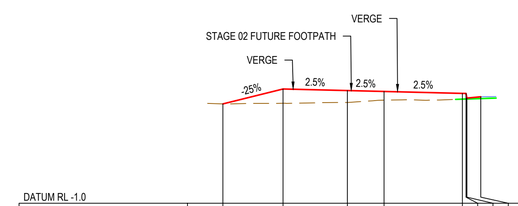
DATUM RL -1.0									
DESIGN SURFACE LEVEL	2.267	2.768	2.716	2.686	2.624	2.624	2.474	2.514	
NEW JACOBS DRIVE SURFACE LEVEL					2.462	2.465	2.466	2.481	
NATURAL SURFACE LEVEL	2.267	2.251	2.335	2.464	2.461	2.466	2.468	2.486	
OFFSET	-8.393	-6.389	-4.289	-3.089	-0.600	-0.480	-0.450	0.000	

CHAINAGE 75.0



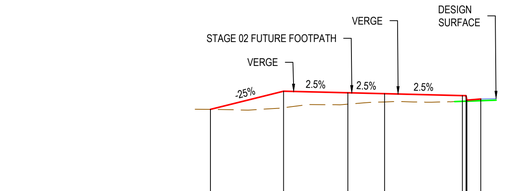
DATUM RL -1.0									
DESIGN SURFACE LEVEL	2.309	2.721	2.668	2.638	2.574	2.574	2.424	2.464	
NEW JACOBS DRIVE SURFACE LEVEL					2.390	2.394	2.395	2.409	
NATURAL SURFACE LEVEL	2.309	2.265	2.286	2.354	2.391	2.397	2.398	2.423	
OFFSET	-8.120	-6.474	-4.374	-3.174	-0.600	-0.480	-0.450	0.000	

CHAINAGE 100.0



DATUM RL -1.0									
DESIGN SURFACE LEVEL	2.240	2.730	2.678	2.648	2.584	2.584	2.434	2.474	
NEW JACOBS DRIVE SURFACE LEVEL					2.398	2.402	2.403	2.418	
NATURAL SURFACE LEVEL	2.240	2.261	2.289	2.364	2.400	2.406	2.407	2.428	
OFFSET	-8.419	-6.457	-4.357	-3.157	-0.600	-0.480	-0.450	0.000	

CHAINAGE 95.0



DATUM RL -2.0									
DESIGN SURFACE LEVEL	2.144	2.740	2.687	2.657	2.594	2.594	2.444	2.484	
NEW JACOBS DRIVE SURFACE LEVEL					2.407	2.412	2.413	2.428	
NATURAL SURFACE LEVEL	2.144	2.201	2.315	2.388	2.409	2.415	2.417	2.437	
OFFSET	-8.825	-6.440	-4.340	-3.140	-0.600	-0.480	-0.450	0.000	

CHAINAGE 90.0

FOR FUTURE STAGE 02 AS PER PLANS

FOR CONSTRUCTION

Shoalhaven City Council

APPROVED

CRAIG EXTON
MANAGER | TECHNICAL SERVICES

DATE

PLAN REFERENCE 10063.87

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A	29.10.2021	ISSUE FOR 50% REVIEW
B	03.02.2022	ISSUE FOR 80% REVIEW
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D	27.04.2022	ISSUE FOR CONSTRUCTION
E	14.06.2022	ISSUE FOR CONSTRUCTION

TITLE	NAME
DRAWN	BK
DESIGNED	BK
DRG CHECK	AL
DESIGN CHECK	AL
APPROVED	CP

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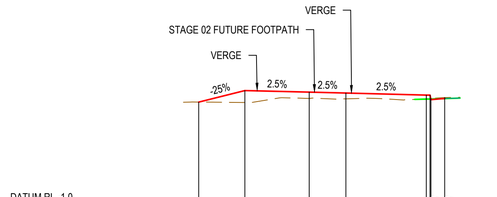
JACOBS DRIVE & SUSSEX INLET ROAD INTERSECTION UPGRADES

CLIENT
SHOALHAVEN CITY COUNCIL

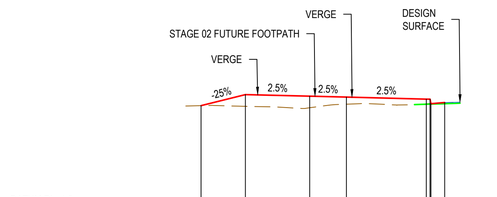
MC01 CROSS SECTIONS - SHEET 02 OF 03

JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	A.S	C701	E



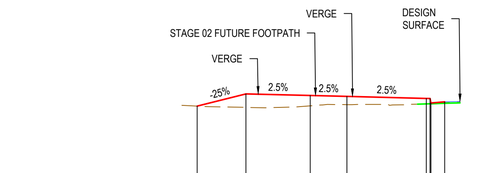
DATUM RL -1.0								
DESIGN SURFACE LEVEL	2.316	2.693	2.640	2.610	2.544	2.544	2.394	2.434
NEW JACOBS DRIVE SURFACE LEVEL					2.415	2.418	2.419	2.431
NATURAL SURFACE LEVEL	2.316	2.302	2.435	2.421	2.428	2.436	2.438	2.463
OFFSET	-8.032	-6.525	-4.425	-3.225	-0.600	-0.480	-0.450	0.000

CHAINAGE 115.0



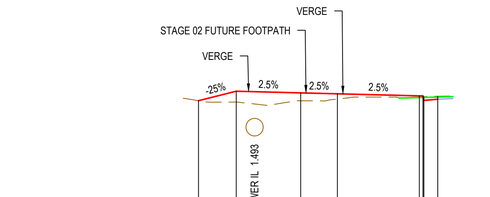
DATUM RL -1.0								
DESIGN SURFACE LEVEL	2.341	2.702	2.650	2.620	2.554	2.554	2.404	2.444
NEW JACOBS DRIVE SURFACE LEVEL					2.387	2.391	2.392	2.405
NATURAL SURFACE LEVEL	2.341	2.319	2.272	2.388	2.400	2.407	2.409	2.435
OFFSET	-7.953	-6.508	-4.408	-3.208	-0.600	-0.480	-0.450	0.000

CHAINAGE 110.0



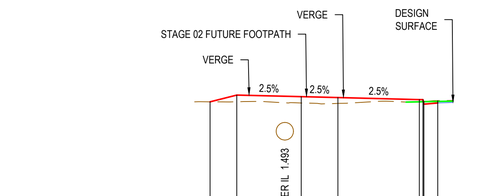
DATUM RL -1.0								
DESIGN SURFACE LEVEL	2.314	2.711	2.659	2.629	2.564	2.564	2.414	2.454
NEW JACOBS DRIVE SURFACE LEVEL					2.387	2.390	2.391	2.405
NATURAL SURFACE LEVEL	2.314	2.272	2.321	2.362	2.395	2.402	2.404	2.426
OFFSET	-8.080	-6.491	-4.391	-3.191	-0.600	-0.480	-0.450	0.000

CHAINAGE 105.0



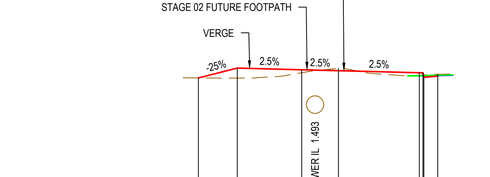
DATUM RL -2.0								
DESIGN SURFACE LEVEL	2.356	2.664	2.612	2.582	2.515	2.515	2.365	2.405
NEW JACOBS DRIVE SURFACE LEVEL					2.460	2.463	2.464	2.475
NATURAL SURFACE LEVEL	2.356	2.309	2.353	2.409	2.478	2.484	2.486	2.500
OFFSET	-7.808	-6.576	-4.476	-3.276	-0.600	-0.480	-0.450	0.000

CHAINAGE 130.0



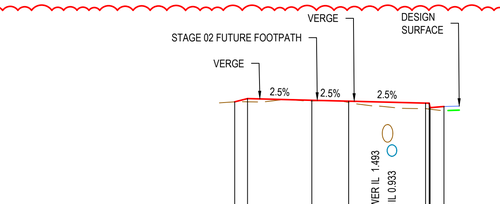
DATUM RL -2.0								
DESIGN SURFACE LEVEL	2.455	2.674	2.621	2.591	2.525	2.525	2.375	2.415
NEW JACOBS DRIVE SURFACE LEVEL					2.453	2.456	2.456	2.466
NATURAL SURFACE LEVEL	2.455	2.455	2.416	2.400	2.464	2.469	2.470	2.492
OFFSET	-7.435	-6.559	-4.459	-3.259	-0.600	-0.480	-0.450	0.000

CHAINAGE 125.0



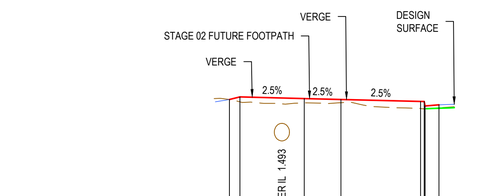
DATUM RL -2.0								
DESIGN SURFACE LEVEL	2.365	2.683	2.631	2.601	2.535	2.535	2.385	2.425
NEW JACOBS DRIVE SURFACE LEVEL					2.437	2.439	2.440	2.449
NATURAL SURFACE LEVEL	2.365	2.360	2.535	2.678	2.453	2.459	2.461	2.482
OFFSET	-7.812	-6.542	-4.442	-3.242	-0.600	-0.480	-0.450	0.000

