

Review of Environmental Factors (REF) Addendum

Proposed Replacement of St Anns and Lyrebird Park Sewer Pump Stations and Rising Mains, Nowra

Prepared for
Shoalhaven Water

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Contents

Contents	ii	
1	Introduction	4
1.1	The Proposed Activity	4
1.2	Purpose of this REF Addendum	4
1.3	Location of the Study Area	5
1.4	Staging of Proposed Works	5
1.5	Construction Period and Working Hours	5
1.6	Plant and Equipment	5
2	Legislation and planning context	6
2.1	Environmental Planning and Assessment Act 1979.....	6
2.2	State Environmental Planning Policies.....	6
2.3	Shoalhaven Local Environment Plan 2014	7
2.4	Other NSW Legislation	7
2.5	Commonwealth Legislation	9
3	Existing Environment.....	10
3.1	Topography, Soils and Drainage	10
3.2	Acid Sulfate Soils.....	10
3.3	Flora and Fauna	10
3.3.1	Method of Assessment	10
3.3.2	Vegetation Communities	12
3.3.3	Threatened Flora	12
3.3.4	Threatened Fauna	12
3.4	Heritage Value	12
4	Consultation.....	14
5	Assessment of Environmental Impacts	16
5.1	Section 7.3 of the Biodiversity Conservation (BC) Act 2016	16
5.1.1	Affected Endangered Ecological Communities (EECs)	16
5.1.2	Affected Threatened Flora.....	16
5.1.3	Affected Threatened Fauna.....	16
5.2	Clause 228(2) Matters of Consideration.....	18
5.3	Matters of National Environmental Significance.....	19

6	Mitigation Measures	21
7	Conclusion	23
8	Determination	24
	References	25
	Appendix A: Figures	26
	Appendix B: Threatened Species Tables.....	33
	Appendix C: AHIMS	41
	Appendix D: Letter Template for Consultation	42
	Appendix E: Test of Significance.....	43
	Appendix F: GGBF Management Plan.....	46

1 Introduction

1.1 THE PROPOSED ACTIVITY

Shoalhaven Water, a part of Shoalhaven City Council, is responsible for the collection, treatment and distribution of potable water and wastewater in the Shoalhaven local government area.

Shoalhaven Water proposes to undertake the following works:

- upgrade the existing St Anns Street sewage pumping station (SPS 3) and the associated rising main (SRM3) to a connection point located in Wondalga Farm; and
- upgrade the existing Lyrebird sewage pumping station (SPS 2) and the associated rising main (SRM2) to a connection point located in Wondalga Farm.

These proposed works have been previously assessed in a number of different Review of Environmental Factors (REF) reports including:

- REF prepared by GHD in September 2015 for the upgrade of St Anns Street sewage pumping station (SPS 3) and the associated rising main through to Nowra Wastewater Treatment Plant;
- REF prepared by GHD in December 2015 for the upgrade of Lyrebird sewage pumping station (SPS 2);
- REF prepared by EMAP Consulting in September 2018 for the replacement of rising mains SRM 2 and SRM3 (altered alignment since 2015), as well as South Nowra Surcharge Main.

Shoalhaven Water has revised the proposed alignment of the St Anns Rising Main (SRM 3) and the Lyrebird Rising Main (SRM 2). The upgrade works to the two sewer pump stations remains unchanged. The proposed activity for purposes of this REF Addendum is the revised alignment of the proposed St Anns and Lyrebird rising mains.

1.2 PURPOSE OF THIS REF ADDENDUM

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)*. The environmental assessment of the proposed activity has been undertaken in the context of Clause 228 of the Environmental Planning and Assessment Regulation 2000. In doing so, this Review of Environmental Factors (REF) Addendum helps to fulfil the requirements of Section 111 of the Act that SCC examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the proposed activity.

This REF Addendum assesses environmental impacts of the revised alignment of these rising mains.

1.3 LOCATION OF THE STUDY AREA

The proposed activity is located in Nowra, NSW. The location of the study area, location of the proposed activity and proposed staging of works are illustrated in Figures 1 and 2 respectively, in Appendix A.

The REF Study Area for the purposes of this assessment has been mapped and assessed as a 50 metre buffer of the proposed rising main alignment. Additional features proposed- such as the proposed stockpile sites and sediment control measures- are all located within this area.

1.4 STAGING OF PROPOSED WORKS

The replacement of St Anns Rising Main (SRM3) will be conducted in three stages, as illustrated in Figure 3. The first stage is the section from SPS 3 to the Princes Highway.

