

**REVIEW OF ENVIRONMENTAL FACTORS (REF)
SHOALHAVEN RUGBY PARK
FIELD SUBSOIL DRAINAGE**

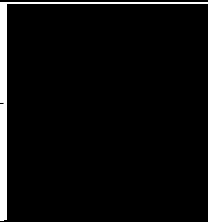
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Document control

Item	Details
Project	Review of Environmental Factors – Shoalhaven Rugby Field Subsoil Drainage
Client	City Lifestyles, Shoalhaven City Council
Prepared By	City Services, Shoalhaven City Council

Document status

Version	Author / Reviewer*	Name	Signed	Date
V1.0	Author	Jeff Bryant		13/07/2023
	Reviewer	Geoff Young		03/08/2023

*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 – as a matter of public interest (Section 171(4)(c) of the NSW <i>Environmental Planning and Assessment Act 1979</i>). Refer to Section 7 of this REF.

1. PROPOSAL AND LOCATION

1.1 Overview

This Review of Environmental Factors (REF) addresses the potential environmental impacts of – and provides mitigation measures for – the proposed construction of subsoil drainage infrastructure within the sports fields at Shoalhaven Rugby Park.

Proposed subsoil drainage consists of:

- 350mm deep sand and gravel collector trenches at 3m parallel intervals across the fields.
- 50 DN Slotted PN4 AF Carrier Pipe in 75mm wide x 450mm deep trenches at 5m intervals across the fields and into 150 DWV PVC Pipe Mainlines which in turn discharge into existing drainage channels via existing stormwater pits.

As part of the works, disused concrete slabs in the south-west corner of the western field would be demolished.

Additionally, a pipe-culvert would be installed beneath the Rugby Park access road to connect table drains on the west side of the access road, with the Flinders Rd table drain on the east side of the access road, to ensure appropriate drainage and avoid potential impacts associated with increased stormwater runoff.

Spoil material (approx. 265 tonne soil) would be reapplied to the fields, reused in accordance with applicable Environmental Protection Authority (EPA) resource recovery orders and exemptions, or otherwise disposed of at a licenced waste facility.

Figure 3 shows the proposed subsoil drainage. Refer also to Appendix A.

Shoalhaven City Council (SCC) is the proponent and the determining authority under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This Review of Environmental Factors (REF) provides an assessment of the proposed activity and associated impacts on the environment, in the context of Division 5.1 of the Act and section 171 of the *Environmental Planning and Assessment Regulation 2021*, and in doing so, satisfies the requirement of section 5.5 of the Act, that SCC examines and takes into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

1.2 Location

The proposed subsoil drainage works would be undertaken at Shoalhaven Rugby Park, 159 Flinders Rd, South Nowra (refer to Figures 1 and 2). All works would occur within Crown Land Lot 462 DP 1062117 (Crown Reserve R88840, classified as Community Land – Sportsground / General Community Use), for which Council is the designated land manager.

Figure 1. Site location



Figure 2. Site of proposed subsoil drainage



Figure 3. Proposed subsoil drainage plan (clip from Water Wise Consulting, drawing SHC_RP_2212, Sheet 01, Rev.C; refer also to Appendix A)



2. EXISTING ENVIRONMENT

2.1 Habitat and vegetation assessment

Site investigations were carried out by a Council Environmental Officer on 11 July 2023. Surveys undertaken involved vegetation and habitat assessment, recording all flora species within and immediately adjacent to the subject site, determination of vegetation communities, targeted survey for potentially occurring threatened flora species (including *Acacia pubescens*, *Eucalyptus langleyi*, *Hibbertia puberula* and *Hibbertia stricta* subsp. *furcatula*, *Rhodamnia rubescens*, *Solanum celatum*, *Syzygium paniculatum*, *Triplarina nowraensis* and *Zieria baeuerlenii*) and investigation of habitat availability on site including suitability of habitat for potentially occurring threatened terrestrial orchid species (including *Cryptostylis hunteriana*, *Genoplesium baueri*, *Pterostylis gibbosa* and *Pterostylis vernalis*).

Shoalhaven Rugby Park is a sporting complex with managed playing fields; amenity and storage buildings; a sealed access road and carpark; and ancillary fixtures including flood-lighting, water tank, goal posts, practice nets and fencing.

Native bushland surrounds Rugby Park, providing a 40 to 100 m vegetated buffer from Flinders Rd to the south; a 100+ m vegetated buffer to Nowra Racetrack to the west; extensive vegetation for at least 1.3 km to the north over Nowra Local Aboriginal Land Council (NLALC) land and unallocated Crown Land; and 500+ m vegetated buffer over NLALC land to Princes Hwy to the west, containing Nowra Creek and an unnamed water course tributary.

The site of the proposal comprises: three existing playing fields, two of which (fields 2 and 3) are adjoined; the Rugby Park access road; and a vegetated area between Flinders Rd and field 1 where existing swale drains occur.

Swale drains exist along the outer edges of the fields, containing grated pit inlets above piped stormwater infrastructure. The piped stormwater is predominantly discharged to the south-east corner of Lot 462 DP 1062117 via a central drainage line between fields 1 and 2, and a separate drain at the south-east corner of field 1. The current proposal would connect to these drainage lines.

The piped central drainage line discharges over rip-rap into a partially vegetated swale drain that runs 160 m (approx.) in a south-east direction through bushland to Flinders Rd on the western side of the Rugby Park access road, while the separate piped drain discharges to a 25 m (approx.) long vegetated swale, connecting to a table drain which runs along the western edge of the access road leading to the same destination. A table drain exists on the eastern side of the Rugby Park access road but there is currently no culvert beneath it. As a result, stormwater pools on the verge between Flinders Rd and the Rugby Park entrance.

There are also two existing pits on the eastern edge of field 1, that are piped to discharge on the eastern side of the access road over adjacent NLALC land. No additional stormwater discharge or other impacts would occur on this land.

The sports fields and adjacent cleared and managed areas are predominantly covered with turf grass and occasional associated exotic groundcovers.

Native vegetation mapped as PCT3269 *Shoalhaven Lowland Spotted Gum-Paperbark Forest* surrounds the Shoalhaven Rugby Park. PCT3269 is associated with NSW Illawarra Lowlands Grassy Woodland endangered ecological community (EEC) and Commonwealth listed Illawarra and South Coast Lowland Forest and Woodland EEC.

The dominant canopy species recorded on-site and in the adjacent vegetation was Spotted Gum (*Corymbia maculata*), with Grey Ironbark (*Eucalyptus punctata*) commonly present and scattered Woollybutt (*E.longifolia*), Grey Gum (*E.punctata*) and White Stringybark (*E.globoidea*) occurring.

Understorey species include Black She-oak (*Allocasuarina littoralis*), Black Wattle (*Acacia mearnsii*), Fern-leaved Wattle (*Acacia filicifolia*), Cherry Ballart (*Exocarpus cupressiformis*), Hickory Wattle (*Acacia implexa*), Tick Bush (*Kunzea ambigua*), Sydney Golden Wattle (*Acacia longifolia* subsp. *longifolia*), Sweet Pittosporum (*Pittosporum undulatum*), Everlasting (*Ozothamnus diosmifolius*), Hairy Bush-pea (*Pultenaea villosa*), Sweet Wattle (*Acacia suaveolens*), Berry Saltbush (*Einadia hastata*) and Sandfly Zieria (*Zieria smithii*).

Groundcover species include Brown's Lovegrass (*Eragrostis brownii*), Weeping Meadow Grass (*Microlaena stipoides*), Blue Flax-lily (*Dianella caerulea*) and Wiry Panic Grass (*Entolasia stricta*).

A patch of the threatened shrub *Acacia pubescens* (Downy Wattle) occurs in the south-west corner of Lot 462 DP 1062117, outside the site of the proposal and at a higher elevation than the existing and proposed stormwater infrastructure. More information is provided in section 3.2.1.

No other threatened flora species including *Eucalyptus langleyi*, *Hibbertia puberula* and *Hibbertia stricta* subsp. *furcatula*, *Rhodamnia rubescens*, *Solanum celatum*, *Syzygium paniculatum*, *Triplarina nowraensis* and *Zieria baeuerlenii* were detected on site during vegetation surveys.

No suitable habitat for threatened flora species including terrestrial orchids *Cryptostylis hunteriana*, *Genoplesium baueri*, *Pterostylis gibbosa* or *Pterostylis vernalis* was considered to occur within the site. All impacts would occur on cleared land with moderate levels of existing disturbance.

South-eastern Glossy Black-cockatoos (*Calyptorhynchus lathami lathami*) were observed feeding on *Allocasuarina littoralis* (Black She-oak) trees to the immediate east of the access road (on Part Lot 459 DP 1062117) during site investigations. Evidence of feeding (i.e. chewed cones) was noted beneath Black She-oak trees in one additional location to the immediate east of the access road. This species was not detected and no evidence of feeding was observed within the site of the proposed activity.

No evidence of use of the site by threatened glider species (e.g. feeding scars on *Corymbia gummifera* or *Eucalyptus punctata*) or bandicoots (e.g. cone-shaped diggings) was observed.

No significant habitat for threatened fauna species occurs within the site.

Photos 1 through 6 below show the sites and relevant features.