CHAINAGE 120.0



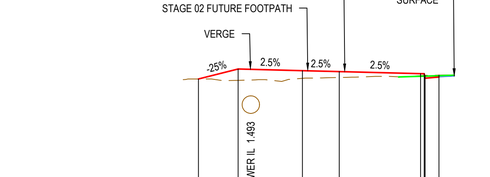
DATUM RL -3.0								
DESIGN SURFACE LEVEL	2.522	2.627	2.574	2.544	2.481	2.481	2.331	2.371
NEW JACOBS DRIVE SURFACE LEVEL								
NATURAL SURFACE LEVEL	2.522	2.524	2.547	2.503	2.300	2.286	2.282	2.235
OFFSET	-6.830	-6.410	-4.310	-3.110	-0.600	-0.480	-0.450	0.000

CHAINAGE 145.0



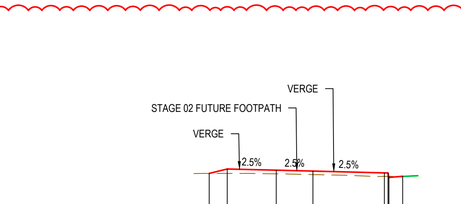
DATUM RL -2.0								
DESIGN SURFACE LEVEL	2.557	2.642	2.590	2.560	2.495	2.495	2.345	2.385
NEW JACOBS DRIVE SURFACE LEVEL								2.273
NATURAL SURFACE LEVEL	2.557	2.460	2.446	2.454	2.263	2.253	2.255	2.286
OFFSET	-6.839	-6.498	-4.398	-3.198	-0.600	-0.480	-0.450	0.000

CHAINAGE 140.0



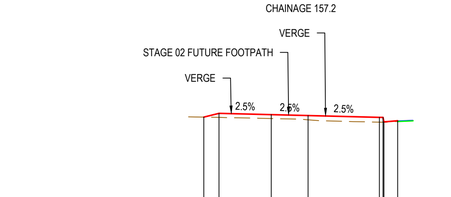
DATUM RL -2.0								
DESIGN SURFACE LEVEL	2.330	2.654	2.601	2.571	2.505	2.505	2.355	2.395
NEW JACOBS DRIVE SURFACE LEVEL					2.417	2.421	2.422	2.436
NATURAL SURFACE LEVEL	2.330	2.285	2.353	2.377	2.440	2.446	2.446	2.454
OFFSET	-7.852	-6.556	-4.456	-3.256	-0.600	-0.480	-0.450	0.000

CHAINAGE 135.0



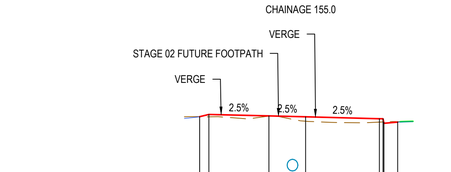
DATUM RL -1.0								
DESIGN SURFACE LEVEL	2.360	2.507	2.467	2.437	2.379	2.379	2.229	2.269
NEW JACOBS DRIVE SURFACE LEVEL							2.259	
NATURAL SURFACE LEVEL	2.360	2.360	2.348	2.325	2.263	2.264	2.264	2.269
OFFSET	-6.318	-5.730	-4.130	-2.930	-0.600	-0.480	-0.450	0.000

CHAINAGE 157.2



DATUM RL -1.0								
DESIGN SURFACE LEVEL	2.408	2.531	2.489	2.459	2.401	2.401	2.251	2.291
NEW JACOBS DRIVE SURFACE LEVEL							2.268	
NATURAL SURFACE LEVEL	2.408	2.399	2.361	2.320	2.244	2.242	2.241	2.262
OFFSET	-6.329	-5.636	-4.128	-2.928	-0.600	-0.480	-0.450	0.000

CHAINAGE 155.0



DATUM RL -3.0								
DESIGN SURFACE LEVEL	2.513	2.588	2.539	2.509	2.449	2.449	2.299	2.339
NEW JACOBS DRIVE SURFACE LEVEL								
NATURAL SURFACE LEVEL	2.513	2.510	2.532	2.366	2.337	2.342	2.343	2.351
OFFSET	-6.467	-6.165	-4.207	-3.007	-0.600	-0.480	-0.450	0.000

CHAINAGE 150.0

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CRAIG EXTON
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DATE

PLAN REFERENCE 10063.88

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REV	DATE	REVISION DESCRIPTION
A	29.10.2021	ISSUE FOR 50% REVIEW
B	03.02.2022	ISSUE FOR 80% REVIEW
C	18.03.2022	ISSUE FOR FINAL COMMENT
D	27.04.2022	ISSUE FOR CONSTRUCTION
E	14.06.2022	ISSUE FOR CONSTRUCTION

TITLE	NAME
DRAWN	BK
DESIGNED	BK
DRG CHECK	AL
DESIGN CHECK	AL
APPROVED	CP

FOR CONSTRUCTION

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JACOBS DRIVE & SUSSEX INLET ROAD INTERSECTION UPGRADES

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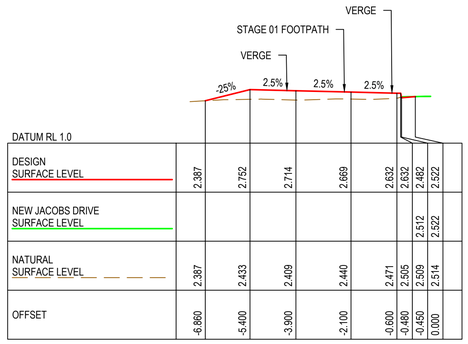
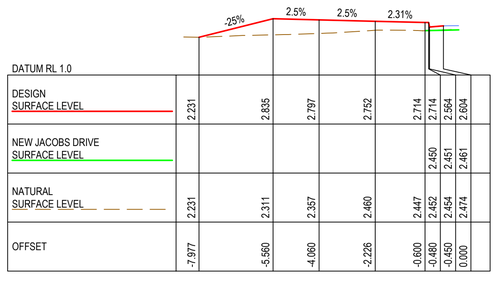
MC01 CROSS SECTIONS - SHEET 03 OF 03

JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	A.S	C702	E



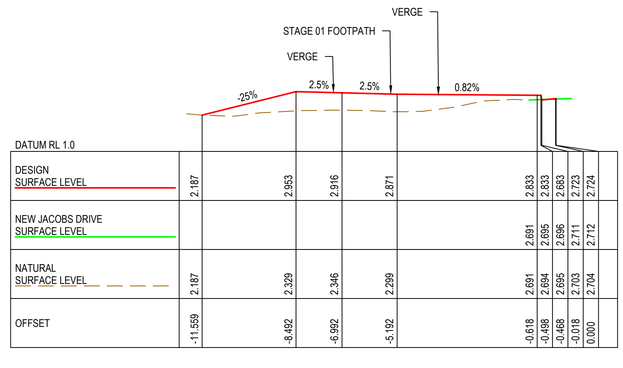
DATUM RL 1.0								
DESIGN SURFACE LEVEL	2.387	2.752	2.714	2.669	2.632	2.632	2.482	2.522
NEW JACOBS DRIVE SURFACE LEVEL						2.512	2.522	
NATURAL SURFACE LEVEL	2.387	2.433	2.409	2.440	2.471	2.505	2.509	2.514
OFFSET	-6.860	-5.400	-3.900	-2.100	-0.600	-0.480	-0.450	0.000

CHAINAGE 10.0



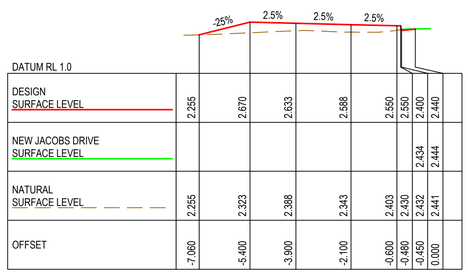
DATUM RL 1.0								
DESIGN SURFACE LEVEL	2.231	2.835	2.797	2.752	2.714	2.714	2.564	2.604
NEW JACOBS DRIVE SURFACE LEVEL						2.450	2.451	2.461
NATURAL SURFACE LEVEL	2.231	2.311	2.357	2.460	2.447	2.452	2.454	2.474
OFFSET	-7.977	-5.560	-4.060	-2.226	-0.600	-0.480	-0.450	0.000

CHAINAGE 25.0



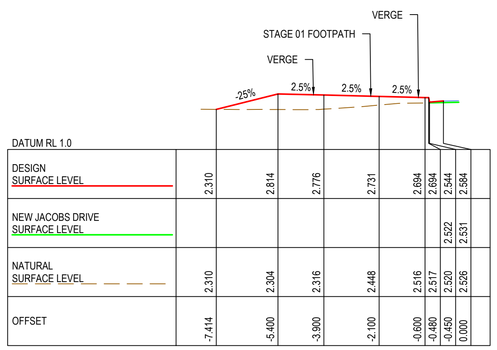
DATUM RL 1.0								
DESIGN SURFACE LEVEL	2.167	2.953	2.916	2.871	2.833	2.833	2.683	2.724
NEW JACOBS DRIVE SURFACE LEVEL					2.691	2.695	2.686	2.712
NATURAL SURFACE LEVEL	2.167	2.329	2.346	2.299	2.691	2.694	2.695	2.703
OFFSET	-11.559	-8.492	-6.992	-5.192	-0.618	-0.498	-0.468	-0.018

CHAINAGE 40.0



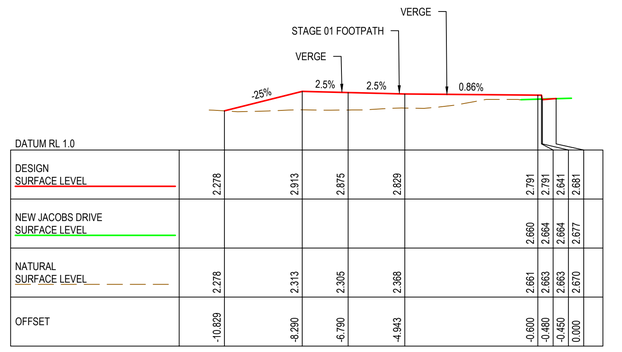
DATUM RL 1.0								
DESIGN SURFACE LEVEL	2.255	2.670	2.633	2.588	2.550	2.550	2.400	2.440
NEW JACOBS DRIVE SURFACE LEVEL						2.434	2.444	
NATURAL SURFACE LEVEL	2.255	2.323	2.388	2.343	2.403	2.430	2.432	2.441
OFFSET	-7.060	-5.400	-3.900	-2.100	-0.600	-0.480	-0.450	0.000