Replacement of SRM2 will occur at the same time as Stage 3 of SRM3, in a common trench.

1.5 CONSTRUCTION PERIOD AND WORKING HOURS

The first stage of works will commence in June 2020, and is likely to take approximately 12 weeks.

Work hours will be between 6:00am and 6:00pm, Mondays to Fridays. Work on Saturdays may be undertaken between 8:00am and 1:00pm.

No work is proposed on Sundays or public holidays.

1.6 PLANT AND EQUIPMENT

Plant and equipment utilised in the construction works include:

- Various earthmoving equipment including excavators;
- Trucks;
- Compactors;
- Mobile crane to lift pipes into place;
- Concrete trucks and concrete pump;
- Asphalt Pavers;
- Electrofusion and Butt Welders;
- Vibrating plate and jumping compactors (hand operated); and
- Road saws.

2 Legislation and planning context

This section describes the planning framework under which the Proposal is assessed and relevant provisions of local, state and commonwealth legislation.

2.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and its associated regulations provide the framework for assessing environmental impacts and determining planning approvals for developments and activities in NSW. The EP&A Act also establishes State Environmental Planning Policies (SEPPs) and Local Environmental Plans (LEPs) which may include provisions relevant to the Proposal.

Under the EP&A Act, Shoalhaven City Council is classified as a proponent and a determining authority (Part 5 of the Act). A proposed activity can be assessed by a determining authority under Part 5 of the Act if it:

- May be carried out without development consent;
- Is not a prohibited development;
- Is carried out, or approved by a determining authority.

The Proposal does not require development consent under Part 4 of the EP&A Act, and is not classified as state significant infrastructure under 5.1. Therefore, the Proposal has been assessed under Part 5 of the EP&A Act. This REF has been prepared to determine if the Proposal is likely to have a significant impact on the environment. If a determining authority decides an activity is likely to significantly affect the environment, it must prepare an environmental impact statement (EIS). Clause 228 of the EP&A Regulation lists factors that must be taken into account when considering the likely impact of an activity on the environment. Section 5 includes an assessment of these factors for this proposal.

2.2 STATE ENVIRONMENTAL PLANNING POLICIES

State Environmental Planning Policy (Infrastructure) 2007

The aim of the State Environmental Planning Policy (Infrastructure) 2007 is to facilitate the effective delivery of infrastructure across NSW. This SEPP provides for this work to be undertaken without development consent. 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.

State Environmental Planning Policy (Coastal Management) 2018

The Coastal Management SEPP gives effect to the objectives of the Coastal Management Act 2016 from a land use planning perspective, by specifying how development is assessed if it is within the coastal zone. The REF Study Area is partly located within the coastal zone to which this SEPP applies.

State Environmental Planning Policy No.44 – Koala Habitat Protection

The development control provisions within this SEPP apply only to development applications made under Part 4 of the EP&A Act. Therefore this SEPP does not apply.

State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011

The subject site is not mapped as an area covered by this policy.

2.3 SHOALHAVEN LOCAL ENVIRONMENT PLAN 2014

Under the Shoalhaven LEP, the REF Study Area traverses areas that are zoned:

- R1 General Residential
- R2 Low Density Residential
- R3 Medium Density Residential
- RE1 Public Recreation
- RU1 Primary Production
- SP2 Special Infrastructure

The proposed activity may have required development consent under the SLEP. However, the provisions of the SEPP Infrastructure prevail over the SLEP and consequently development consent is not required.

2.4 OTHER NSW LEGISLATION

Heritage Act 1977

The *Heritage Act 1977* was introduced to conserve the environmental heritage of NSW. It defines environmental heritage as places, buildings, works, relics, moveable objects and precincts that have State or local heritage significance. The Act allows for a variety of orders and permits to protect items of environmental heritage, including the listing of items on the State Heritage Register (SHR). Section 3.3 of this REF considers the impact of the proposed works to heritage and associated items and concludes there will be no significant impact to items of heritage significance.

Protection of the Environment Operations Act 1997 (POEO Act)

The proposed work does not constitute scheduled development work or scheduled activities as listed under Schedule 1 of the Act. The proposed activity therefore does not require an environmental protection licence.

National Parks and Wildlife Act 1974

The Office of Environment and Heritage (OEH) administers the *National Parks and Wildlife Act 1974* (NPW Act). Under section 86 of the Act it is an offence to harm Aboriginal objects or places. Defences against prosecution of this offence include having an Aboriginal Heritage Impact Permit and being able to demonstrate due diligence. All works will be undertaken on existing disturbed sites. Similarly, no known archaeological sites, Aboriginal objects or places would be directly or indirectly impacted by the Proposal. Further discussion of Aboriginal Heritage is included in section 3.3.