Figure 4. Vegetation communities mapped as occurring in proximity to the site

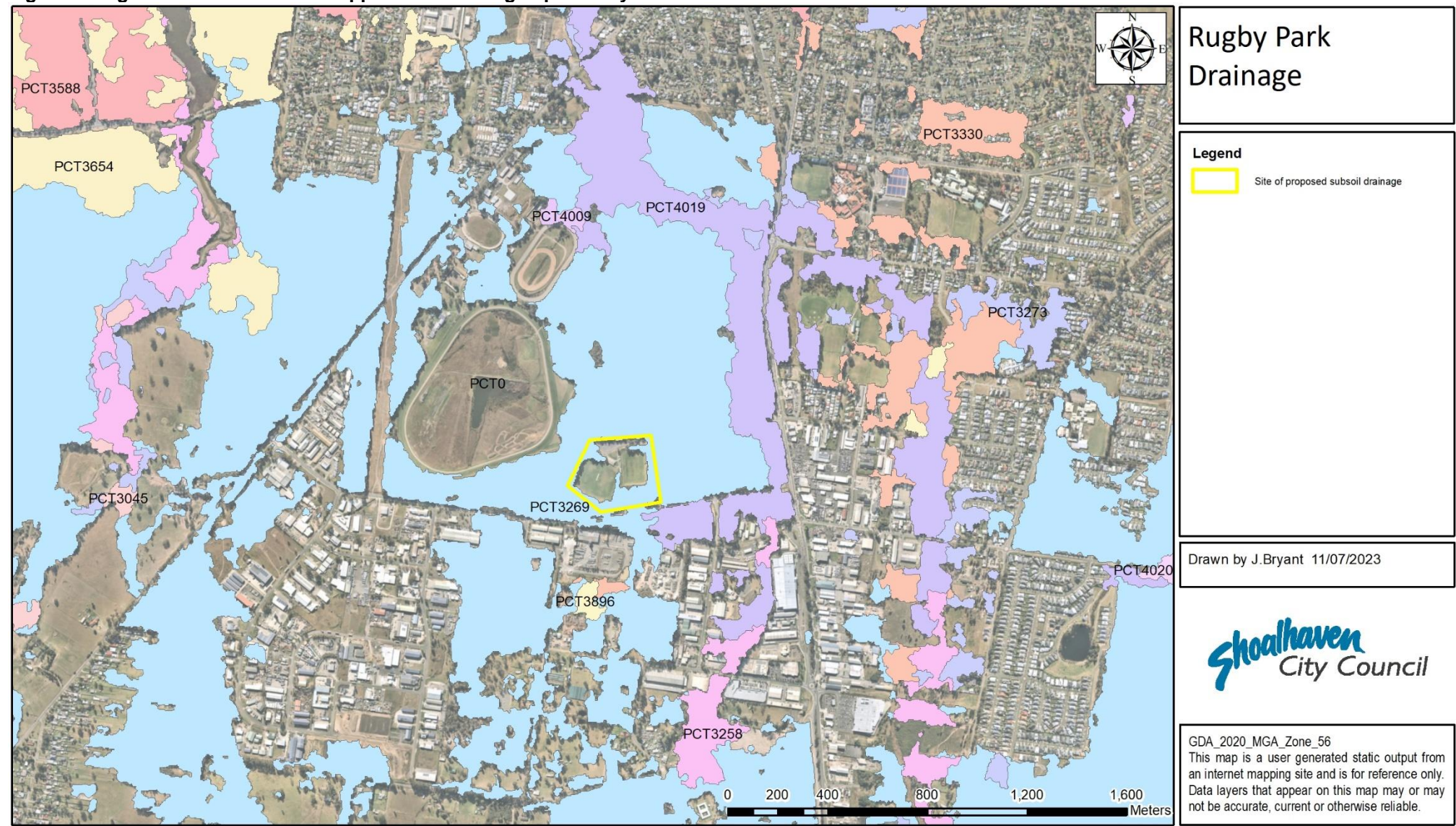


Photo 1. Site facing east across fields 2 and 3 from south-west corner



Photo 2. Existing central drainage outlet between fields 1 and 2, to Flinders Rd via vegetated swale



Photo 3. Field 1 facing southern edge



Photo 4. Swale drain discharge from existing Field 1 south-eastern stormwater outlet to Flinders Rd via access road swale drain



Photo 5. Existing pit and tail-out drain on access road, discharging onto neighbouring land – no increase in discharge would occur



Photo 6. Flinders Rd verge where stormwater from the Rugby Park central drain currently discharges to and pools. A pipe under Rugby Park access road is proposed to connect to existing eastward table drain



3. ASSESSMENT OF LIKELY IMPACTS ON THE ENVIRONMENT

3.1 Impacts associated with the proposal

All direct impacts associated with the excavation and installation of drainage infrastructure, would occur entirely within the existing cleared, disturbed and modified footprints of the sports fields and the access road.

There would be no direct impacts to native vegetation or habitat during the construction works.

Sediment and erosion controls shall be installed and maintained during construction works to prevent indirect associated impacts to waterways and adjacent intact native vegetation.

Potential indirect impacts on vegetation, habitat and ecosystems, related to increased volumes or velocities of stormwater discharge, are anticipated to be low.

Each of the three fields would provide a catchment footprint of approx. 1 Ha, with stormwater from fields 2 and 3 being conveyed along the central drain, and stormwater from field 1 being split being the central drain and the access road table drain.

The central drain pipe-outlet was constructed with rip-rap and the swale channel is vegetated with grasses and shrubs along its 160 m (approx.) length.

The south-eastern drain from field 1 is vegetated with grasses and shrubs along its 25 m (approx.) length, before joining the unvegetated table drain along the access road. It is recommended that rip-rap be installed at the pipe outlet of this drain.

Due to the length and vegetation coverage of the swales, in addition to the presence of rip-rap, increased volumes and velocities of stormwater are not anticipated to result in any scouring and impacts related to sediment movement and deposition, however, the drains shall be monitored and additional rip-rap and / or vegetation shall be installed to dissipate energy and provide additional stabilisation as required.

The vegetation occurring on site (PCT3269) is known to occur at low elevations (below 60 m asl) including gentle depressions and creeks on the Nowra lowlands (NSW Government 2023) and would therefore be tolerant of periodic inundation if overtopping of channels occurred during flood events.

The drainage is existing and continues through to Flinders Rd (refer to Figure 5).

Potential flooding impacts on Flinders Rd (including exacerbation of water sheeting across the road, creating transport hazard during heavy rain events) would be avoided by constructing a pipe culvert beneath the Rugby Park access road to enable conveyance of water into existing eastward stormwater infrastructure (refer to Figure 5). This would also avoid potential impacts associated with long-term waterlogging along the drains.

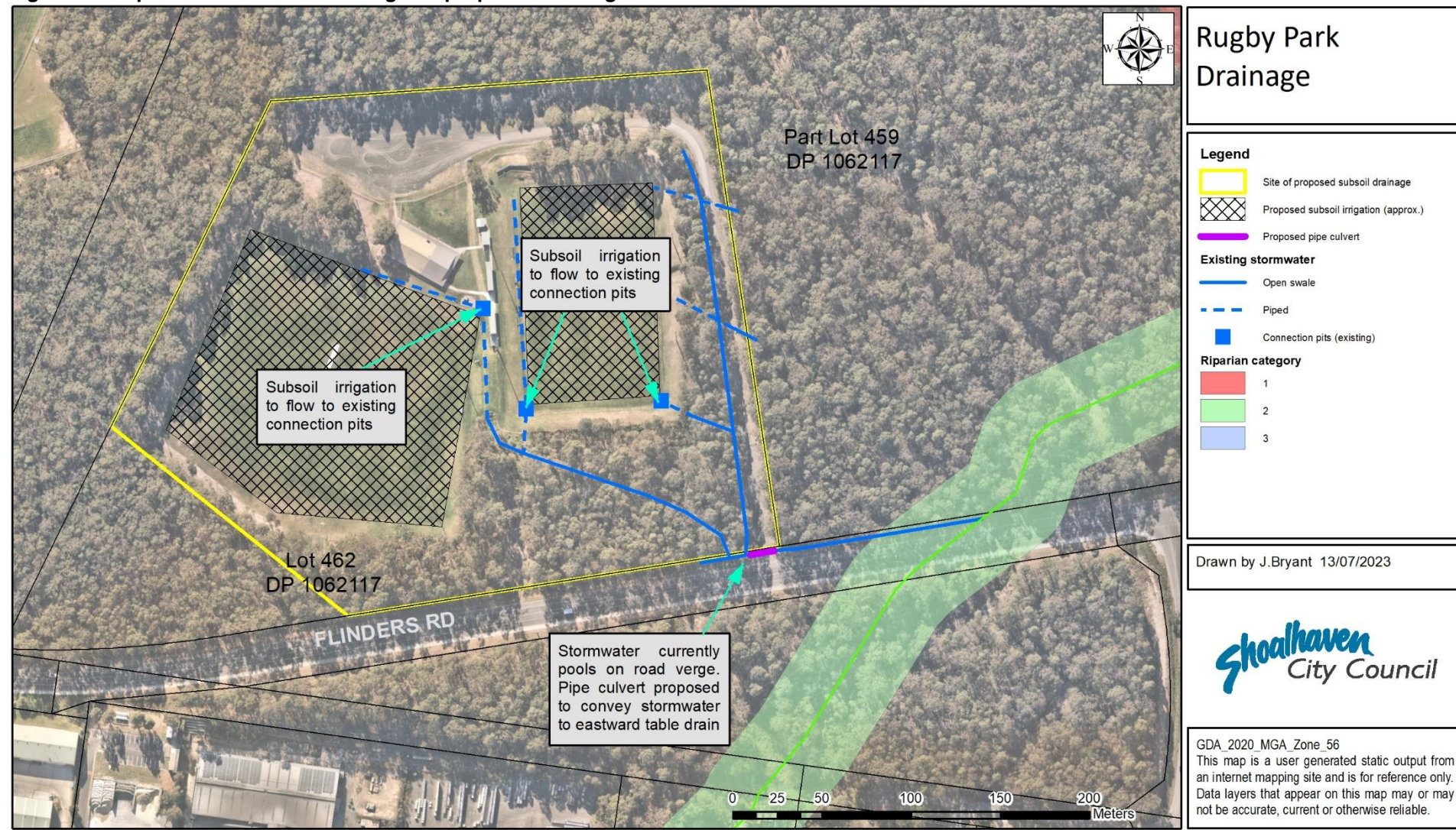
The eastward stormwater infrastructure comprises a grassed table drain which runs approximately 120m along Flinders Rd and then into an unnamed, vegetated, watercourse tributary of Nowra creek. Nowra creek is a further 350m downstream from Flinders Rd.