CHAINAGE 5.0



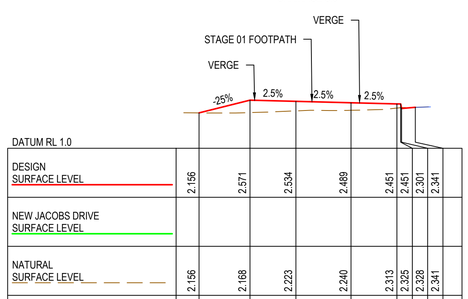
DATUM RL 1.0								
DESIGN SURFACE LEVEL	2.310	2.814	2.776	2.731	2.694	2.694	2.544	2.584
NEW JACOBS DRIVE SURFACE LEVEL						2.522	2.531	
NATURAL SURFACE LEVEL	2.310	2.304	2.316	2.448	2.516	2.517	2.520	2.526
OFFSET	-7.414	-5.400	-3.900	-2.100	-0.600	-0.480	-0.450	0.000

CHAINAGE 20.0



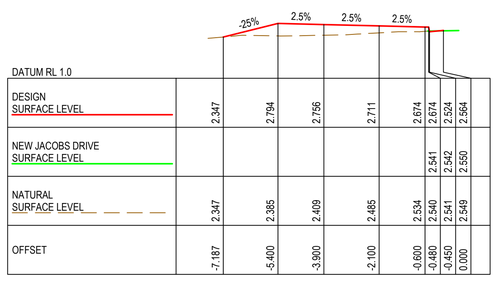
DATUM RL 1.0								
DESIGN SURFACE LEVEL	2.278	2.913	2.875	2.829	2.791	2.791	2.641	2.681
NEW JACOBS DRIVE SURFACE LEVEL					2.660	2.664	2.664	2.677
NATURAL SURFACE LEVEL	2.278	2.313	2.305	2.368	2.661	2.663	2.663	2.670
OFFSET	-10.829	-8.290	-6.790	-4.943	-0.600	-0.480	-0.450	0.000

CHAINAGE 35.0



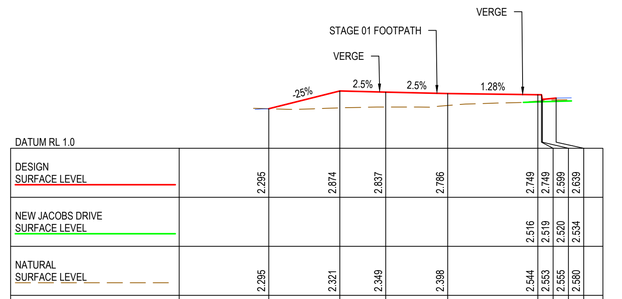
DATUM RL 1.0								
DESIGN SURFACE LEVEL	2.156	2.571	2.534	2.489	2.451	2.451	2.301	2.341
NEW JACOBS DRIVE SURFACE LEVEL								
NATURAL SURFACE LEVEL	2.156	2.168	2.223	2.240	2.313	2.325	2.328	2.341
OFFSET	-7.062	-5.400	-3.900	-2.100	-0.600	-0.480	-0.450	0.000

CHAINAGE 0.0



DATUM RL 1.0								
DESIGN SURFACE LEVEL	2.347	2.794	2.756	2.711	2.674	2.674	2.524	2.564
NEW JACOBS DRIVE SURFACE LEVEL						2.541	2.542	2.550
NATURAL SURFACE LEVEL	2.347	2.385	2.409	2.465	2.534	2.540	2.541	2.549
OFFSET	-7.187	-5.400	-3.900	-2.100	-0.600	-0.480	-0.450	0.000

CHAINAGE 15.0



DATUM RL 1.0								
DESIGN SURFACE LEVEL	2.295	2.874	2.837	2.786	2.749	2.749	2.599	2.639
NEW JACOBS DRIVE SURFACE LEVEL					2.516	2.519	2.520	2.534
NATURAL SURFACE LEVEL	2.295	2.321	2.349	2.398	2.544	2.553	2.555	2.560
OFFSET	-9.381	-7.062	-5.562	-3.541	-0.600	-0.480	-0.450	0.000

CHAINAGE 30.0

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DATE

PLAN REFERENCE 10063.89

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TITLE	NAME
DRAWN	BK
DESIGNED	BK
DRG CHECK	AL
DESIGN CHECK	AL
APPROVED	CP

FOR CONSTRUCTION

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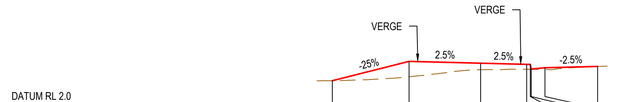
MC02 CROSS SECTIONS - SHEET 01 OF 02

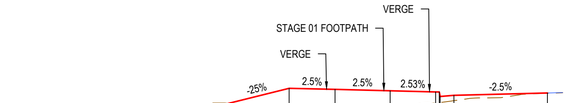
JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	A.S	C703	D



DATUM RL 2.0

DESIGN SURFACE LEVEL	2.720	3.347	3.289	3.251	3.251	3.101	3.141	3.184
NEW JACOBS DRIVE SURFACE LEVEL								
NATURAL SURFACE LEVEL	2.720	2.848	3.078	3.090	3.090	3.090	3.082	3.184
OFFSET	-8.663	-6.154	-3.818	-2.318	-2.198	-2.168	-1.718	0.000

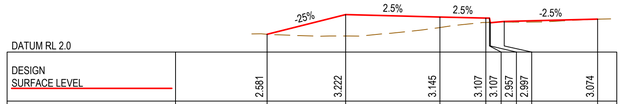
CHAINAGE 75.0



DATUM RL 1.0

DESIGN SURFACE LEVEL	2.507	3.005	2.968	2.923	2.885	2.735	2.775	2.852
NEW JACOBS DRIVE SURFACE LEVEL								
NATURAL SURFACE LEVEL	2.507	2.348	2.335	2.376	2.522	2.539	2.602	2.845
OFFSET	-10.427	-8.434	-6.934	-5.134	-3.650	-3.500	-3.050	0.000

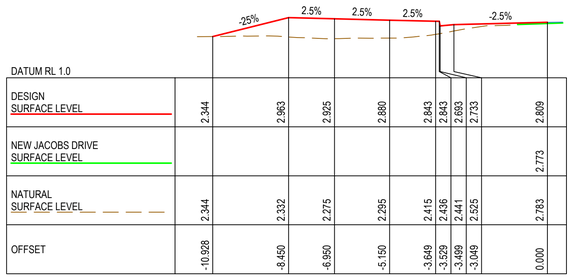
CHAINAGE 55.0



DATUM RL 2.0

DESIGN SURFACE LEVEL	2.581	3.222	3.145	3.107	3.107	2.957	2.997	3.074
NEW JACOBS DRIVE SURFACE LEVEL								
NATURAL SURFACE LEVEL	2.581	2.525	2.801	2.967	2.971	2.972	2.977	3.073
OFFSET	-10.793	-8.228	-5.150	-3.650	-3.530	-3.500	-3.050	0.000

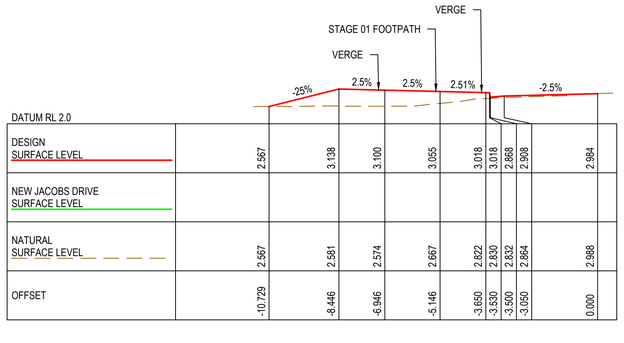
CHAINAGE 70.0



DATUM RL 1.0

DESIGN SURFACE LEVEL	2.344	2.963	2.925	2.880	2.843	2.693	2.733	2.809
NEW JACOBS DRIVE SURFACE LEVEL								2.773
NATURAL SURFACE LEVEL	2.344	2.332	2.275	2.295	2.415	2.441	2.525	2.783
OFFSET	-10.928	-8.450	-6.950	-5.150	-3.649	-3.499	-3.049	0.000

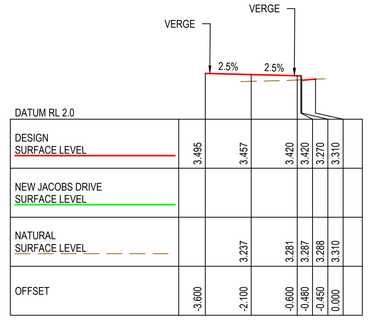
CHAINAGE 50.0



DATUM RL 2.0

DESIGN SURFACE LEVEL	2.567	3.138	3.100	3.055	3.018	3.018	2.908	2.984
NEW JACOBS DRIVE SURFACE LEVEL								
NATURAL SURFACE LEVEL	2.567	2.581	2.574	2.667	2.822	2.830	2.864	2.988
OFFSET	-10.729	-8.446	-6.946	-5.146	-3.650	-3.530	-3.050	0.000