The NPW Act also allows for the establishment and management of National Parks and nature reserves and prohibits certain activities within these areas. There are no National Parks or nature reserves at or in the immediate vicinity of the subject site.

NSW Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) establishes a framework for protecting threatened species, populations, ecological communities and their habitats in NSW. Schedules 1 and 2 of the BC Act list terrestrial species, populations and ecological communities threatened in NSW.

Under Section 7.8 of the BC Act, if an activity assessed under Part of the EP&A Act is likely to *significantly affect* threatened species – as per Section 7.3 of the BC Act “*Test for determining whether proposed development or activity likely to significantly affect threatened species or ecological communities, or their habitats*” - a Species Impact Statement (SIS) and licence are required. Section 5 of this REF provides details of threatened species, populations, ecological communities or habitats within or in the vicinity of the work areas.

Fisheries Management Act 1994

The proposed activity:

- Would not affect declared aquatic reserves;
- Does not involve dredging or reclamation works in ‘key fish habitat’;
- Would not impact mangroves and marine vegetation;
- Would not involve disturbance to gravel beds where salmon or trout spawn;
- Does not involve the release of live fish;
- Does not involve construction of dams and weirs;
- Would not result in blocking of the passage of fish;
- Would not impact declared threatened species or endangered ecological communities;
- Does not constitute a declared key threatening process;
- Would not use explosives in a watercourse.

Therefore a licence is not required.

Noxious Weeds Act 1993

The purpose of the Noxious Weeds Act 1993 is to identify noxious weeds in respect of which particular control measures need to be taken, to specify those control measures, and to specify the duties of both public and private landholders with respect to the control of noxious weeds.

The proposed activity will include mitigation measures to reduce the potential spread of noxious weeds.

Water Management Act 2000

Local councils are exempt from s.91E(1) of the Act in relation to controlled activities that are carried out in waterfront land.

2.5 COMMONWEALTH LEGISLATION

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Under the EPBC Act 1999 activities that are likely to have a significant impact on matters of national environmental significance, actions undertaken on Commonwealth lands, or by the Commonwealth must be assessed and approved. The EPBC Act identifies matters of national environmental significance (MNES) as:

- world heritage properties;
- national heritage properties;
- Ramsar wetlands;
- nationally threatened species and communities;
- migratory species protected under international agreements;
- Commonwealth marine environment;
- Great Barrier Reef Marine Park;
- nuclear actions;
- protection of water resources from coal seam gas development and large coal mining development.

The results of the EPBC Protected Matters search of the study area revealed the following MNES occur within a 10km radius of the study area:

- 3 listed threatened ecological communities;
- 39 threatened species;
- 15 listed migratory species.

These matters are discussed further in sections 5.2 and 5.3. The proposed activity IS NOT likely to have a significant impact on any matters of national environmental significance. The proposed activity is therefore not a controlled activity and does not require commonwealth referral.

3 Existing Environment

3.1 TOPOGRAPHY, SOILS AND DRAINAGE

The REF Study Area is located in Nowra, NSW.

The topography of the study area is mostly flat. St Anns Wastewater Pump Station is at an elevation of approximately 18 metres ASL.

Drainage channels in the study area drain north towards Nowra Wastewater Treatment Plant and Shoalhaven River.

3.2 ACID SULFATE SOILS

There are Potential Acid Sulfate Soils (PASS) mapped along sections of the proposed alignment- see Figure 4 in Appendix A. Left undisturbed, acid sulfate soils do not present any risk, however when they are exposed to air the iron sulfides they contain react with oxygen to create sulfuric acid. The acid makes metals in the soil, such as iron and aluminium more soluble.

The acid and released metals can have the following environmental impacts:

- Water quality impacts due to the release of acid and toxic metals into waterways;
- Killing aquatic life, particularly organisms that are immobile (such as oysters) and that live in sediment; and
- Reduce survival and growth rates of plants and animals and promote disease outbreaks, such as red-spot disease in fish.

As well as potential environmental impacts, acid sulfate soils can have impacts on most industries including recreational and commercial fishing, oyster growing and other aquaculture, cropping, grazing and dairying.

As the proposed project requires excavation and therefore disturbance of acid sulfate soils, it is recommended that onsite testing be conducted to confirm the presence of acid sulfate soils along the alignment of the proposed main, the depth at which acid sulfate soils occur, and whether an Acid Sulfate Soils Management Plan is required.