Ongoing field management would involve irrigation and fertiliser management plans to ensure optimal application rates and timing matched with the requirements of the turf on-site, and which minimises the potential for run-off and nutrient leaching beyond the turf root-zone.

Other potential impacts on the environment, including indirect impacts have been considered, including:

- Impacts on threatened species;
- Impacts on indigenous and non-indigenous heritage;

Figure 5. Simplified overview of existing and proposed drainage infrastructure



- Impacts on water quality, the riparian zone and key fish habitat;
- Impacts associated with flood liable land.

Each of these is discussed below.

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.

All works and vehicle movement would occur on dry land and would be unlikely to result in erosion of sediment or other pollution affecting waterways. Refer to section 3.7 of this REF for more information.

No marine vegetation or threatened marine fauna will be directly impacted by the proposal. Further consideration 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 A). Additional species have been considered where suitable habitat occurs on site. The following species and endangered ecological communities are known to occur on-site or are considered to have some potential to occur on-site or be otherwise impacted by the proposal, and therefore required further assessment under Part 7 of the NSW *Biodiversity Conservation Act 2016*:

- Downy Wattle (*Acacia pubescens*)
- Illawarra Lowlands Grassy Woodland endangered ecological community

Section 7.3 of the Act provides a ‘five-part’ test to determine whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats. Each Part is addressed below:

Part A - In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the lifecycle of the species such that a viable local population of the species is likely to be place at risk of extinction.

Downy Wattle (*Acacia pubescens*)

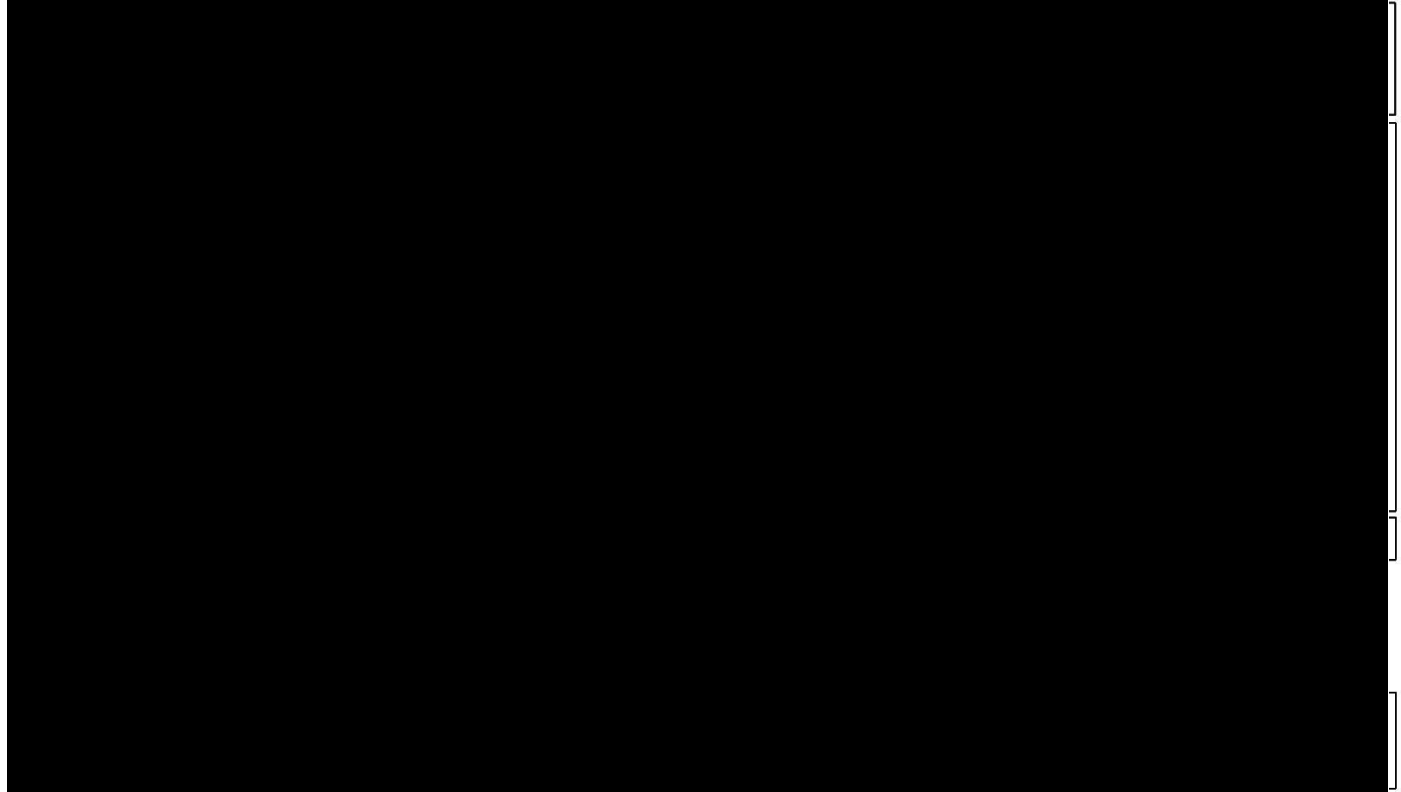
Downy Wattle is a spreading shrub, 1-5 m high with brilliant yellow flowers, bipinnate leaves and conspicuously hairy branchlets. The species occurs on alluviums, shales and at the intergrade between shales and sandstones. The soils are characteristically gravelly soils, often with ironstone. It occurs in open woodland and forest, in a variety of plant communities, including Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain

Woodland. Longevity is unknown, but clonal species have been known to survive for many decades. Flowering is from August to October. Pollination of Acacia flowers is usually by insects and birds. The pods mature in October to December. Recruitment is more commonly from vegetative reproduction than from seedlings. The percentage of pod production and seed fall for this species appears to be low. Acacia species generally have high seed dormancy and long-lived persistent soil seedbanks. It is thought that the species needs a minimum fire free period of 5 - 7 years to allow an adequate seedbank to develop (OEH 2009).

Downy Wattle occurs on Lot 462 DP 1062117 and Part Lot 459 DP 1062117 to the south-west of the site and a higher elevation than the existing and proposed stormwater infrastructure, with the extent of the population having been mapped previously by Council's Environmental Operations Officer (refer to Figure 6).

Works would occur at least 30 m from Downy Wattle and would not encroach into the bushland.

Figure 6. Location of Downy Wattle in proximity to the site



Targeted survey for the species on 11 July 2023 did not detect any individuals in proximity to proposed works or in the vicinity of stormwater discharge.

Potential indirect impacts associated with stormwater would occur to the east and at lower elevations from the area in which this population occurs, and would therefore not impact on the species or its habitat.

It is therefore unlikely that Downy Wattle would be impacted by the proposed works, and the proposed activity is unlikely to have an adverse effect on the lifecycle of these species such that a viable local population of any of these species is likely to be placed at risk of extinction.

Part B - In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

- (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**
- (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction**

Native vegetation mapped as PCT3269 *Shoalhaven Lowland Spotted Gum-Paperbark Forest* surrounds the Shoalhaven Rugby Park. PCT3269 is associated with NSW Illawarra Lowlands Grassy Woodland EEC.

Illawarra Lowlands Grassy Woodland

Illawarra Lowlands Grassy Woodland occurs on relatively gently sloping to undulating lands less than about 200 m elevation on Berry Siltstone, Budgong Sandstone and Quaternary alluvium. This community comprises vegetation types that occupy the Illawarra coastal plain and escarpment foothills. Characteristic tree species in the Illawarra Lowlands Grassy Woodland are *Eucalyptus tereticornis*, *Eucalyptus eugenioides*, *Eucalyptus longifolia*, *Eucalyptus bosistoana* and *Melaleuca decora*. The understorey is not necessarily grassy as moist forest vegetation types are also included within this broad community. Common shrub species include *Acacia mearnsii* and *Dodonaea viscosa* subsp. *angustifolia*.

The proposal would not involve the removal of any vegetation.

Potential indirect impacts on vegetation, habitat and ecosystems, related to increased volumes or velocities of stormwater discharge, are anticipated to be negligible.

The proposal is not anticipated to result in any scouring or impacts related to sediment movement and deposition (refer to section 3.1 of this REF).

The vegetation occurring on site (PCT3269) is known to occur at low elevations (below 60 m asl) including gentle depressions and creeks on the Nowra lowlands (NSW Government 2023) and would therefore be tolerant of periodic inundation if overtopping of channels occurred during flood events.

The proposal would therefore not result in the fragmentation or isolation of areas of any EEC, nor adversely affect the extent or composition of an EEC such that a local occurrence of the EEC will be placed at risk of extinction.

Part C - In relation to the habitat of a threatened species or ecological community:

- (i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity**
- (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and**
- (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality.**

No important habitat for threatened species would be removed or otherwise significantly impacted (see Part A).

No EEC would not be fragmented or isolated, nor removed or modified to an extent that would affect the long-term survival of the EEC occurring in the locality (refer to Part B).

The proposal will therefore not affect the long-term survival of any threatened species or endangered ecological community in the locality.

Part D – Whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).

No “areas of outstanding biodiversity values” have been declared in the City of Shoalhaven.

Part E – Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

No key threatening processes listed under schedule 4 of the Act are considered relevant to the proposal.

3.3 Threatened species impact assessment (Commonwealth EPBC Act 1999)

A Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Report was generated on 28 June 2023. An EPBC Protected Matters Report provides general guidance on matters of national significance and other matters protected by the EPBC Act in the area selected. Of those threatened species and endangered ecological communities reported as likely occurring or having habitat within the area of the report, the following were considered to have potential habitat on the site and requiring of further assessment:

- Downy Wattle (*Acacia pubescens*) (V)
- Illawarra and South Coast Lowland Forest and Woodland Ecological Community (CE)

(CE – Critically Endangered; V – Vulnerable; M – Migratory).