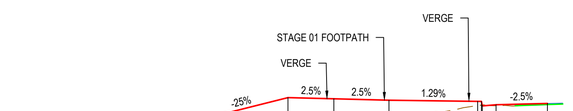
CHAINAGE 65.0



DATUM RL 2.0

DESIGN SURFACE LEVEL	3.495	3.457	3.420	3.420	3.270	3.310	
NEW JACOBS DRIVE SURFACE LEVEL							
NATURAL SURFACE LEVEL		3.237	3.281	3.287	3.288	3.310	
OFFSET	-3.600	-2.100	-0.600	-0.480	-0.450	0.000	

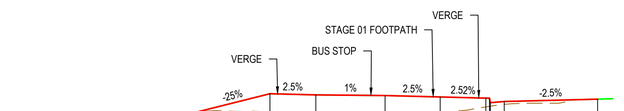
CHAINAGE 80.6



DATUM RL 1.0

DESIGN SURFACE LEVEL	2.221	2.955	2.917	2.872	2.835	2.835	2.685	2.725	2.767
NEW JACOBS DRIVE SURFACE LEVEL									2.730
NATURAL SURFACE LEVEL	2.221	2.352	2.322	2.294	2.685	2.712	2.717	2.687	2.735
OFFSET	-11.407	-8.471	-6.971	-5.171	-2.275	-2.155	-2.125	-1.675	0.000

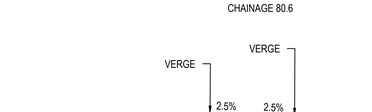
CHAINAGE 45.0



DATUM RL 1.0

DESIGN SURFACE LEVEL	2.500	3.083	3.045	3.022	2.977	2.940	2.940	2.790	2.830	2.906
NEW JACOBS DRIVE SURFACE LEVEL										
NATURAL SURFACE LEVEL	2.500	2.487	2.424	2.419	2.474	2.652	2.671	2.675	2.735	2.907
OFFSET	-13.029	-10.700	-9.200	-6.940	-5.140	-3.650	-3.530	-3.500	-3.050	0.000

CHAINAGE 60.0



DATUM RL 2.0

DESIGN SURFACE LEVEL	3.482	3.442	3.405	3.405	3.295	3.295	
NEW JACOBS DRIVE SURFACE LEVEL							
NATURAL SURFACE LEVEL	3.171	3.212	3.265	3.271	3.273	3.294	3.295
OFFSET	-3.716	-2.121	-0.621	-0.501	-0.471	-0.021	0.000

CHAINAGE 80.0

APPROVED		PLAN REFERENCE
Shoalhaven City Council	CRAIG EXTON MANAGER | TECHNICAL SERVICES	10063.90
	DATE	

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B	03.02.2022	ISSUE FOR 80% REVIEW
C	18.03.2022	ISSUE FOR FINAL COMMENT
D	27.04.2022	ISSUE FOR CONSTRUCTION

TITLE	NAME
DRAWN	BK
DESIGNED	BK
DRG CHECK	AL
DESIGN CHECK	AL
APPROVED	CP

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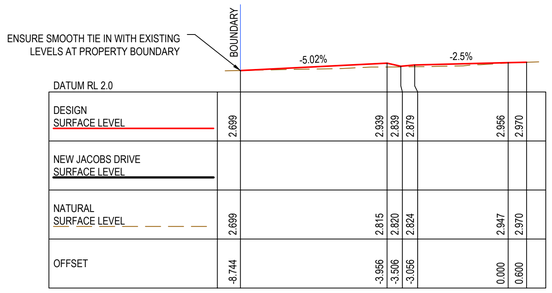
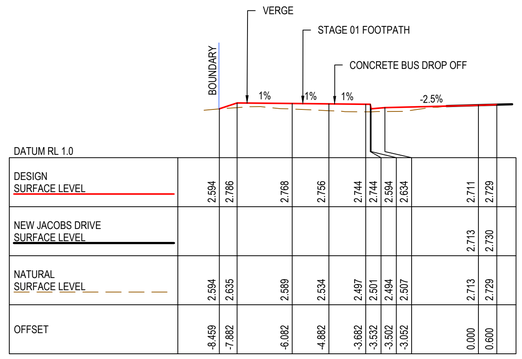
MC02 CROSS SECTIONS - SHEET 02 OF 02

JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	A.S	C704	D



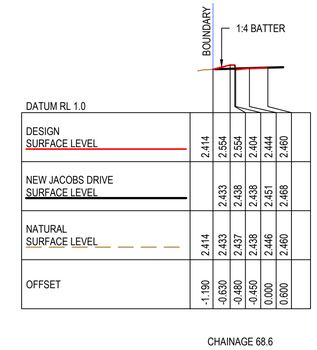
DATUM RL 2.0									
DESIGN SURFACE LEVEL	2.699		2.939	2.839	2.879		2.956	2.970	
NEW JACOBS DRIVE SURFACE LEVEL									
NATURAL SURFACE LEVEL	2.699		2.815	2.820	2.824		2.947	2.970	
OFFSET	-8.744		-3.956	-3.506	-3.056		0.000	0.600	

CHAINAGE 15.0



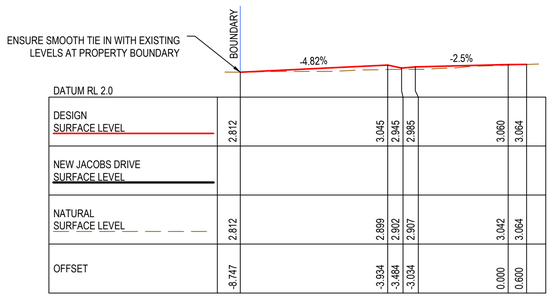
DATUM RL 1.0											
DESIGN SURFACE LEVEL	2.594	2.766	2.768	2.756	2.744	2.744	2.594	2.634	2.711	2.729	
NEW JACOBS DRIVE SURFACE LEVEL									2.713	2.730	
NATURAL SURFACE LEVEL	2.594	2.635	2.589	2.534	2.497	2.501	2.494	2.507	2.713	2.729	
OFFSET	-8.459	-7.882	-6.082	-4.882	-3.682	-3.532	-3.502	-3.052	0.000	0.600	

CHAINAGE 35.0



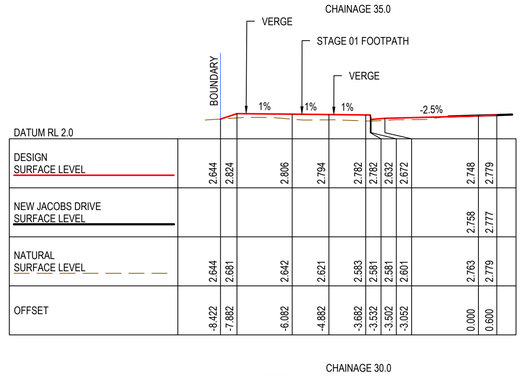
DATUM RL 1.0							
DESIGN SURFACE LEVEL	2.414	2.554	2.554	2.404	2.444	2.460	
NEW JACOBS DRIVE SURFACE LEVEL		2.433	2.438	2.438	2.451	2.468	
NATURAL SURFACE LEVEL	2.414	2.433	2.437	2.438	2.446	2.460	
OFFSET	-1.190	-0.630	-0.480	-0.450	0.000	0.600	

CHAINAGE 68.6



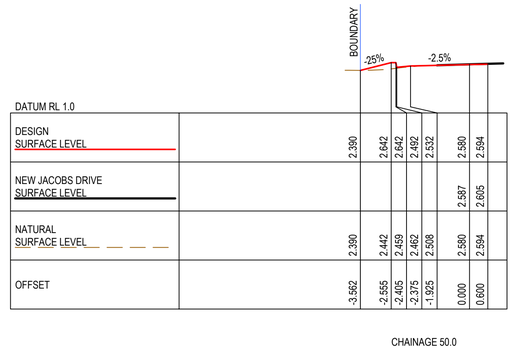
DATUM RL 2.0									
DESIGN SURFACE LEVEL	2.812		3.045	2.945	2.985		3.060	3.064	
NEW JACOBS DRIVE SURFACE LEVEL									
NATURAL SURFACE LEVEL	2.812		2.899	2.902	2.907		3.042	3.064	
OFFSET	-8.747		-3.934	-3.484	-3.034		0.000	0.600	

CHAINAGE 10.0



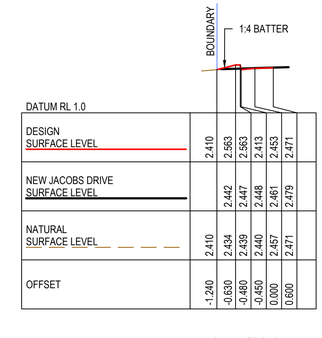
DATUM RL 2.0											
DESIGN SURFACE LEVEL	2.644	2.824	2.806	2.794	2.782	2.782	2.632	2.672	2.748	2.779	
NEW JACOBS DRIVE SURFACE LEVEL									2.758	2.777	
NATURAL SURFACE LEVEL	2.644	2.681	2.642	2.621	2.583	2.581	2.581	2.601	2.763	2.779	
OFFSET	-8.422	-7.882	-6.082	-4.882	-3.682	-3.532	-3.502	-3.052	0.000	0.600	

CHAINAGE 30.0



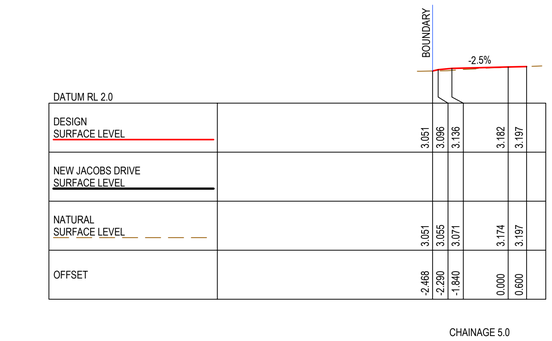
DATUM RL 1.0							
DESIGN SURFACE LEVEL	2.390	2.642	2.642	2.492	2.532	2.580	2.594
NEW JACOBS DRIVE SURFACE LEVEL						2.587	2.605
NATURAL SURFACE LEVEL	2.390	2.442	2.459	2.462	2.508	2.580	2.594
OFFSET	-3.562	-2.555	-2.405	-2.375	-1.925	0.000	0.600