3.3 FLORA AND FAUNA

3.3.1 Method of Assessment

As this is a desktop assessment only, methods for assessment included:

- Database searches:
 - OEH (2013) Compilation Map: Biometric vegetation types and endangered ecological communities of the Shoalhaven, Eurobodalla and Bega Valley local government areas;
 - OEH Threatened Species Profiles Database;
 - OEH NSW Bionet Atlas (10km buffer, accessed 29th April, 2020);

- The EPBC Protected Matters Search Tool (10km buffer, accessed 29th April, 2020);
- Literature Review:
 - Review of Environmental Factors for Lyrebird Park Sewer Pump Station (SPS 2) Upgrade (GHD 2015);
 - Review of Environmental Factors for St Anns Pumping Station and Rising Main (GHD 2015); and
 - Review of Environmental Factors for Proposed Replacement of Surcharge Mains in Nowra (EMAP Consulting 2018).
- An assessment of likelihood of occurrence of threatened species based on previous records and information provided in the literature review;
- Test of Significance (under section 7.3 of the NSW *Biodiversity Conservation Act 2016*) for Green and Golden Bell Frog.

A list of threatened flora and fauna within the locality (10km buffer of the study area- see Figure 6, and Appendix B) was determined from the database searches detailed above. The list of subject species is determined from consideration of this list.

In order to adequately determine the relevant level of assessment to apply to potentially impacted species, analysis of the likelihood of those species occurring within the study area was completed.

Four categories for 'likelihood of occurrence' (Table 1) were attributed to species after consideration of criteria such as proximity of NSW Bionet Atlas records and presence or absence of important habitat features on the subject site (based on literature review). This process was completed on an individual species basis.

Species considered further in formal assessments of significance (BC Act, EPBC Act) legislation are those in the 'Known' or 'Potential' categories and where impacts for the species could reasonably be expected to occur from the proposed activity. Species listed as a 'low' or 'no' likelihood of occurrence are those for which there is limited or no habitat present within the study area.

Table 1 Likelihood of occurrence criteria

Likelihood Rating	Threatened flora criteria	Threatened fauna criteria
Known	The species was observed within the study area.	The species was observed within the study area during previous field surveys.
Potential	Potential habitat for a species occurs on the site. Adequate field survey would determine if there is a 'high' or 'low' likelihood of occurrence for the species within the study area.	Potential habitat for a species occurs on the site and the species may occasionally utilise that habitat. Species unlikely to be wholly dependent on the habitat present within the study area.
Low	It is unlikely that the species inhabits the study area.	It is unlikely that the species inhabits the study area. If present at the site the species would likely be a transient visitor. The site contains only very common habitat for this species which the species would not rely on for its ongoing local existence.
None/ Unlikely	The habitat within the study area is unsuitable for the species	The habitat within the study area is unsuitable for the species.

One threatened fauna species- the Green and Golden Bell Frog (*Litoria aurea*) which is listed as Endangered under the BC Act and Vulnerable under the EPBC Act, was considered to have a “high” likelihood of occurrence within the REF Study Area and to be potentially impacted by the proposed works. A Test of Significance under section 7.3 of the NSW *Biodiversity Conservation Act 2016* is provided in Appendix E, and concludes that the proposed replacement of the St Anns and Lyrebird Sewer Rising Mains, and associated mitigation measures outlined in this REF, will not result in the removal or fragmentation of any known habitat for this species, and as such a Species Impact Statement is not required.

A Significant Impact Assessment for this species under the EPBC Act is not required as the proposed activity meets the criteria for ‘prior authorisation’ or ‘continuing use’ exemptions.

A GGBF Management Plan has been prepared and will be implemented to ensure potential impacts on this species are negligible (Appendix F).

3.3.2 Vegetation Communities

The Shoalhaven Biometric Vegetation Map (OEH 2013) does not identify the presence of any vegetation communities along the alignment of the proposed main- see Figure 4 in Appendix A.

There is a patch of vegetation mapped immediately to the south west of the St Anns Street Wastewater Pump Station, which is identified as “Sydney Peppermint - Spotted Gum - Lilly Pilly wet forest in gullies of the coastal foothills, northern South East Corner and southern Sydney Basin” (see Figure 3).

There are no Endangered Ecological Communities present along the alignment or within the vicinity of the alignment of the proposed alignment of the St Anns and Lyrebird Sewer Rising Mains.

3.3.3 Threatened Flora

A total of 26 threatened flora species, as listed on the BC and/or EPBC Acts, were considered in this assessment (Appendix B). As detailed in section 5.1.2, it is considered unlikely that any threatened flora species will be impacted by the proposed activity.