Additional species listed under the Act, including marine species, may occur occasionally within the vicinity of the proposed activity but would not be affected by the proposal.

Table 1. EPBC Significant impact assessment

Vulnerable species - Significant impact criteria	
Species to consider:	
Downy Wattle (<i>Acacia pubescens</i>)	
Criteria	Assessment
lead to a long-term decrease in the size of an important population of a species	Assessment involving targeted survey confirmed that no Downy Wattle individuals occurred within 30m of proposed works. No Downy Wattle would be removed or otherwise impacted by the proposal. Indirect impacts associated with stormwater would not affect the area in which this population occurs. Stormwater discharge from the proposal would not affect land where Downy Wattle occurs. Refer to S3.2.2 for more information.
reduce the area of occupancy of an important population	No

fragment an existing important population into two or more populations	No
adversely affect habitat critical to the survival of a species	The proposal would not reduce the availability of suitable habitat for this species. Areas of impact are disturbed and modified.
disrupt the breeding cycle of an important population	No
modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No. See above
result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	No invasive species will be introduced
introduce disease that may cause the species to decline	No disease is likely to be introduced
interfere substantially with the recovery of the species	No
Summary	It is considered unlikely that Downy Wattle would be impacted by the proposed works and the proposed activity is unlikely to have an adverse effect on the lifecycle of the species such that a viable local population of any of these species is likely to be placed at risk of extinction.
Critically endangered and endangered ecological communities - Significant impact criteria	
Communities to consider:	
Illawarra and South Coast Lowland Forest and Woodland Ecological Community (ISCLF&W)	
Criteria	Assessment
reduce the extent of an ecological community	The proposal does not involve any removal or other direct impacts on any native vegetation. The proposed tree removal would therefore not reduce the 'extent' of the EEC, would not fragment and would not affect the recovery or increase the likelihood of extinction of the EEC.
fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines adversely affect habitat critical to the survival of an ecological community	See above.
modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns	The proposal is not anticipated to result in any scouring or impacts related to sediment movement and deposition. The proposal would not substantially alter surface water drainage patterns, but may result in increased volumes or velocities of stormwater discharge into existing drainage swales through bushland. The vegetation present on-site would be tolerant of periodic inundation if overtopping of channels occurred during flood events.
cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	No

cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: assisting invasive species, that are harmful to the listed ecological community, to become established, or causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community	No
interfere with the recovery of an ecological community	No
Summary	It is considered unlikely that the proposal would adversely affect the extent or composition of <i>Illawarra and South Coast Lowland Forest and Woodland Ecological Community</i> such that a local occurrence of the EEC will be placed at risk of extinction.

Conclusion of EPBC Significant Impact Assessment

The proposal is therefore unlikely to have an adverse effect on a vulnerable, endangered, critically endangered or migratory species or its habitat, nor on the extent or integrity of an endangered ecological community such that its local occurrence is likely to be placed at risk of extinction. Further assessment and referral to the Commonwealth is therefore not required.

3.4 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 Wales* (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.

The site is not associated with any landscape features which are regarded as indicating a higher potential for Aboriginal objects including:

- within 200m of waters, or
- located within a sand dune system, or
- located on a ridge top, ridge line or headland, or
- located within 200m below or above a cliff face, or
- within 20m of or in a cave, rock shelter, or a cave mouth.

A search on the Aboriginal Heritage Information Management System (AHIMS) on 28 June 2023 indicated that there are no recorded Aboriginal sites or places in the vicinity of the proposal (refer to AHIMS report below in Figure 7).

The Due Diligence Guidelines define disturbed land as follows:

Figure 7. Results of AHIMS Aboriginal heritage search



**AHIMS Web Services (AWS)
Search Result**

Your Ref/PO Number : Rugby Park

Client Service ID : 795527

Shoalhaven City Council - Nowra

Date: 28 June 2023

PO Box 42 Bridge Rd

Nowra New South Wales 2541

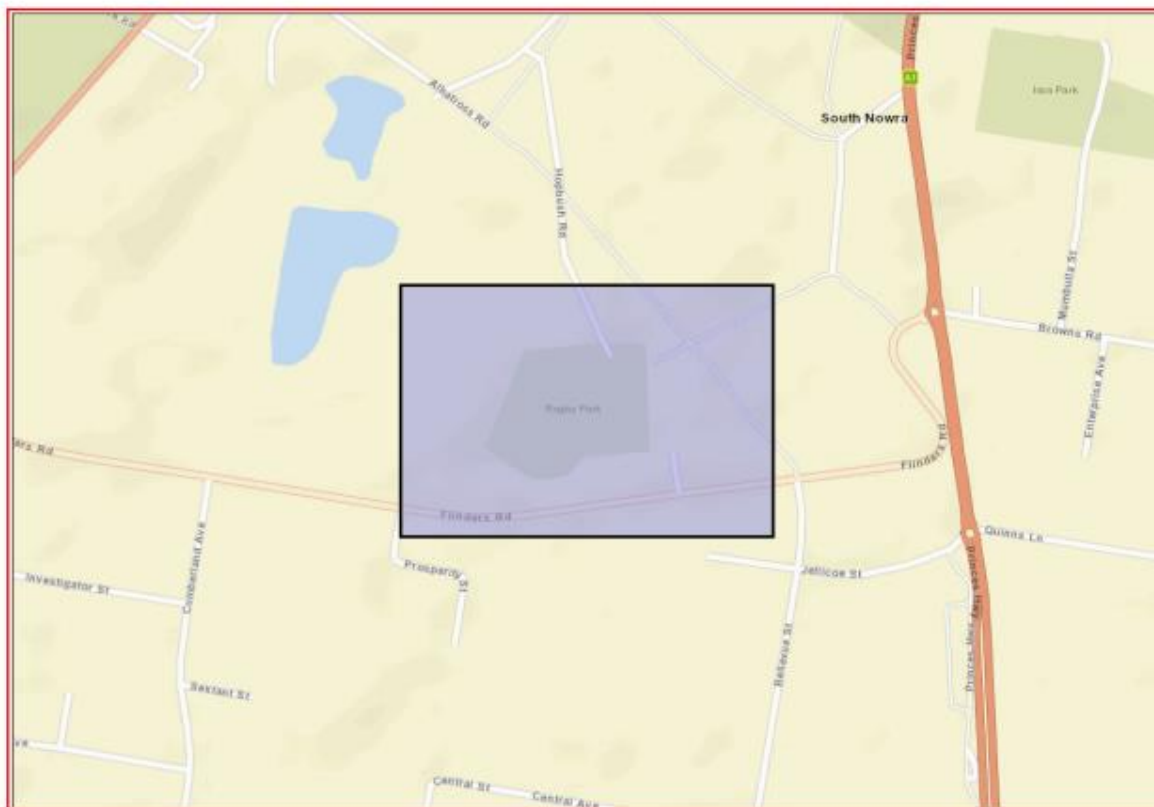
Attention: Jeff Bryant

Email: jeff.bryant@shoalhaven.nsw.gov.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -34.9086, 150.5911 - Lat, Long To : -34.9042, 150.5989, conducted by Jeff Bryant on 28 June 2023.

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. *

“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 proposed works is within existing disturbed land which has been cleared and modified as a result of the construction and maintenance of the sports fields . 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.

3.5 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.

3.6 Acid Sulfate Soils

The site is mapped as containing Class 5 Acid Sulfate Soils (A.S.S).

The *Shoalhaven Local Environment Plan 2014* indicates that risk of Acid Sulfate Soil exposure exists for Class 5 A.S.S under the following circumstances:

Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum and by which the watertable is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.

As the proposal would not involve or result in any lowering of the watertable, it can be reasonably concluded that no risk of Acid Sulfate Soil exposure exists for the proposal.