CHAINAGE 50.0



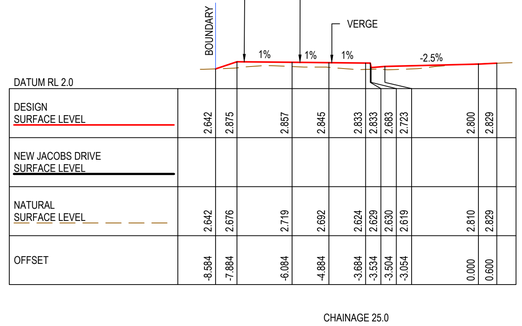
DATUM RL 1.0							
DESIGN SURFACE LEVEL	2.410	2.563	2.563	2.413	2.453	2.471	
NEW JACOBS DRIVE SURFACE LEVEL		2.442	2.447	2.448	2.461	2.479	
NATURAL SURFACE LEVEL	2.410	2.434	2.439	2.440	2.457	2.471	
OFFSET	-1.240	-0.630	-0.480	-0.450	0.000	0.600	

CHAINAGE 65.0



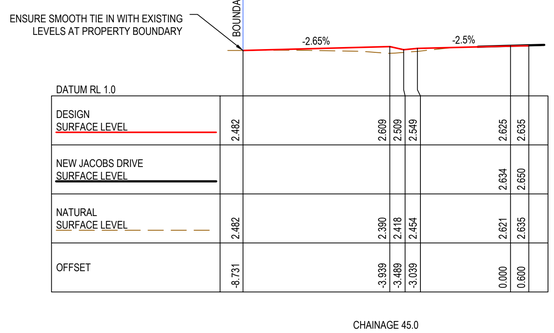
DATUM RL 2.0									
DESIGN SURFACE LEVEL			3.051	3.096	3.136		3.162	3.197	
NEW JACOBS DRIVE SURFACE LEVEL									
NATURAL SURFACE LEVEL			3.051	3.055	3.071		3.174	3.197	
OFFSET			-2.468	-2.290	-1.840		0.000	0.600	

CHAINAGE 5.0



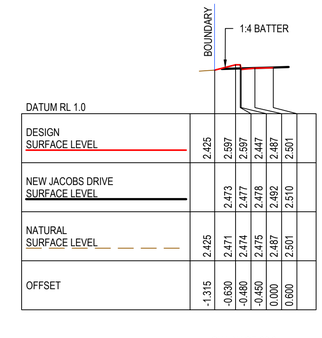
DATUM RL 2.0											
DESIGN SURFACE LEVEL	2.642	2.875	2.857	2.845	2.833	2.833	2.683	2.723	2.800	2.829	
NEW JACOBS DRIVE SURFACE LEVEL											
NATURAL SURFACE LEVEL	2.642	2.676	2.719	2.692	2.624	2.629	2.630	2.619	2.810	2.829	
OFFSET	-8.584	-7.884	-6.084	-4.884	-3.684	-3.534	-3.504	-3.054	0.000	0.600	

CHAINAGE 25.0



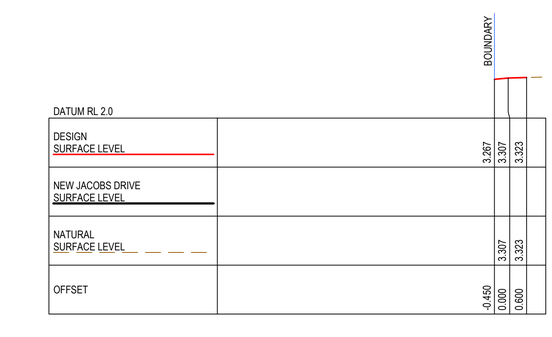
DATUM RL 1.0							
DESIGN SURFACE LEVEL	2.482	2.609	2.509	2.549	2.625	2.635	
NEW JACOBS DRIVE SURFACE LEVEL					2.634	2.650	
NATURAL SURFACE LEVEL	2.482	2.390	2.418	2.454	2.621	2.635	
OFFSET	-8.731	-3.939	-3.489	-3.039	0.000	0.600	

CHAINAGE 45.0



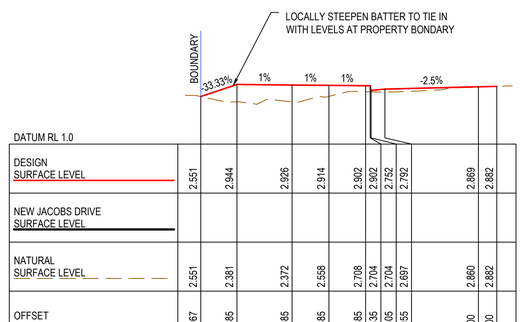
DATUM RL 1.0							
DESIGN SURFACE LEVEL	2.425	2.597	2.597	2.447	2.487	2.501	
NEW JACOBS DRIVE SURFACE LEVEL		2.473	2.477	2.478	2.492	2.510	
NATURAL SURFACE LEVEL	2.425	2.471	2.474	2.475	2.487	2.501	
OFFSET	-1.315	-0.630	-0.480	-0.450	0.000	0.600	

CHAINAGE 60.0



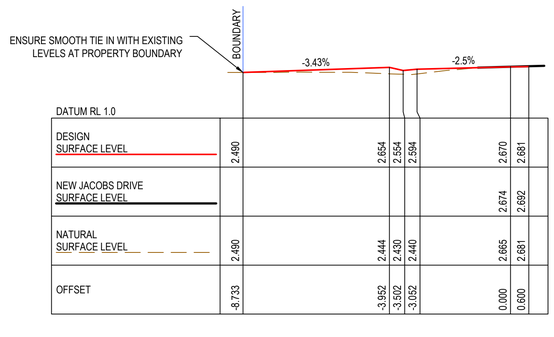
DATUM RL 2.0									
DESIGN SURFACE LEVEL			3.267	3.307	3.323				
NEW JACOBS DRIVE SURFACE LEVEL									
NATURAL SURFACE LEVEL				3.307	3.323				
OFFSET			-0.450	0.000	0.600				

CHAINAGE 0.0



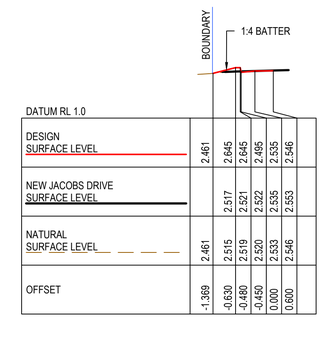
DATUM RL 1.0											
DESIGN SURFACE LEVEL	2.551	2.944	2.926	2.914	2.902	2.902	2.752	2.792	2.869	2.882	
NEW JACOBS DRIVE SURFACE LEVEL											
NATURAL SURFACE LEVEL	2.551	2.381	2.372	2.558	2.708	2.704	2.704	2.697	2.860	2.882	
OFFSET	-9.067	-7.885	-6.085	-4.885	-3.685	-3.535	-3.505	-3.055	0.000	0.600	

CHAINAGE 20.0



DATUM RL 1.0							
DESIGN SURFACE LEVEL	2.490	2.654	2.554	2.594	2.670	2.681	
NEW JACOBS DRIVE SURFACE LEVEL					2.674	2.692	
NATURAL SURFACE LEVEL	2.490	2.444	2.430	2.440	2.665	2.681	
OFFSET	-8.733	-3.952	-3.502	-3.052	0.000	0.600	

CHAINAGE 40.0



DATUM RL 1.0							
DESIGN SURFACE LEVEL	2.461	2.645	2.645	2.495	2.535	2.546	
NEW JACOBS DRIVE SURFACE LEVEL		2.517	2.521	2.522	2.535	2.553	
NATURAL SURFACE LEVEL	2.461	2.515	2.519	2.520	2.533	2.546	
OFFSET	-1.369	-0.630	-0.480	-0.450	0.000	0.600	

CHAINAGE 55.0

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B	18.03.2022	ISSUE FOR FINAL COMMENT
C	27.04.2022	ISSUE FOR CONSTRUCTION

TITLE	NAME
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DESIGNED	BK
DRG CHECK	AL
DESIGN CHECK	AL
APPROVED	CP

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JACOBS DRIVE & SUSSEX INLET ROAD INTERSECTION UPGRADES

CLIENT
SHOALHAVEN CITY COUNCIL

MC03 CROSS SECTIONS

JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	A.S	C705	C

BUS STOP POST AND FLAG TO MEET COUNCIL SPECIFICATIONS

EXISTING ARROWS TO BE REMOVED AND REINSTATED IN ACCORDANCE WITH AUSTRALIAN STANDARDS

CHEVRON LINE MARKING TO BE INSTALLED IN ACCORDANCE WITH AUSTRALIAN STANDARD AS1742.2

AREA WITHIN SHADED EXTENT IS DEFINED AS STAGE 02. STAGE 02 IS TO BE DESIGNED / CONSTRUCTED AT A LATER DATE.