3.3.4 Threatened Fauna

A total of 82 threatened fauna species (53 birds, 23 mammals, 2 frogs, 2 reptiles and 2 Fish) have been recorded (NSW Bionet Atlas) or are predicted to have habitat (EPBC Act) within 10km of the study area (Appendix B). Of these species, one species is considered to have a high likelihood of occurring within the study area, thirteen species are considered to have a moderate likelihood of occurring in the study area, and the remainder were considered to have a low likelihood of occurring in the study area (see Appendix B). This is a conservative approach based on the limitations of a desktop assessment.

3.4 HERITAGE VALUE

A basic Aboriginal Heritage Information Management System (AHIMS) search conducted on 1st May 2020 revealed there are 2 Aboriginal sites and no Aboriginal places recorded in the vicinity of the study area. See Appendix C.

The proposed activity constitutes a low impact activity in accordance with the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales. This is because the proposed activity is maintenance of an existing utility on or under land that has been previously disturbed.

The National Parks and Wildlife Regulation 2009 (the Regulation), under Clause 80B describes defences of carrying out certain low impact activities:

(1) It is a defence to a prosecution for an offence under section 86(2) of the Act, if the defendant establishes that the act or omission concerned:

(a) was maintenance work of the following kind on land that has been disturbed: (i) maintenance of existing roads, fire and other trails and tracks, (ii) maintenance of existing utilities and other similar services (such as above or below ground electrical infrastructure, water or sewage pipelines).

The Regulation defines the following as “land that has been disturbed”:

(2) For the purpose of this clause, land is disturbed if it has been the subject of human activity that has changed the land surface, being changes that remain clear and observable.

Note: Examples of activities that may have disturbed land includes the following: (a) soil ploughing; (b) construction of rural infrastructure (such as dams and fences); (c) construction of roads, trails and tracks; (d) clearing of vegetation; (f) construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewage pipeline, storm water drainage, and other similar infrastructure; (h) construction of earth works associated with anything referred to in paragraphs (a)-(g).

As the proposed activity is considered a low impact activity, no further assessment is required.

4 Consultation

4.1 CONSULTATION METHODS

Consultation requirements with other government authorities are specified by Part 2 Division 1 of the Infrastructure SEPP.

The Draft REF document was placed on public exhibition on Council's website for a period of 3 weeks, from 11th May to 1st June 2020. A notice was placed in the South Coast Register on 27th May, and letters sent to targeted landowners including:

- Residents along St Anns Street (between Osborne Street and Seccombe St);
- Residents along Wallace Street (between St Anns and Jervis St);
- Residents along Amalfi Crescent; and
- Residents along Shorland Place.

A letter was sent by Council to directly impacted properties to inform them of the public exhibition and invite them to make a submission (letter template in Appendix E).

Other consultation requirements of the Infrastructure SEPP do not apply as the proposed activity:

- Would not impact local heritage items;
- Would not be undertaken adjacent to a marine park declared under the Marine Parks Act 1997;
- Would not be undertaken adjacent to an aquatic reserve declared under the Fisheries Management Act 1994;
- Would not be undertaken in the foreshore area within the meaning of the Sydney Harbour Foreshore Authority Act 1998; and
- Does not comprise a fixed or floating structure in or over navigable waters.

4.2 STAKEHOLDER AND COMMUNITY FEEDBACK

Three responses were received during the public exhibition of the Draft REF.

The first respondent was generally supportive of the project, and sought the following:

1. Assistance locating the REF document on Council's website;
2. Clarification on anticipated commencement date for rising main works within St Anns Street; and
3. Clarification on whether access will be maintained to their property during the works.

Following further discussions with the project's nominated Council representative, the project team was able to:

- Assist the respondent locate the REF document as per item 1 above; and
- Provide the requested clarifications as identified in items 2 and 3 above.

The second respondent raised concern with existing odour from their bathroom plumbing. This concern did not specifically related to the exhibited REF and accordingly the matter was referred to Shoalhaven Water Operations for review and investigation/landowner assistance.

The third respondent was generally supportive of the project, and sought the following:

1. Clarification on the proposed location of the new rising main within St Anns Street; and
2. Clarification on anticipated commencement date for rising main works within St Anns Street.

Following further discussions with the project's nominated Council representative, the project team was able to:

- Provide the requested clarifications as identified in items 1 and 2 above.