3.7 Riparian corridors, Key Fish Habitat and Flood-labile Land

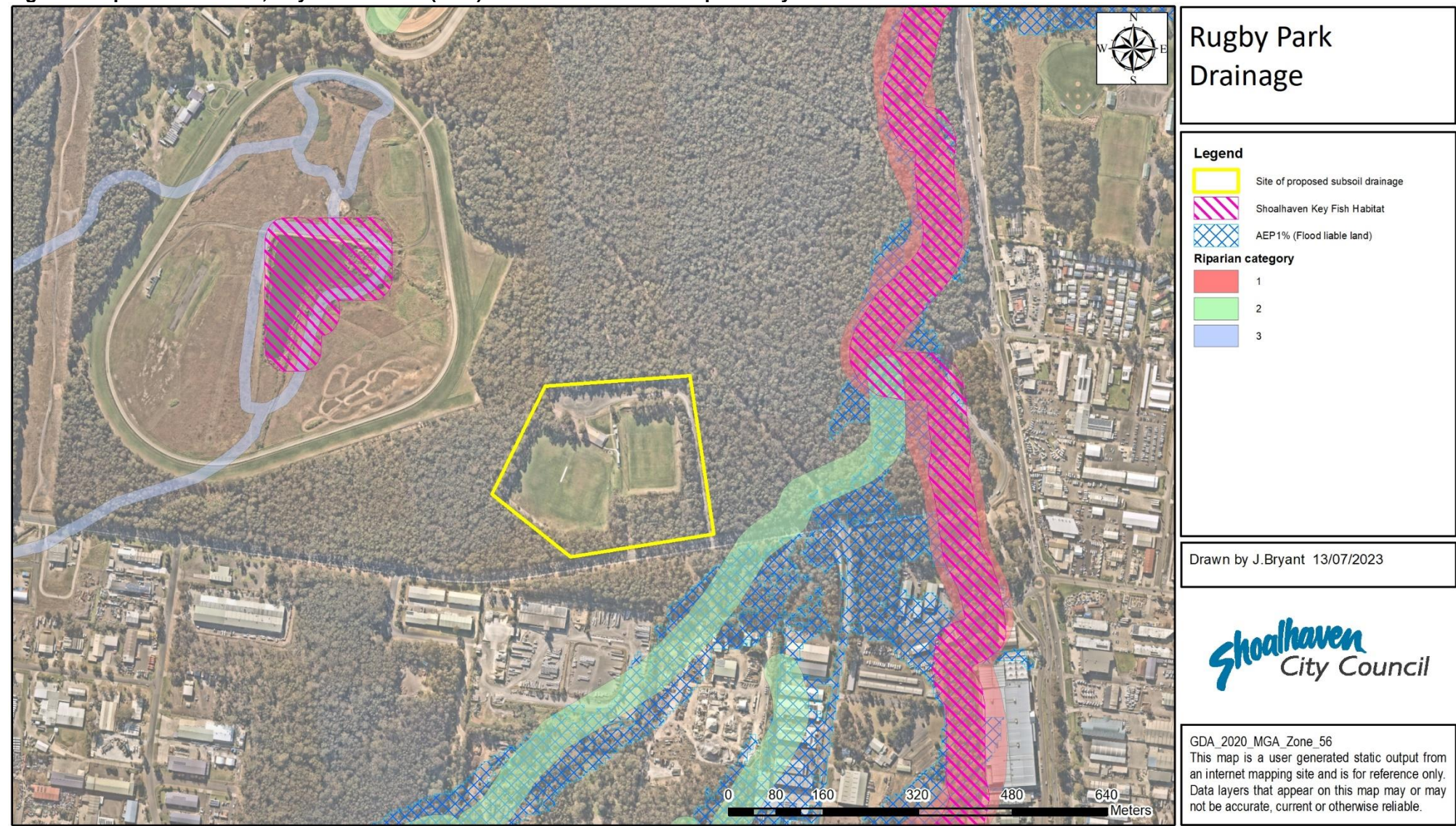
A category 2 riparian corridor associated with an unnamed watercourse tributary of Nowra Creek occurs approximately 60m to the west of the south-east corner of the site. No direct impacts on vegetation would occur as part of the proposal (refer to Figure 8 below).

A pipe culvert would be constructed beneath the Rugby Park access road to enable conveyance of stormwater into existing eastward stormwater infrastructure which connects with the unnamed tributary and associated category 2 riparian corridor. The proposal is not anticipated to result in any scouring or impacts related to sediment movement and deposition.

The site is not within or in close proximity to mapped Key Fish Habitat (refer to Figure 8).

The site is not mapped as flood-labile land (refer to Figure 8).

Figure 8. Riparian corridors, Key Fish Habitat (KFH) and flood-labile land in proximity to the site



3.8 Other considerations

In the context of this environmental assessment, the area to be affected by the proposed activity:

- is not an Aboriginal Place in the context of the NSW National Parks and Wildlife Act 1974, nor is it known to contain Aboriginal artefacts, and
- is not mapped as “potentially contaminated land”.

3.9 EP&A Regulation – Section 171 matters of consideration

Section 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 2 deals with each of the factors in relation to the proposed activity.

Table 2. Section 171 Matters of consideration

Does the proposal:	Assessment	Reason
a) Have any environmental impact on a community?	Positive	<p>The proposal involves construction of subsoil drainage over the sports fields at Shoalhaven Rugby Park to improve the health and quality of the fields for enhanced user experience.</p> <p>The proposed activity would not have any impact on community services and infrastructure such as power, waste water, waste management, educational, medical or social services.</p>
b) Cause any transformation of a locality?	Positive	<p>The locality’s current use would remain relatively unchanged, but with improved drainage and field quality.</p>
c) Have any environmental impact on the ecosystem of the locality?	Low adverse	<p>The five-part test of significance (Section 3.2) concludes that the proposed activity would not have a significant impact upon threatened species or endangered ecological communities.</p> <p>No significant habitat features would be removed or otherwise impacted. No food resources critical to the survival of a particular species would be removed.</p> <p>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.</p> <p>Environmental safeguards and mitigation measures (Section 7) would be employed to minimise risk of impacts.</p>

d) Cause a diminution of the aesthetic, recreational, scientific or other environmental quality or value of a locality?	Positive / Low adverse	<p>The area that would be affected by the proposed activity has no significant value in terms of aesthetic or scientific qualities. The proposed activity would have no impact on these values.</p> <p>Recreational values of the site for sports groups would be enhanced as a result of the proposal.</p>
e) Have any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific, or social significance or other special value for present or future generations?	Negligible	<p>The site of the proposed activity has no significant aesthetic, architectural, cultural, historical or scientific values. As such, the proposed activity would have no impact on these items.</p> <p>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.</p> <p>The site is not within an Aboriginal Place declared under the <i>National Parks and Wildlife Act 1974</i>.</p> <p>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).</p>
f) Have any impact on the habitat of protected fauna (within the meaning of the Biodiversity Conservation Act 2016)?	Low adverse	<p>No significant habitat will be removed or otherwise impacted. The potential impact is therefore considered to be minimal and not significant.</p> <p>The five-part test of significance, provided in Section 3.2 above, concludes that the proposed activity would not have a significant impact upon threatened fauna.</p> <p>The specified environmental mitigation measures (Section 7) would mitigate indirect impacts to fauna and habitat including through control of sediment.</p>
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	<p>The five-part test of significance, provided in Section 3.2 above, concludes that the proposed activity would not have a significant impact upon threatened fauna.</p> <p>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 of extinction.</p>
h) Have any long-term effects on the environment?	Low adverse	<p>No vegetation removal would occur.</p> <p>Potential impacts associated with increased stormwater discharge and velocities are anticipated to be negligible.</p> <p>The possible impacts have been discussed in detail under Section 3. Refer also to the conclusions and recommendations in Section 7.</p>

i) Cause any degradation of the quality of the environment?	Low-adverse	<p>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.</p> <p>The proposal would not intentionally introduce noxious weeds, vermin, or feral animals into the area or contaminate the soil.</p> <p>Environmental safeguards and mitigation measures (Section 7) would be employed to minimise risk of impacts.</p>
j) Cause any risk to the safety of the environment?	Low-adverse	<p>The proposed activity would not involve hazardous wastes and would not lead to increased bushfire or landslip risks.</p> <p>The activity is not going to adversely affect flood or tidal regimes or exacerbate flooding risks.</p>
k) Cause any reduction in the range of beneficial uses of the environment?	Negligible	<p>Proposed subsoil drainage would occur entirely within the footprint of existing sports fields to be used by – and benefit – existing and future sports clubs, consistent with the purpose of the reserve.</p>
l) Cause any pollution of the environment?	Low adverse	<p>The proposal would not affect any noise sensitive receivers such as residential areas, schools, childcare centres and hospitals.</p> <p>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.</p> <p>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.</p> <p>The risk of contamination and spills from machinery including fuel and hydraulic fluids would be minimised through safeguards and mitigation measures (Section 7).</p>
m) Have any environmental problems associated with the disposal of waste?	Negligible	<p>There would be no trackable waste, hazardous waste, liquid waste, or restricted solid waste as described in the NSW <i>Protection of the Environment Operations Act 1997</i>.</p> <p>Spoil material would be utilised in accordance with relevant NSW EPA Resource Recovery Orders and Exemptions or otherwise be disposed of at a licenced waste facility.</p>
n) Cause any increased demands on resources (natural or otherwise) which are, or are likely to become, in short supply?	Low adverse	<p>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.</p>
o) Have any cumulative	Low adverse	<p>The assessed low adverse or negligible impacts of the proposal are not likely to interact.</p>

environmental effect with other existing or likely future activities?		Mitigation measures (Section 7) shall be implemented to minimise the risk of cumulative environmental effects.
p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions	Low adverse	The proposed activity would have no effect on coastal processes including those projected under climate change conditions. The site is not located in the coastal zone.
q) Any applicable local strategic planning statement, regional strategic plan or district strategic plan made under Division 3.1 of the Act	Positive	The proposed activity meets Planning Priority 2 (<i>Delivering infrastructure</i>) and Planning Priority 16 (<i>Promoting events and public art</i>) of the <i>Shoalhaven 2040 Strategic Land-use Planning Statement</i> 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) Any other relevant environmental factors	N/A	

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, clause 2.73(3) of the NSW *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Infrastructure SEPP) provides that:

“Any of the following development may be carried out by or on behalf of a council without consent on a public reserve under the control of or vested in the council—

(a) development for any of the following purposes—

...

(ii) recreation areas and recreation facilities (outdoor), but not including grandstands,

...”

In consideration of proposed stormwater works, clause 2.137 of TISEPP provides that:

“(1) Development for the purpose of stormwater management systems may be carried out by or on behalf of a public authority without consent on any land.

Additionally, clause 2.113(1) of TISEPP provides that:

“Development for any of the following purposes is exempt development if it is carried out by or on behalf of a public authority or the Minister responsible for Crown roads (within the meaning of the Roads Act 1993) in connection with a road or road infrastructure facilities and complies with section 2.20—

(a) erection, installation, maintenance, reconstruction or replacement of any of the following, and any associated landscaping works—

...

(xiii) culverts, drains and other works to improve the quality or control of stormwater runoff,

...”

The proposed subsurface drainage works constitutes an ‘activity’ for the purposes of Part 5 of the EP&A Act, and can be carried out by (or on behalf of) a public authority as development without consent. Environmental impact assessment under Part 5 of the EP&A Act is required, including consideration of matters outlined in Section 171 of the EP&A Regulation 2021. This REF provides this assessment and ensures that Council as determining authority in consideration of the activity, meets its obligation under s5.5 of the EP&A Act, to examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

4.2 *Local Government Act 1993*

Under clause 35 of the *Local Government Act 1993*, community land is required to be used and managed in accordance with the plan of management applying to the land, any laws permitting the

use of the land for a specified purpose or otherwise regulating the use of the land, and any other relevant clause in Part 2, Division 2 of the Act.