BUS STOP POST AND FLAG TO MEET COUNCIL SPECIFICATIONS

CHEVRON LINE MARKING TO BE INSTALLED IN ACCORDANCE WITH AUSTRALIAN STANDARD AS1742.2

R5-20 (R)

R5-20 (L)

R2-3 (L)

R1-2

JACOBS DRIVE

SUSSEX INLET ROAD

STAGE 01 LIMIT OF WORKS

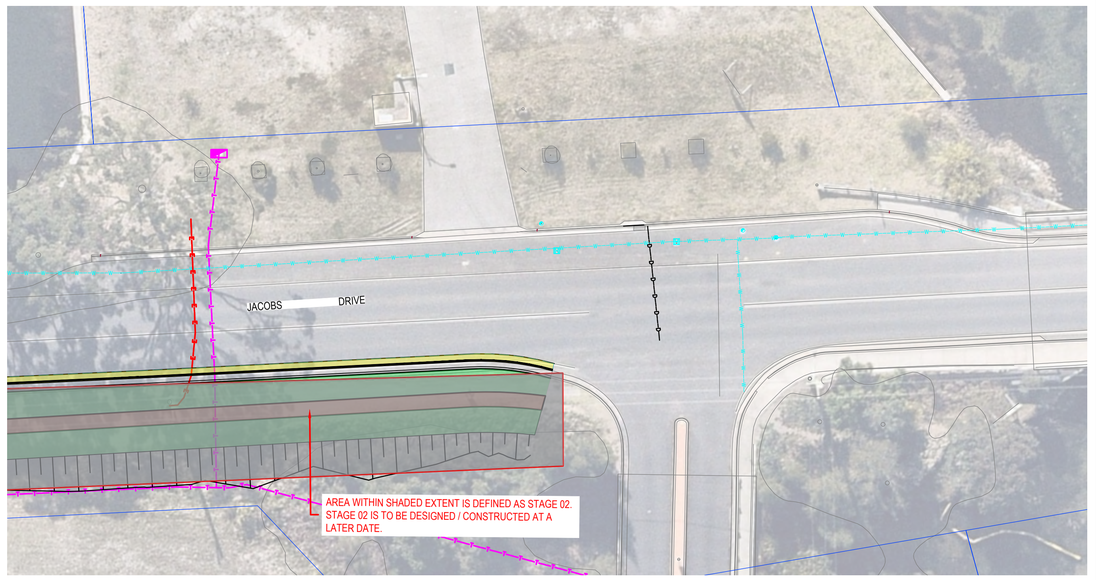
10m MIN

22m

23m

LINEMARKING LEGEND

BARRIER LINE, DOUBLE-TWO-WAY	BB
CONTINUITY LINE	C1
EDGE LINE / PAINTED MEDIAN	E5
LANE LINE, STANDARD-BROKEN	L1
LANE LINE, STANDARD-CONTINUOUS	L3
GIVEWAY LINE	TB
CHEVRON	
TURN ARROW (AR-3R)	



NOTE.

1. ALL LINEMARKING TO BE REINSTATED TO EXISTING LOCATION . LINEMARKING TO BE SURVEYED PRIOR TO DEMOLITION OF ASPHALT

FOR CONSTRUCTION

JACOBS DRIVE & SUSSEX INLET ROAD INTERSECTION UPGRADES

CLIENT

SHOALHAVEN CITY COUNCIL

SIGNAGE & LINEMARKING PLAN

JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	1:250	C800	C

REV	DATE	REVISION DESCRIPTION
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C	14.06.2022	ISSUE FOR CONSTRUCTION

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DESIGNED	BK
DRG CHECK	AL
DESIGN CHECK	AL
APPROVED	CP

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SCALE 1:250 2.5 0 2.5 5 AT A1

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DATE

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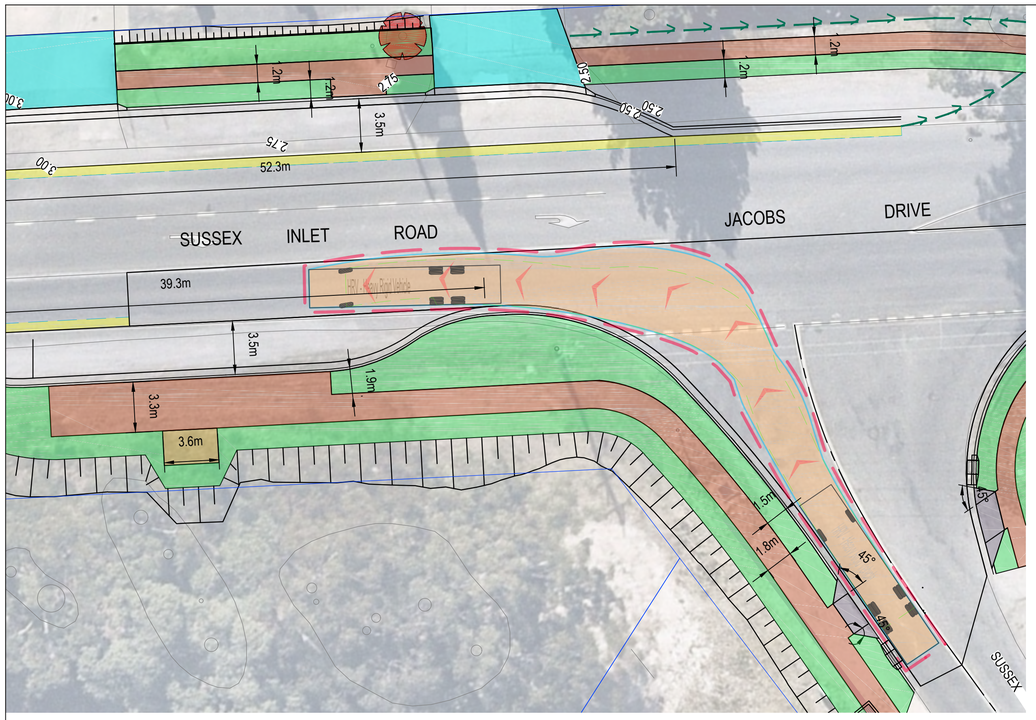
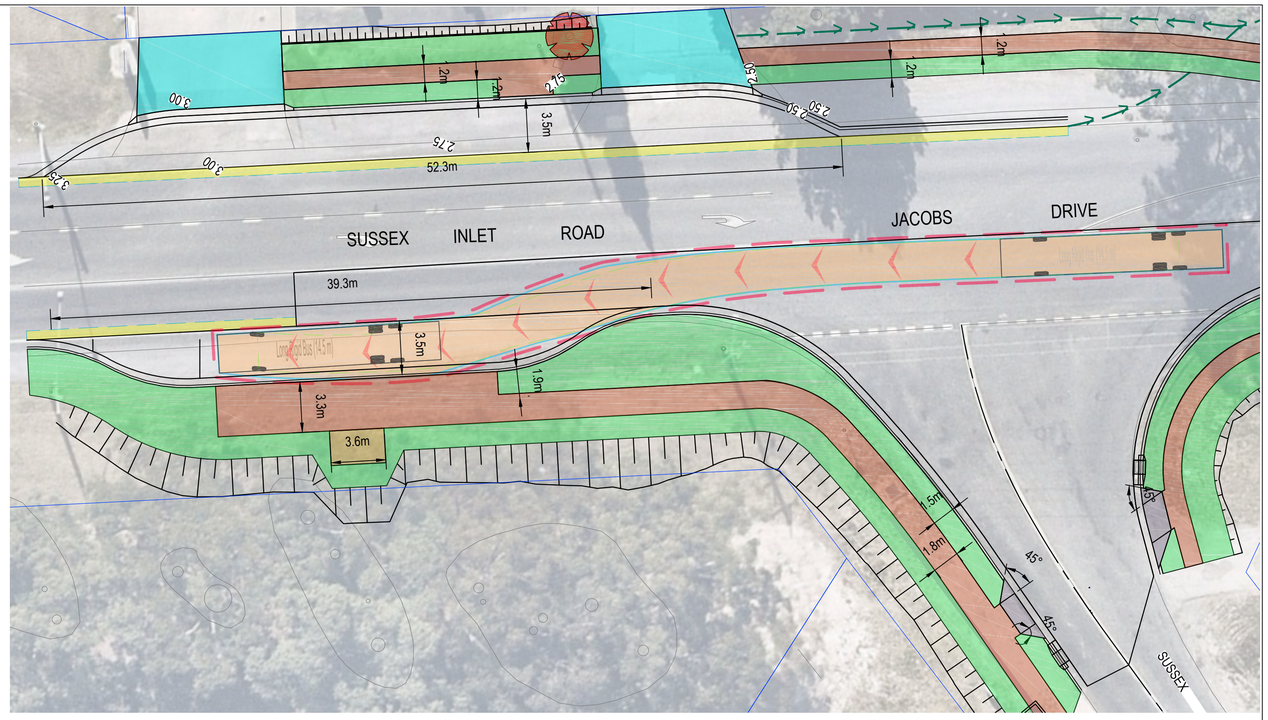
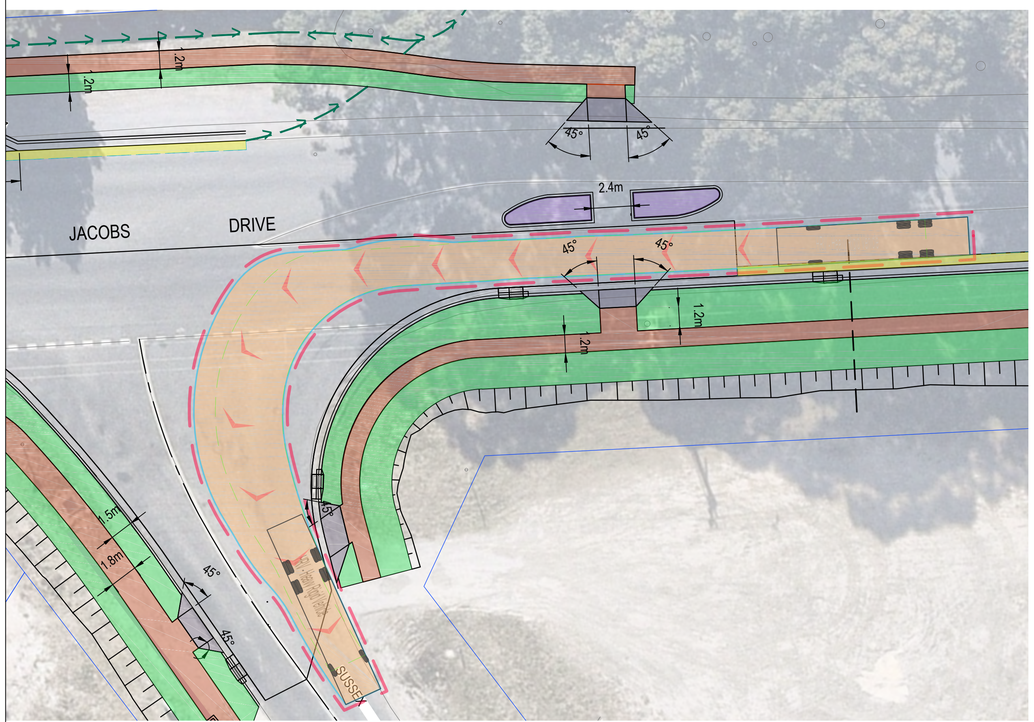