5 Assessment of Environmental Impacts

In circumstances where development consent is not required, the environmental assessment provisions outlined in Part 5 (Environmental Assessment) of the EP&A Act are required to be complied with. Part 5 requires Council to examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity. As a minimum the following must be addressed:

- Section 7.3 of the *Biodiversity Conservation (BC) Act 2016*;
- Section 111 Matters of Consideration
- Clause 228 of the EP&A Regulation;
- Matters of NES under the *EPBC Act*.

5.1 SECTION 7.3 OF THE BIODIVERSITY CONSERVATION (BC) ACT 2016

5.1.1 Affected Endangered Ecological Communities (EECs)

As discussed in section 3.3.2, no Endangered Ecological Communities will be impacted by the proposal. No further impact assessment is required for EECs.

5.1.2 Affected Threatened Flora

As discussed in Section 3.3.3, twenty six (26) species of threatened flora have been recorded within 10km of the study area. Without conducting field survey of the subject site it can not be determined with any certainty whether these species occur there. It has therefore been assumed- based on available information regarding available habitat and previous data records- that the likelihood of occurrence for each of these species at the subject site is low (see Appendix B).

Due to the nature of the proposed activity, and minimal impact to native vegetation at the subject site, the potential of these species to be impacted by the proposal is considered negligible. Therefore, threatened flora are not likely to be impacted by the proposal. As such, Tests of Significance under the BC Act and an address of Significant Impact Criteria (EPBC Act) are not required for threatened flora.

5.1.3 Affected Threatened Fauna

A total of 82 threatened fauna species (53 birds, 23 mammals, 2 frogs, 2 reptiles and 2 Fish) have been recorded within 10km of the REF study area.

Of these species:

- One threatened species, the Green and Golden Bell Frog (“Endangered” in NSW and “Vulnerable” in Commonwealth) is considered to have a HIGH likelihood of occurring in the vicinity of the proposed works. This species has been recorded within 1km of the proposed alignment of the Rising Main. Suitable habitat for this species is located within the vicinity of the proposed works. A ‘test of significance’ is therefore required under the NSW *Biodiversity Conservation Act 2016*, and is provided in Appendix E. The EPBC Act significant impact guidelines for this species consider that significant impact is possible if actions result in the

removal or degradation of terrestrial habitat within 200 metres of known habitat. The project is short term and does not propose removal or modification of habitat. It also falls under the 'continuing use' exemption criteria for this assessment and therefore does not need to be referred to the Commonwealth.

- Thirteen threatened species (11 birds and 2 mammals) are considered to have a MODERATE likelihood of occurring in the vicinity of the proposed works as there have been previous records of these species within 1km of the proposed alignment of the Rising Main. The potential for the proposed project to affect these species in any way is considered negligible due to lack of limiting breeding and/or foraging habitat for these species in the vicinity of the proposed works.
- Sixty-eight threatened species (42 birds, 21 mammals, 1 frog, 2 reptiles and 2 fish) are considered to have a LOW likelihood of occurring in the vicinity of the proposed works as there are no previous records of these species within 1km of the proposed alignment of the Rising Main. The potential for the proposed project to affect these species in any way is considered negligible due to lack of previous records and lack of limiting breeding and/or foraging habitat for these species in the vicinity of the proposed works.

This is a conservative rating due to the absence of field survey, hence the large number of species that have been assessed in Appendix B.

Developments can impact upon fauna in a number of ways. The significance of an impact would be greatest if any of the following situations occur:

- Death or injury of individuals
- Loss or disturbance of limiting foraging resources
- Loss or disturbance of limiting breeding resources.

Limiting resources are those that are of particular importance for the survival of a species.

All these species may have potential foraging habitat within the study area, however the habitat surrounding the study area is extensive and likely to provide similar habitat. It is therefore unlikely that the proposal will result in a significant loss of habitat or direct impact to any threatened fauna.

A Test of Significance (s7.3 of the BC Act) is provided in Appendix E. This assessment concluded that the proposal is not expected to have a significant impact upon this species, as long as the mitigation measures outlined in this REF are put in place. Therefore a Species Impact Statement is not required.

5.2 CLAUSE 228(2) MATTERS OF CONSIDERATION

Clause 228 Matters of Consideration are outlined in Table 2.