Crown Reserve R88840 is categorised as Sportsground and General Community Use.

Council's *Generic Community Land Plan of Management Sportsground* (D09/60401) and *Generic Community Land Plan of Management General Community Use* (D02/55518), provide core objectives for their respective land categorisations as follows:

Core Objectives for Community Land Categorised as Sportsground

The core objectives for Sportsgrounds are to:

- encourage, promote and facilitate recreational pursuits in the community involving organised and informal sporting activities and games, and to
- ensure that such activities are managed having regard to any adverse impacts on nearby residents.

Core Objectives for Community Land Categorised as General Community Use

The core objectives for management of Community Land categorised as General Community Use are to promote encourage and provide for the use of the land, and to provide facilities on the land, to meet the current and future needs of the local community and of the wider public:

- In relation to public recreation and the physical, cultural, social and intellectual welfare or development of individual members of the public, and
- In relation to purposes for which a lease, licence or other estate may be granted in respect of the land (other than the provision of public utilities and works associated with or ancillary to public utilities).

The proposal is for the construction of subsoil drainage over the sports fields at Shoalhaven Rugby Park to improve the health and quality of the fields for enhanced user experience.

No adverse impacts on nearby residents are anticipated.

The proposal is therefore consistent with the objectives of the plan of management applicable to these community land types.

4.3 Other

A summary of other relevant legislation and permissibility is provided in Table 3 below.

Table 3. Summary of other relevant legislation and permissibility

NSW STATE LEGISLATION	
<i>Environmental Planning and Assessment Act 1979 (EP&A Act)</i>	
Permissible ✓	Not permissible <input type="checkbox"/>

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 knowingly 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 3.4 for more information.

Fisheries Management Act 1994

Permissible ☒ Not permissible ☐

Justification:

The proposed activity:

- would not affect declared aquatic reserves (Part 7, Division 2 of the Act);
- would not involve dredging or reclamation in Key Fish Habitat (Part 7, Division 3);
- would not involve or result in the blocking the passage of fish (s.219);
- would not impact mangroves and marine vegetation (Part 7, Division 4);

- would not involve disturbance to gravel beds where salmon or trout spawn (s.208 of the Act);
- does not involve the release of live fish (Part 7, Division 7);
- does not involve the construction of dams and weirs (s.218);
- would not impact declared threatened species of endangered ecological communities (Part 7A);
- does not constitute a declared key threatening process (Part 7A); and
- would not use explosives in a watercourse (Clauses 70 and 71 of the *Fisheries Management (General) Regulation 2019*).

A Fisheries Permit is therefore not required.

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).
- 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.

Water Management Act 2000

Permissible ☒ Not permissible ☐

Justification:

- Local councils are exempt from s.91E(1) of the Act in relation to all controlled activities 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 (Resilience & Hazards) 2021

Permissible ☒ Not permissible ☐

Justification:

- The site is not mapped for the purpose of the SEPP.

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 (Section 3.3). 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 within Lot 462 DP 1062117 (Crown Reserve R88840) to which Native Title applies.

Native Title Assessment was undertaken for the proposal as a Future Act under Subdivision J (Council reference D23/254288). Notification and request for comment shall be provided to registered parties for a period of 28 days.

5. CONSULTATION WITH GOVERNMENT AGENCIES & OTHER ORGANISATIONS

5.1 Transport & Infrastructure SEPP

Note that consultation under Chapter 2, Part 2.2 of the Transport & Infrastructure SEPP applies only to relevant development undertaken as development without consent under the provisions of Chapter 2.

Clause 2.10 – Development with impacts on council-related infrastructure or services

No impacts to roads, sewerage systems, water infrastructure, nor excavation of footpaths, such as described under clause 2.10(1) would occur.

The project is being delivered on behalf of the land custodian, Shoalhaven Swim Sport Fitness. Consultation under Clause 2.10 is therefore not required.

Clause 2.11 – Development with impacts on local heritage

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

Clause 2.12 – Development with impacts on flood liable land

The site is not mapped as being flood liable and the proposal would not affect flood behaviour. Consultation under Clause 2.12 is therefore not required.

Clause 2.13 – Consultation with State Emergency Service—development with impacts on flood liable land

The site is not mapped as being flood liable and the proposal would not affect flood behaviour. Consultation under Clause 2.13 is therefore not required.

Clause 2.14 – 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.

Clause 2.15 – Consultation with public authorities other than councils

In consideration of the consultation requirements specified under Clause 2.15 of the Infrastructure SEPP, the proposed activity:

- would not be undertaken on adjacent to land reserved under the *National Parks and Wildlife Act 1974* or in Zone E1 or in equivalent zones.
- 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*

The consultation requirements specified under Clause 2.15 of the Infrastructure SEPP therefore do not apply.

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

The proposed activity is not a type applicable to this clause *i.e.* health services facilities, correctional centres and residential accommodation. Consideration of PBP is therefore not required.

Summary

No consultation with government agencies under Part 2.2, Division 1 of the Transport & Infrastructure SEPP is required.

6. COMMUNITY ENGAGEMENT

In accordance with Council's Community Engagement Policy, the proposal constitutes a *Local Area – Low Impact* activity. Formal community engagement is not required.

7. ENVIRONMENTAL SAFEGUARDS AND MEASURES TO MINIMISE IMPACTS

Note that all safeguards are prescribed unless otherwise stated.

Safeguard / Measure	Responsibility
Works planning, approvals, consultation & notification	
1. This REF shall be published on NSW Planning Portal or Council's website in accordance with s171(4) EP&A Regulation, as a matter of 'public interest'.	SCC Environmental Officer
2. It is recommended that the project provide for the installation of rip-rap at the pipe outlet of the south-eastern drain from field 1.	SCC Project Manager
Site establishment & construction works	
3. Existing underground services in the vicinity of proposed excavation shall be located and marked on site prior to any excavation.	Construction Contractor
4. Erosion and sediment controls in accordance with the 'Blue Book' (Landcom 2004) shall be installed and maintained during construction to prevent the entry of sediment into waterways and adjacent intact vegetation.	Construction Contractor
5. Tree protection measures in accordance with AS4970 – <i>Protection of trees on development sites</i> shall be implemented to minimise the risk of impacts on trees in proximity to works. Machinery, vehicles and stockpiles shall not encroach into native vegetation, including the drip zone of trees.	Construction Contractor
6. It is recommended that rip-rap be installed at the pipe outlet of the south-eastern drain from field 1.	Construction Contractor
7. Spoil material shall be reapplied to fields, or be reused in accordance with applicable Environmental Protection Authority (EPA) resource recovery orders and exemptions, or otherwise be disposed of at a licenced waste facility.	Construction Contractor
8. In the event that wildlife is 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).	Construction Contractor
9. 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	Construction Contractor

Safeguard / Measure	Responsibility
of Planning, Industry and Environment (ph:131 555) shall be contacted.	
Post construction	
10. 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
11. A fertiliser management plan must be developed and implemented which involves ongoing monitoring and revision to achieve optimal nutrient application rates and timing matched with the requirements of the turf on-site, and which minimises the potential for nutrient leaching beyond the turf root-zone.	12. Asset custodian
13. Drains shall be inspected on a monthly basis for a minimum of six months. In the event that scouring or other erosion is observed, additional rip-rap and / or suitable endemic vegetation shall be installed to dissipate energy and provide additional stabilisation as required.	Asset custodian

8. SIGNIFICANCE EVALUATION & DECISION STATEMENT

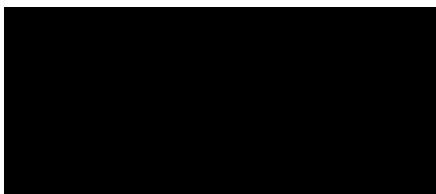
This Review of Environmental Factors has assessed the likely environmental impacts, in the context of Part 5 of the Environmental Planning and Assessment Act 1979, of a proposal by Shoalhaven City Council for the construction of subsoil drainage over the sports fields at Shoalhaven Rugby Park, Flinders Rd, South Nowra.

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 activity and an Environmental Impact Statement is not required.
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:



Kevin Norwood
Manager – Swim, Sport & Fitness
Shoalhaven City Council

Date: 08/08/2023

9. REFERENCES

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APPENDIX A – Subsoil Drainage Plan

**“Rugby Park South Nowra Subsoil Drainage System”
Drawing No. SHC_RP_2212, Sheet 01, Rev. C
Water Wise Consulting
Council reference D23/278304**

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) 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).

Review of Environmental Factors Part 5 Assessment EP&A Act 1979

Endangered Ecological Community name		Status	Likelihood of presence within areas impacted by the activity
Illawarra Lowlands Grassy Woodland in the Sydney Basin Bioregion		Endangered - NSW BC Act Critically Endangered - Commonwealth EPBC Act	This EEC is associated with PCT3269 Shoalhaven Lowland Spotted Gum-Paperbark Forest which is mapped as occurring within and around the site. surrounds the Shoalhaven Rugby Park. Further assessment has been undertaken in s3.2.2 and s3.3 of this REF.
Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions		Endangered - NSW BC Act Endangered - Commonwealth EPBC Act	Does not occur on-site and is not mapped as occurring in close proximity to the site (nearest records are approx. 980m to the south of the site).
Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions		Endangered - NSW BC Act	Does not occur on-site and is not mapped as occurring in close proximity to the site (nearest records are approx. 880m to the south-east of the site).
Species name	Status	Habitat requirements (www.environment.nsw.gov.au)	Likelihood of presence within areas impacted by the activity
FLORA			
<i>Acacia pubescens</i> Downy Wattle	Vulnerable EPBC Act Vulnerable NSW BC Act	Occurs on alluviums, shales and at the intergrade between shales and sandstones. The soils are characteristically gravelly soils, often with ironstone. Occurs in open woodland and forest, in a variety of plant communities, including Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland.	Occurs in proximity to the site. Further assessment has been undertaken in s3.2.2 and s3.3 of this REF.
<i>Cryptostylis hunteriana</i> Leafless tongue Orchid	Vulnerable EPBC Act Vulnerable NSW BC Act	Occurs in a wide variety of habitats from moist sandy soil to dense heathland, sedgeland and verges of fire trails. The larger populations typically occur in woodland dominated by Scribbly Gum (<i>Eucalyptus sclerophylla</i>), Silvertop Ash (<i>E. sieberi</i>), Red Bloodwood (<i>Corymbia gummifera</i>) and Black Sheoak (<i>Allocasuarina</i>	Unlikely to occur. No suitable habitat present within the site.