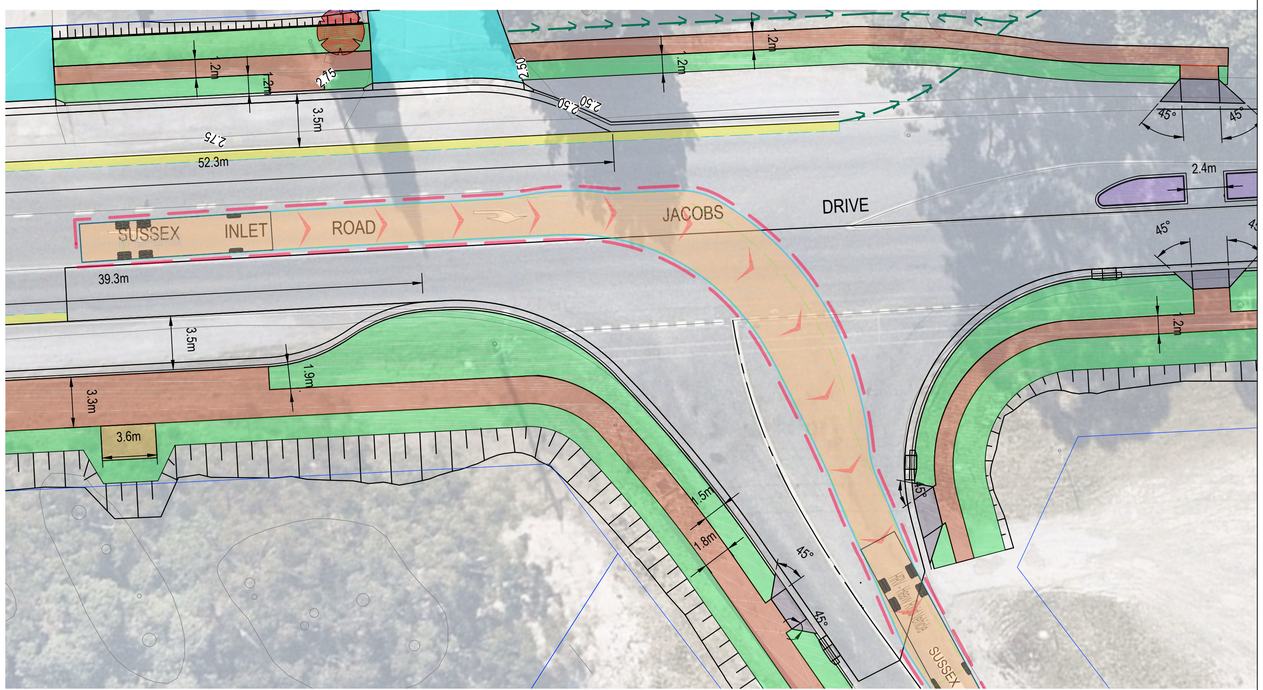
HRV TURNING LEFT ONTO JACOBS DRIVE



14.5m BUS TURNING INTO FORMAL BUS BAY



HRV TURNING LEFT ONTO SUSSEX INLET ROAD



HRV TURNING RIGHT ONTO SUSSEX INLET ROAD

FOR CONSTRUCTION

Shoalhaven City Council

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DATE

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SCALE 1:200 2 0 2 4 AT A1

REV	DATE	REVISION DESCRIPTION
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TITLE	NAME
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DESIGNED	BK
DRG CHECK	AL
DESIGN CHECK	AL
APPROVED	CP

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JACOBS DRIVE & SUSSEX INLET ROAD INTERSECTION UPGRADES

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SHOALHAVEN CITY COUNCIL

SWEPT PATHS PLAN

JOB NUMBER:	SCALE @ A1	SHEET No	REV
21053	1:200	C900	D

APPENDIX B - Likelihood of Occurrence Table (NSW Threatened Species)

NSW Threatened Species Likelihood of Occurrence Table

The table of likelihood of occurrence evaluates the likelihood of threatened species to occur on the subject site. This list is derived from previously recorded species within a 5 km radius (taken from NSW BioNet Atlas on 17/6/2022) around the subject site. Ecology information unless otherwise stated, has been obtained from the *Threatened Biodiversity Profile Search* on the NSW OEH (Office of Environment & Heritage) online database (https://www.environment.nsw.gov.au/threatenedspeciesapp/).

Likelihood of occurrence in study area

1. Unlikely – Species, population or ecological community is not likely to occur. Lack of previous recent (<25 years) records and suitable potential habitat limited or not available in the study area.
2. Likely – Species, population or ecological community could occur and study area is likely to provide suitable habitat. Previous records in the locality and/or suitable potential habitat in the study area.
3. Present – Species, population or ecological community was recorded during the field investigations.

Possibility of impact

1. Unlikely – The proposal would be unlikely to impact this species or its habitats. No NSW *Biodiversity Conservation Act 2016* “Test of Significance” or EPBC Act significance assessment is necessary for this species.
2. Likely – The proposal could impact this species, population or ecological community or its habitats. A NSW *Biodiversity Conservation Act 2016* “Test of Significance” and/or EPBC Act significance assessment is required for this species, population or ecological community.

Note that where further assessment is deemed required, this is undertaken within the REF as a Test of Significance (in the case of NSW listed species) or an EPBC Significant Impact Assessment (in the case of Commonwealth listed species).

Species name	*Status*	*Habitat requirements (www.environment.nsw.gov.au)*	*Likelihood of presence within areas impacted by the activity*
FLORA			
Narrow-leafed Wilsonia *Wilsonia backhousei*	Vulnerable BC Act	This is a species of the margins of salt marshes and lakes.	Not likely – no suitable habitat
Biconvex paperbark *Melaleuca biconvexa*	Vulnerable BC Act and EPBC Act	The species generally grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects.	Not likely – although suitable habitat exists, the species was not observed during site inspections. It is a non-cryptic species and easily identifiable if it were present.
Leafless Tongue Orchid *Cryptostylis hunteriana*	Vulnerable BC Act and EPBC Act	Larger populations typically occur I woodland dominated by Scribbly Gum, Silvertop Ash, Red Bloodwood and Black Sheoak and appears to prefer open areas.	Not likely – no suitable habitat
Pterostylis ventricosa	Endangered BC Act	The species favours more open areas of tall coastal eucalypt forest often dominated by one or more of the following tree species:- Turpentine, Spotted Gum, Grey Ironbark, Blackbutt, White Stringybark, Scribbly Gum and Sydney Peppermint. Often favours more open areas such as along powerline easements and on road verges where the tree overstorey has been removed or thinned. Grows in a range of groundcover types, including moderately dense low heath, open sedges and grasses, leaf litter, and mosses on outcropping rock. Small moss gardens are a commonly associated micro-habitat feature in most habitats.	Not likely – although suitable habitat exists the site has dense grassy understorey of mainly exotic grasses.
Tangled Bedstraw *Galium australe*	Endangered BC Act	In NSW, the species has been recorded in Turpentine forest and coastal Acacia shrubland	Not likely – although suitable habitat exists, the species was not observed during site inspections. It is a non-cryptic species and easily identifiable if it were present.

AMPHIBIANS			
Green and Golden Bell Frog *Litoria aurea*	Endangered BC Act Vulnerable EPBC Act	Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (*Typha* spp.) or spikerushes (*Eleocharis* spp.)	Not likely – no suitable habitat
REPTILES			
Green Turtle *Chelonia mydas*	Vulnerable BC Act and EPBC Act	This is a mine turtle	Not likely – no suitable habitat
BIRDS			
Southern Giant Petrel *Macronectes giganteus*	Endangered BC Act and EPBC Act	The species has a circumpolar pelagic range from Antarctica to approx..20 degrees S. Over summer, the species nests in small colonies amongst open vegetation on Antarctic and subantarctic islands.	Not likely – no suitable habitat
Northern Giant Petrel *Macronectes halli*	Vulnerable BC Act and EPBC Act	The Northern Giant-Petrel has a circumpolar pelagic distribution, usually between 40-64ºS in open oceans. Their range extends into subtropical waters (to 28ºS) in winter and early spring, and they are a common visitor in NSW waters, predominantly along the south-east coast during winter and autumn. Breeding in Australian territory is limited to Macquarie Island and occurs during spring and summer.	Not likely – no suitable habitat
White-bellied Sea-Eagle *Haliaeetus leucogaster*	Vulnerable BC Act	The habitat for this species is characterised by the presence of large areas of open water including larger rivers, swamps, lakes and the sea. Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts.	Not likely – no suitable habitat