Table 2 Consideration of Clause 228

Does the proposal:	Assessment	Reason
(a) Have any environmental impact on a community?	Positive	The proposed activity will replace the existing main and therefore reduce the potential for the existing main to fail and subsequent flow of wastewater into surrounding environments.
(b) Cause any transformation of a locality?	Negligible	There is expected to be a minor impact on the visual amenity of the site for the duration of construction. Following construction, the locality will benefit from the improved function of the rising main.
(c) Have any environmental impact on the ecosystem of the locality?	Negligible	The threatened species assessment provided in Section 5.1 concludes that the proposed activity would not have a significant impact upon endangered ecological communities or threatened fauna or flora.
(d) Cause a diminution of the aesthetic, recreational, scientific or other environmental quality or value of a locality?	Positive	The proposed activity will replace the existing main and therefore reduce the potential for the existing main to fail and subsequent flow of wastewater into surrounding environments
(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	There are no items in the vicinity of the site on the State Heritage Register. The site is not within an Aboriginal Place declared under the National Parks and Wildlife Act 1974. In accordance with the NSW OEH Due Diligence Code of Practice, as the proposed activity is low impact, it is unlikely to disturb an Aboriginal object or place, and therefore does not require an Aboriginal Heritage Impact Permit.
(f) Have any impact on the habitat of protected fauna (within the meaning of the National Parks and Wildlife Act 1974)?	Negligible	The threatened species assessment provided in Section 5.1 concludes that the proposed activity will not have a significant impact on protected fauna or habitats.
(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	The threatened species assessment provided in Section 5.1 concludes that the proposed activity will not have a significant impact on threatened fauna or habitats.
(h) Have any long term effects on the environment?	Negligible	The proposed activity will be short term and environmental mitigation measures will be put in place to prevent any effects on the environment.
(i) Cause any degradation of the quality of the environment?	Negligible	The proposed activity will be short term and environmental mitigation measures will be put in place to prevent any effects on the environment.
(j) Cause any risk to the safety of the environment?	Negligible	The proposed activity will be short term and environmental mitigation measures will be put in place to prevent any effects on the environment.

Does the proposal:	Assessment	Reason
(k) Cause any reduction in the range of beneficial uses of the environment?	Positive	The proposed activity will improve the aesthetic value of the site.
(l) Cause any pollution of the environment?	Negligible	An Acid Sulfate Soils Management Plan will be prepared to avoid potential pollution generated by disturbance of acid sulfate soils. The proposal will involve a temporary and local increase in noise. However there are no sensitive receivers such as schools, hospitals, nursing homes in the vicinity of the proposed works.
(m) Have any environmental problems associated with the disposal of waste?	Negligible	Consideration will need to be given to the adequate disposal of acid sulfate soils. This will be outlined in the Acid Sulfate Soils Management Plan. There are no other anticipated problems associated with disposal of waste.
(n) Cause any increased demand on resources (natural or otherwise) which are, or are likely to become, in short supply?	Negligible	The proposed activity would not lead to any increase demands on resources to an extent that they become in short supply.
(o) Have any cumulative environmental effect with other existing or likely future activities?	Negligible	There are no cumulative environmental effects associated with the proposed activity.
(p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?	Negligible	The site of the proposed activity is within the coastal zone, however it is unlikely to have any impact on coastal processes.

5.3 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

Under the EPBC Act, consideration of matters of national environmental significance (MNES) is required to determine whether the proposed activity should be referred to the Commonwealth Department of the Environment and Energy. Table 6 provides a summary of how MNES have been considered.

Table 3 Consideration of Matters of National Environmental Significance and Commonwealth Land

MNES	Potential Impacts
Any impact on a World Heritage property?	Nil, there are no World Heritage properties located in the vicinity of the proposed activity.
Any impact on a National heritage place?	Nil, there are no National heritage places located in the vicinity of the proposed activity.
Any impact on any wetlands of international importance?	Nil, there are no wetlands of international importance located in the vicinity of the proposed activity.
Any impact on a Commonwealth listed threatened species or ecological communities?	Nil, there are no impacts to Commonwealth listed threatened species or ecological communities.
Any impacts on a Commonwealth listed migratory species?	Nil, there are no impacts to migratory species.
Any impact on a Commonwealth marine area?	Nil, there are no impacts to marine areas.
Any impact on the Great Barrier Reef Marine Park?	Nil, the proposed activity is not within the Great Barrier

MNES	Potential Impacts
	Marine Park.
Does the proposed activity involve a nuclear action (including uranium mines)?	Nil, the proposed activity does not involve a nuclear action
Does the proposed activity involve a water resource, in relation to coal seam gas development and large coal mining development?	Nil, the proposed activity does not involve a water resource in relation to coal activities.
Is the proposed activity likely to have a significant impact on the environment on Commonwealth land?	Nil, there are no impacts to Commonwealth land.