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		littoralis); appears to prefer open areas in the understorey of this community and is often found in association with the Large Tongue Orchid (<i>C. subulata</i>) and the Tartan Tongue Orchid (<i>C. erecta</i>).	
<i>Eucalyptus langleyi</i> Albatross Mallee	NSW BC Act Vulnerable EPBC Act Vulnerable	Found in Mallee shrub land on poorly drained, shallow, sandy soils on sandstone.	Does not occur within the site. No mid-storey or groundcover vegetation is present.
<i>Genoplesium baueri</i> Bauer's Midge Orchid	Endangered <i>EPBC Act</i> Endangered <i>NSW BC Act</i>	Grows in dry sclerophyll forest and moss gardens over sandstone.	Unlikely to occur. No suitable habitat present within or in vicinity of site.
<i>Hibbertia puberula</i>	NSW BC ACT Endangered	Flowering time is October to December, sometimes into January. Occurs on sandy soil often associated with sandstone, or on clay. Habitats are typically dry sclerophyll woodland communities, although heaths are also occupied. One of the recently (2012) described subspecies also favours upland swamps.	Does not occur within the site. No mid-storey or groundcover vegetation is present.
<i>Hibbertia stricta subsp. furcatula</i>	Endangered NSW BC Act	Habitat of the Southern Sydney population is broadly dry eucalypt forest and woodland. This population appears to occur mainly on upper slopes and above the Woronora River gorge escarpment, at or near the interface between the Lucas Heights soil landscape and Hawkesbury sandstone.	Does not occur within the site. No mid-storey or groundcover vegetation is present.
<i>Pterostylis gibbosa</i> Illawarra Greenhood	Endangered EPBC Act Endangered NSW BC Act	All known populations grow in open forest or woodland, on flat or gently sloping land with poor drainage. In the Illawarra region, the species grows in woodland dominated by Forest Red Gum <i>Eucalyptus tereticornis</i> , Woollybutt <i>E. longifolia</i> and White Feather Honey-myrtle <i>Melaleuca decora</i> . Near Nowra, the species grows in an open forest of Spotted Gum	Unlikely to occur. No suitable habitat present within the site.

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		Corymbia maculata, Forest Red Gum and Grey Ironbark E. paniculata.	
<i>Pterostylis ventricosa</i>	Critically endangered NSW BC Act	Predominantly in 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.	Unlikely to occur. No suitable habitat present within the site.
<i>Rhodamnia rubescens</i> <i>Scrub Turpentine</i>	Critically Endangered NSW BC Act	Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	Does not occur within the site. No mid-storey or groundcover vegetation is present.
<i>Solanum celatum</i>	NSW BC Act Endangered	Grows in rainforest clearings or in wet sclerophyll forests. Flowers August to October and produces fruit between December and January. Normally recorded in disturbed margins and clearings.	Does not occur within the site. No mid-storey or groundcover vegetation is present.
<i>Syzygium paniculatum</i> <i>Magenta Lilly Pilly</i>	Vulnerable EPBC Act Endangered NSW BC Act	On the south coast the Magenta Lilly Pilly occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral (coastal) rainforest.	Does not occur within the site. Only Spotted Gum trees occur within the site.
<i>Triplarina nowraensis</i> <i>Nowra Heath Myrtle</i>	NSW BC Act Endangered EPBC Act Endangered	Nowra Heath Myrtle occurs on poorly drained, gently sloping sandstone shelves or along creek lines underlain by Nowra Sandstone. The sites are often treeless or have a very open tree canopy due to the impeded drainage.	Does not occur within the site. No mid-storey or groundcover vegetation is present.
<i>Zieria baeuerlenii</i> <i>Bomaderry Zieria</i>	NSW BC Act Endangered EPBC Act Endangered	Occurs on skeletal sandy loam overlaying sandstone, on a rocky plateau amongst sandstone boulders in either shrubby open forest, shrubby woodland or closed shrub.	Does not occur within the site. No mid-storey or groundcover vegetation is present.
AMPHIBIANS			

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Green and Golden Bell Frog <i>Litoria aurea</i>	Vulnerable <i>EPBC Act</i> Endangered <i>NSW BC Act</i>	Marshes, dams and stream-sides, particularly those containing bullrushes (<i>Typha</i> spp.) or spikerushes (<i>Eleocharis</i> spp.). Optimum habitat for the species includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (<i>Gambusia holbrooki</i>), with a grassy area nearby and diurnal sheltering sites available. Some sites, particularly in the Greater Sydney region occur in highly disturbed areas (OEH 2017).	Unlikely to occur. No suitable habitat present within or in vicinity of site.
MICRO-CHIROPTERAN BATS			
Eastern (Large) Bentwing-bat <i>Miniopterus orianae oceanensis</i>	NSW BC Act Vulnerable	Specific caves are known maternity sites with other caves being primary roosting habitat outside breeding period. Also uses derelict mines, storm-water tunnels, buildings and other man-made structures.	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal. No breeding habitat occurs within the site.
Eastern False Pipistrelle <i>Falsistrellus tasmaniensis</i>	NSW BC Act Vulnerable	Prefers moist habitat that contains trees greater than 20 m high with a dense understorey. They are fast flyers. Roosts in hollow trunks of eucalyptus trees, in colonies of 3 – 80. Also may roost in caves and old wooden buildings.	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal. No breeding habitat occurs within areas that would be impacted.
Eastern (Coastal) Freetail-Bat <i>Micronomus norfolkensis</i>	<i>Vulnerable NSW BC Act</i> <i>Vulnerable EPBC Act</i>	Small tree hollows/fissures in bark for roosting in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range.	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal. No breeding habitat occurs within areas that would be impacted.

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Greater Broad-nosed Bat <i>Scoteanax ruepelli</i>	Vulnerable NSW BC Act	Found mainly in gullies and river systems that drain the Great Dividing Range, it utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, below 500m, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings. Forages after sunset, flying slowly and directly along creek and river corridors at an altitude of 3 - 6 m	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal. No breeding habitat occurs within areas that would be impacted.
Large –eared Pied Bat <i>Chalinobolus dwyeri</i>	Vulnerable NSW BC Act Vulnerable EPBC Act	Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (<i>Petrochelidon ariel</i>), frequenting low to mid-elevation dry open forest and woodland close to these features	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal. No breeding habitat occurs within the site.
Southern Myotis (Large-footed Myotis) <i>Myotis macropus</i>	Vulnerable NSW BC Act	This species is predominantly roosts in caves, however, is known to roost in trees and man-made structures close to water. Roosts are generally located close to water, where the bats forage in small groups of three or four. They have a strong association with streams and permanent waterways in areas that are vegetated rather than cleared (Churchill, S 2008, Australian Bats, Jacana Books, Crows Nest, NSW	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal. No breeding habitat occurs within areas that would be impacted.

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Yellow-bellied Sheath-tail-bat <i>Saccolaimus flaviventris</i>	Vulnerable <i>NSW BC Act</i>	Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory.	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal. No breeding habitat occurs within areas that would be impacted.
BIRDS			
Australasian Bittern <i>Botaurus poiciloptilus</i>	<i>NSW BC Act</i> Endangered <i>EPBC Act</i> Endangered	Occurs in terrestrial freshwater wetlands and, rarely, estuarine habitats. It favours wetlands with tall, dense vegetation, where it forages in still, shallow water up to 0.3 m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water.	Unlikely to occur. No suitable habitat present
Black Bittern <i>Ixobrychus flavicollis</i>	Vulnerable <i>NSW BC Act</i>	Terrestrial and estuarine wetlands generally in areas of permanent water and dense vegetation that may comprise grassland, woodland forest rainforest and mangroves. Roosts in trees or on ground amongst dense reeds, nests in branches overhanging water	Unlikely to occur. No suitable habitat present
Black Falcon <i>Falco subniger</i>	Vulnerable <i>NSW BC Act</i>	The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. Some reports of 'Black Falcons' on the tablelands and coast of New South Wales are likely to be referable to the Brown Falcon. In New South Wales there is assumed to be a single population that is continuous with a broader continental population, given that falcons are highly mobile, commonly travelling hundreds of kilometres (Marchant & Higgins 1993)	Possibly occurring transiently over the site. Unlikely to be affected by proposed works. No important habitat for the species would be removed.
Bush Stone-curlew <i>Burhinus grallarius</i>	<i>NSW BC Act</i> Endangered	Inhabits open forests and woodlands with a sparse grassy ground layer and fallen timber. Largely nocturnal, being especially active on moonlit nights. Nest on the ground in a scrape or small bare patch.	Possibly occurring (low-likelihood) in proximity to the site. Unlikely to utilise habitat within or in close proximity to the site due to disturbance, exposure, low-quality habitat and nearby Flinders Rd. No important habitat for the

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			species would be removed or otherwise impacted.
Crested Tern <i>Thalasseus bergii</i>	<i>Migratory EPBC Act</i>	Crested Terns inhabit coastal areas, offshore waters, beaches, bays, inlets, tidal rivers, salt swamps, lakes and larger rivers. The species breeds during Sep-Jan in the south and Mar-Jun in the north in large, dense colonies on small islands. Nesting occurs on sand or shingle among low vegetation behind the beaches (Pizzey & Knight 2012; Morcombe 2011)	Unlikely to occur. No suitable habitat present
Dusky Woodswallow <i>Artamus cyanopterus cyanopterus</i>	Vulnerable NSW BC Act	The Dusky Woodswallow is often reported in woodlands in eastern, southern and southwestern Australia. In New South Wales it is widespread from coast to inland, including the western slopes of the great Diving Range and farther west. It is often reported in woodlands and dry open sclerophyll forests, usually dominated by eucalyptus, including mallee associations. It has also been recorded in shrublands and heathlands and various modified habitats including regenerating forests; very occasionally in moist forests of rainforests.	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal.
Eastern Hooded Dotteral (Hooded Plover) <i>Thinornis cucullatus cucullatus</i> (syn <i>Thinornis rubricollis</i>)	NSW BC Act: Critically Endangered EPBC Act: Vulnerable	In south-eastern Australia Hooded Plovers prefer sandy ocean beaches, especially those that are broad and flat, with a wide wave-wash zone for feeding, much beachcast seaweed, and backed by sparsely vegetated sand-dunes for shelter and nesting.	Unlikely to occur. No suitable habitat present
Eastern Osprey <i>Pandion cristatus</i>	NSW BC Act Vulnerable	Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Feed on fish over clear, open water. Breed from July to September in NSW. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.	Unlikely to occur. No suitable habitat present
Fork-tailed Swift <i>Apus pacificus</i>	Migratory EPBC Act	Occurring over inland plains but sometimes above foothills or in coastal areas. They often occur over cliffs and beaches and also over islands and sometimes well out to sea. They also	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal.