Eastern Osprey *Pandion cristatus*	Vulnerable BC Act	The species favours coastal areas, especially the mouths of large rivers, lagoons and lakes. Feeds on fish over clear, open water.	Not likely – no suitable habitat
Sooty Oystercatcher *Haematopus fuliginosus*	Vulnerable BC Act	Favours rock headlands, rocky shelves, exposed reefs with rock pools, beaches and muddy estuaries.	Not likely – no suitable habitat
Pied Oystercatcher *Haematopus longirostris*	Endangered BC Act	Favours intertidal flats of inlets and bays, open beaches and sandbanks.	Not likely – no suitable habitat
Eastern Hooded Dotterel *Thinornis cucullatus cucullatus*	Critically Endangered BC Ac Vulnerable EPBC Act	Prefers sandy ocean beaches. Occasionally the species is found on tidal bays and estuaries, rock platforms and rocky or sand-covered reefs near sandy beaches, and small beaches in lines of cliffs.	Not likely – no suitable habitat
Sooty Tern *Onychoprion fimbriatum*	Vulnerable BC Act	The species is found over tropical and sub-tropical seas and on associated islands and cays around Northern Australia. In NSW only known to breed at Lord Howe Island. Occasionally seen along coastal NSW, especially after cyclones.	Not likely – no suitable habitat
Gang-gang Cockatoo *Callocephalon fimbriatum*	Endangered NSW BC Act, Endangered Commonwealth EPBC Act	In summer and spring the species is generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-iron bark assemblages, or in dry forests in coastal areas and often found in urban areas.	Possible occurring at the site. However no further assessment is required for the following reasons: • No breeding habitat (hollow-bearing trees) would be removed. • The amount of vegetation that may be removed is insignificant relative to the habitat in the locality. • The vegetation that would be removed is marginal habitat adjacent to a busy road without food sources essential to the species.

Glossy Black Cockatoo *Calyptorhynchus lathami*	Vulnerable NSW BC Act	The species inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak *Allocasuarina littoralis* and Forest Sheoak *A.torulosa* are important foods.	Possibly occurring at the site. However no further assessment is required for the following reasons: • No breeding habitat (hollow-bearing trees) would be removed. • The amount of vegetation that may be removed is insignificant relative to the habitat in the locality. • The vegetation that would be removed is marginal habitat adjacent to a busy road without food sources essential to the species. • There is no sign that the species is utilising the single mature Black Sheoak in the area that may be impacted.
Little Lorikeet *Glossopsitta pusilla*	Vulnerable BC Act	Forages primarily in the canopy of open *Eucalyptus* forest and woodland. Riparian habitats are particularly used.	Possibly occurring at the site. However no further assessment is required for the following reasons: • No breeding habitat (hollow-bearing trees) would be removed. • The amount of vegetation that may be removed is insignificant relative to the habitat in the locality. • The vegetation that would be removed is marginal habitat adjacent to a busy road without food sources essential to the species.
Powerful Owl *Ninox strenua*	Vulnerable BC Act	The species inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall opwn wet forests	Possibly occurring at the site. However no further assessment is required for the following reasons: • No breeding habitat (hollow-bearing trees) would be removed.

			• The amount of vegetation that may be removed is insignificant relative to the habitat in the locality. • The vegetation that would be removed is marginal habitat adjacent to a busy road without food sources essential to the species.
Masked Owl *Tyto novaehollandiae*	Vulnerable BC Act	The species is most abundant in the western plains but does occur from the coast. It lives in dry eucalypt forests and woodlands and hunt along the edges of forests. Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting.	Possibly occurring transiently within the site. Potential foraging habitat exists, but not suitable nesting hollows are present. No important habitat would be affected.
Sooty Owl *Tyto tenebricosa*	Vulnerable BC Act	Occur in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forest, Nests in very large tree-hollows.	Possibly could occur at the site. However no further assessment is required for the following reasons: • No breeding habitat (hollow-bearing trees) would be removed. • The amount of vegetation that may be removed is insignificant relative to the habitat in the locality. • The vegetation that would be removed is marginal habitat adjacent to a busy road without food sources essential to the species.
Eastern Bristlebird *Dasyornis brachypterus*	Endangered BC Act and EPBC Act	Habitat is characterised by dense, low vegetation including heath and open woodland with a heathy understorey.	Not likely – no suitable habitat
Regent Honeyeater *Anthochaera Phrygia*	Endangered BC Act and critically endangered EPBC Act	The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland and riparian forests of River Sheoak.	Not likely – no suitable habitat
MAMMALS			

Spotted-tailed Quoll *Dasyurus maculatus*	Vulnerable BC Act and Endangered EPBC Act	Recorded across a range of habitat types. Qualls use hollow-bearing trees, fallen logs, other animal burrows, small caves and rock outcrops as den sites	Unlikely to occur. No suitable habitat present.
Eastern Pygmy-possum *Cercartetus nanus*	Vulnerable BC Act	Found in a broad range of habitats from rainforest through sclerophyll forest and woodland, bust in most areas woodlands and heath appear to be preferred. Feeds largely on nectar and pollen collected from banksias, eucalypts and bottlebrushes. The species shelters in tree hollows, rotten stumps, holes in the ground, abandoned bird-nests, dreys or thickets of vegetation	Unlikely to occur. No suitable habitat present.
Yellow-bellied Glider - *Petaurus Australis*	Vulnerable *NSW* BC *Act*	Forest with old growth elements. Large Eucalypt Hollows for denning- Inhabits mature or old growth Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia mid storey. Feed primarily on plant and insect exudates, including nectar, sap, honeydew and manna with pollen and insects providing protein. Extract sap by incising (or biting into) the trunks and branches of favoured food trees, often leaving a distinctive 'V'-shaped scar. Very mobile and occupy large home ranges between 20 to 85 ha to encompass dispersed and seasonally variable food resources.	Unlikely to occur. No suitable habitat present.
Grey-headed Flying-fox *Pteropus poliocephalus*	Vulnerable BC Act and EPBC Act	The species occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Feeds on the nectar and pollen native trees, in particular *Eucalypts, Melaleuca* and *Banksia,* and fruits of rainforest trees and vines.	Possibly could occur at the site. However no further assessment is required as: • The site is not a camp. The closest camp is at least 11 kilometres away in the upper catchment of Bewong Creek. • The amount of vegetation that may be removed is insignificant relative to the habitat in the locality.

			• The vegetation that would be removed is marginal habitat adjacent to a busy road without food sources useful to the species. • The species will not reduce the amount of food or breeding resources nor create barriers to movement
Yellow-bellied Sheathtail-bat *Saccolaimus flaviventris*	Vulnerable BC Act	The species is a wide-ranging species found across northern and eastern Australia. Roosts singly or in groups of up to six, in tree hollows and buildings. When foraging for insects, flies high and fast over the forest canopy. Forages in most habitats across its very wide range, with and without trees.	Possibly could occur at the site. However no further assessment is required as: • The amount of habitat that may be removed is insignificant relative to the habitat in the locality. • No roosting habitat would be removed. • The species will not reduce the amount of food or breeding resources nor create barriers to movement. • The species has not actually been recorded at the site. • It is a widely occurring ranging species - the removal of 100m2 of marginal habitat adjacent to the busy road would be inconsequential.
Eastern Coastal Free-tailed Bat *Micronomus norfolkensis*	Vulnerable BC Act	The bat is found along the east coast from south Queensland to southern NSW. Occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roosts mainly in tree hollows but will also roost under bark or in man-made structures.	Possibly could occur at the site. However no further assessment is required as: • The amount of habitat that may be removed is insignificant relative to the habitat in the locality. • No roosting habitat would be removed. • The species will not reduce the amount of food or breeding resources nor create barriers to movement.

			• The species has not actually been recorded at the site. • It is a widely occurring species - the removal of 100m2 of marginal habitat adjacent to the busy road would be inconsequential.
Eastern False Pipistrelle *Falsistrellus tasmaniensis*	Vulnerable BC Act	The species is found on the south-east coast and ranges of Australia, from southern Queensland to Victoria and Tasmania. Prefers moist habitats, with trees taller than 20 metres. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. Unts beetles, moths, weevils and other flying insects above or just below the tree canopy.	Possibly could occur at the site, however, no further assessment is required as: • The amount of habitat that may be removed is insignificant relative to the habitat in the locality. • No roosting habitat would be removed. • The species will not reduce the amount of food or breeding resources nor create barriers to movement. • The species has not actually been recorded at the site. • It is a wide-ranging species the removal of 100m2 of marginal habitat adjacent to the busy road would be inconsequential.
Southern Myotis *Myotis Macropus*	Vulnerable BC Act	The species is found in the coastal band from-west of Australia, across the top-end and south to western Victoria. Generally roost in groups of 10 to 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forages over streams and pools catching insects and small fish by raking their feet across the water surface.	Unlikely to occur. No suitable habitat present.

Greater Broad-nosed Bat *Scoteanax rueppellii*	Vulnerable BC Act	The species is found mainly in the gullies and river systems that drains the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. It extends to the coast over much of its range. Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest and rainforest, though it is commonly found in tall wet forest. Although this species usually roosts in tree hollows, it is also been found in buildings.	Possibly could occur at the site, however, no further assessment is required as: • The amount of habitat that may be removed is insignificant relative to the habitat in the locality. • No roosting habitat would be removed. • The species will not reduce the amount of food or breeding resources nor create barriers to movement. • The species has not actually been recorded at the site. • It is a wide-ranging species the removal of 100m2 of marginal habitat adjacent to the busy road would be inconsequential.
Large Bent-winged Bat *Miniopterus orianae oceanensis*	Vulnerable BC Act	Eastern Bentwing-bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. Hunts in forested areas, catching moths and other flying insects.	Possibly could occur at the site, however, no further assessment is required as: • The amount of habitat that may be removed is insignificant relative to the habitat in the locality. • No roosting habitat would be removed. • The species will not reduce the amount of food or breeding resources nor create barriers to movement. • The species has not actually been recorded at the site. • It is a wide-ranging species the removal of 100m2 of marginal habitat adjacent to the busy road would be inconsequential.