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		occur over settled areas, including towns, urban areas and cities. They mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. They are also found at treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand dunes.	
Freckled Duck <i>Stictonetta naevosa</i>	Vulnerable NSW BC Act	Found primarily in south-eastern and south-western Australia, occurring as a vagrant elsewhere. It breeds in large temporary swamps created by floods in the Bulloo and Lake Eyre basins and the Murray-Darling system, particularly along the Paroo and Lachlan Rivers, and other rivers within the Riverina.	Unlikely to occur. No suitable habitat present
Gang-gang Cockatoo <i>Callocephalon fimbriatum</i>	Vulnerable NSW BC Act	Tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In winter, may occur at lower altitudes in drier more open eucalypt forests and woodlands, and often found in urban areas. preferring more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. Favours old growth attributes for nesting and roosting	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal. No suitable hollows were noted in trees within or adjacent to the sites.
Glossy Black-cockatoo <i>Calyptrorhynchus lathamii</i>	Vulnerable NSW BC Act	The GBC inhabits open forest and woodlands of the coast where stands of she-oak occur. In the Jervis Bay region they feed almost exclusively on the seeds of the black she-oak <i>Allocasuarina littoralis</i> , shredding the cones with their bill	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal. No evidence of foraging was noted during surveys. No suitable hollows were noted in trees within or adjacent to the sites.
Latham's Snipe <i>Gallinago hardwickii</i>	EPBC Act: Migratory	In Australia, Latham's Snipe occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water	Unlikely to occur. No suitable habitat present

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		bodies). However, they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity.	
Little Lorikeet <i>Glossopsitta pusilla</i>	Vulnerable NSW BC ACT	Forages primarily in the canopy of open Eucalyptus forest and woodland, yet also finds food in Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species. Roosts in treetops, often distant from feeding areas.	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal. No suitable hollows were noted in trees within or adjacent to the sites.
Masked Owl – <i>Tyto novaehollandiae</i>	Vulnerable NSW BC Act	Dry eucalypt forests and woodlands from sea level to 1100 m. Inhabits forest but often hunts along the edges of forests, including roadsides. The typical diet consists of tree-dwelling and ground mammals, especially rats.	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal. No suitable hollows were noted in trees within or adjacent to the sites.
Pectoral Sandpiper <i>Calidris melanotos</i>	Migratory EPBC Act	In Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	Unlikely to occur. No suitable habitat present
Powerful Owl <i>Ninox strenua</i>	Vulnerable NSW BC Act	Coastal Woodland, Dry Sclerophyll Forest, wet sclerophyll forest and rainforest- Can occur in fragmented landscapes. Roosts in dense vegetation comprising species such as Turpentine <i>Syncarpia glomulifera</i> , Black She-oak <i>Allocasuarina littoralis</i> , Blackwood <i>Acacia melanoxylon</i> , Rough-barked Apple <i>Angophora floribunda</i> , Cherry Ballart <i>Exocarpus cupressiformis</i> and a number of eucalypt species. Requires old growth elements-hollow bearing tree resources for nesting and prey resource. Nests in large tree hollows in large	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal. No suitable hollows were noted in trees within or adjacent to the sites.

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		eucalypts that are at least 150yrs old. Often in riparian areas. Large home range	
Regent Honeyeater <i>Anthochaera phrygia</i>	Critically endangered EPBC Act Critically endangered NSW BC Act	Temperate woodlands and open forests- and drier coastal woodlands in some years (flowering coastal woodlands and forests including box-ironbark woodland, and riparian forests-that exhibit large numbers of mature trees, high canopy cover and abundance of mistletoes) Key eucalypt species include Mugga Ironbark, Yellow Box, Blakely's Red Gum, White Box and Swamp Mahogany. Also utilises: Eucalyptus microcarpa, E. punctata, E. polyanthemos, E. moluccana, Corymbia robusta, E. crebra, E. caleyi, C. maculata, E. mckieana, E. macrorhyncha, E. laevopinea, and Angophora floribunda. Nectar and fruit from the mistletoes Amyema miquelii, A. pendula and A. cambagei are also eaten during the breeding season.	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal. No significant Ironbark trees would be impacted.
Scarlet Robin <i>Petroica boodang</i>	Vulnerable NSW BC Act	The Scarlet Robin is primarily a resident in dry forests and woodlands, but some adults and young birds disperse to more open habitats after breeding.	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal.
Short-tailed Shearwater <i>Ardenna tenuirostris</i>	Migratory EPBC Act	Coastal, oceanic.	Unlikely to occur. No suitable habitat present
Square-Tailed Kite <i>Lophoictinia isura</i>	Vulnerable NSW BC Act	Summer breeding migrant to the south-east, including the NSW south coast, arriving in September and leaving by March. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses large hunting ranges of more than 100km ² . Breeding is from July to February, with nest sites generally located along or within 200m of	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal.

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		riparian areas, near watercourses, in a fork or on large horizontal limbs.	
Varied Sittella <i>Daphoenositta chrysoptera</i>	Vulnerable NSW BC Act	Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal.
Wedge-tailed Shearwater <i>Ardenna pacificus</i>	Migratory EPBC Act	A pelagic, marine bird known from tropical and subtropical waters. The species tolerates a range of surface-temperatures and salinities, but is most abundant where temperatures are greater than 21 °C and salinity is greater than 34.6 %. In tropical zones the species may feed over cool nutrient-rich waters.	Unlikely to occur. No suitable habitat present
White-bellied Sea-Eagle <i>Haliaeetus leucogaster</i>	NSW BC Act Vulnerable Migratory EPBC Act	Found in coastal habitats (especially those close to the sea-shore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia and its offshore islands. The habitats occupied by the sea-eagle are characterized by the presence of large areas of open water (larger rivers, swamps, lakes, the sea).	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal.
White-fronted Chat <i>Epthianura albifrons</i>	Vulnerable NSW BC Act	Commonly occurring in the saltmarshes of southern Australia, the White-fronted Chat is often seen foraging for insects and their larvae among the succulent leaves and stems of stunted saltmarsh plants.	Unlikely to occur. No suitable habitat present
White-throated Needletail <i>Hirundapus caudacutus</i>	Migratory EPBC Act	Almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable, but there are, nevertheless, certain preferences exhibited by the species.	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal.
MAMMALS			

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Eastern Pygmy-possum <i>Cercartetus nanus</i>	Vulnerable NSW BC Act	Rainforest, sclerophyll forest & woodland to heath – but heath & woodland preferred. Forages on banksias, eucalypts & bottlebrushes.	Unlikely to occur. No suitable habitat present within or in vicinity of site.
Greater Glider <i>Petauroides Volans</i>	Vulnerable EPBC Act	Feeds exclusively on eucalypt leaves, buds, flowers and mistletoe. Shelter during the day in tree hollows and will use up to 18 hollows in their home range. Occupy a relatively small home range with an average size of 1 to 3 ha.	Unlikely to occur. No suitable habitat present within or in vicinity of site.
Grey-headed Flying-fox <i>Pteropus poliocephalus</i>	Vulnerable EPBC Act Vulnerable NSW BC Act	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.	Possibly occurring transiently over the site but will not be affected by proposal or associated works. No important habitat will be affected by the proposal.
Koala <i>Phascolarctos cinereus</i>	Vulnerable NSW BC Act	Eucalypt woodland and forest Home range sizes vary with quality of habitat ranging from less than two ha to several hundred ha. Preferred tree species on the south coast are <i>Eucalyptus amplifolia</i> , <i>E.viminalis</i> , & <i>E.tereticornis</i> but numerous other species also known food trees.	Unlikely to occur. No suitable habitat present within or in vicinity of site.
Southern Brown Bandicoot (eastern) <i>Isodon obesulus obesulus</i>	Endangered EPBC Act Endangered NSW BC Act	Southern Brown Bandicoots are largely crepuscular (active mainly after dusk and/or before dawn). They are generally only found in heath or open forest with a heathy understorey on sandy or friable soils.	Unlikely to occur. No suitable habitat present within or in vicinity of site.
Spotted-tailed Quoll <i>Dasyurus maculatus</i>	Endangered EPBC Act Vulnerable NSW BC Act	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites.	Unlikely to occur. No suitable habitat present within or in vicinity of site.

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Squirrel Glider <i>Petaurus norfolcensis</i>	NSW BC Act Vulnerable	Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey.	Unlikely to occur. No suitable habitat present within or in vicinity of site.
Yellow-bellied Glider - <i>Petaurus Australis</i>	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 within or in vicinity of site.