6 Mitigation Measures

Potential Impact	Mitigation Measures
<p>Flora and fauna impacts:</p> <ul style="list-style-type: none"> (i) Direct Impacts <ul style="list-style-type: none"> - Potential loss of Green and Golden Bell Frog (ii) Indirect Impacts: <ul style="list-style-type: none"> - Acid Sulfate Soils disturbance - Sedimentation and erosion 	<ul style="list-style-type: none"> • All areas to be disturbed are to be demarcated to ensure no additional disturbance occurs; • Prepare a Green and Golden Bell Frog Management Plan which outlines training to be provided to all contractors for identifying Green and Golden Bell Frog and a suitable relocation plan for any individuals that are located during the proposed works. A Draft Plan has been provided in Appendix F, which needs to be reviewed and approved by NSW EE&S; • Should any evidence of threatened species be found in the study area prior to or during construction, works should cease and an appropriate management plan and impact assessment be completed; • <u>No vegetation clearing</u> should be undertaken without further impact assessment.
<p>Water Quality Impacts:</p> <ul style="list-style-type: none"> - Acid Sulfate soils disturbance; - Erosion of soil in the proposed works area; - Generation of sediment-laden runoff from unprotected soil stockpiles and excavated ground; - Soil and runoff contamination from spillage of oil, grease and chemicals; - Exposure of contamination; - Soil compaction in areas immediately surrounding construction zones. 	<ul style="list-style-type: none"> • Prepare an Acid Sulfate Soils Management Plan for management of Acid Sulfate Soils; • Install sediment and erosion control devices around work sites and manage stockpiles in accordance with the NSW Government's 'Blue Book' (4th Edition) (Landcom, 2004). These devices would be inspected regularly including after rainfall to ensure their effectiveness. Any damage to erosion and sedimentation controls are to be rectified immediately; • Minimise the area of exposed surfaces. Disturbed areas would be stabilised progressively to ensure that no areas remain unstable for any extended length of time; • Excess excavated material that cannot be used in backfilling would be classified in accordance with the Waste Classification Guidelines (DECCW, 2009) before off-site disposal at a suitably licensed waste facility; • Wherever possible, reuse soil and sediment that accumulates in erosion and sediment control structures during site restoration, unless it is contaminated or otherwise inappropriate for reuse; • Cease work if areas of suspected contamination are identified. Areas of suspected contamination are to be cordoned off and the environmental representative contacted for further advice; • Equipment, plant and materials would be placed in a designated laydown area; • Remove any erosion and sediment control structures as part of final clean-up after work is complete. This will include removing any sediment which has been trapped by erosion control devices, and restoring as close as possible to pre-existing conditions.

Potential Impact	Mitigation Measures
	<ul style="list-style-type: none"> • Effectively stabilise any areas disturbed by work (including designated laydown, access and parking areas), following construction; • If necessary, revegetation using indigenous vegetation.
<p>Aboriginal heritage impacts:</p> <ul style="list-style-type: none"> • Potential disturbance of unforeseen Aboriginal objects or items of Aboriginal heritage significance 	<ul style="list-style-type: none"> • If unforeseen Aboriginal objects are uncovered during development, or items or places suspected of being of Aboriginal heritage significance, work should cease and Shoalhaven City Council notified. In consultation with Council, an archaeologist, the OEH and the NLALC should also be contacted for further direction prior to recommencement of construction activities. If human remains are found, work should cease, the site should be secured and the NSW Police and the OEH should be notified.
<p>Traffic impacts:</p> <ul style="list-style-type: none"> - Potential disturbance to local residents, motorists and community, particularly at Berry and Kinghorne Streets. 	<ul style="list-style-type: none"> • Prepare a suitable Traffic Management Plan; • Inform local residents and the local community of the works to be undertaken and mitigation measures from the Traffic Management Plan that will be implemented to reduce the potential impacts on local traffic.

7 Conclusion

The proposed activity will reduce the risk of failure of key assets that deliver wastewater from St Anns Sewer Pump Station and Lyrebird Park Sewer Pump Station to Nowra Wastewater Treatment Plant.

The proposed activity is unlikely to have a significant impact on the environment for the following reasons:

- An assessment of the statutory matters of consideration reveals no potential adverse impacts.
- All identified potential impacts are addressed by the proposed mitigation measures;
- The assessments conducted under Section 7.3 of the *NSW Biodiversity Conservation Act 2016* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 2000* indicate that the proposed activity is unlikely to have a significant effect on threatened species, populations or ecological communities.

8 Determination

This Review of Environmental Factors has assessed the likely environmental impacts of a proposal by Shoalhaven City Council (Shoalhaven Water) for the replacement of St Anns and Lyrebird Park Pump Stations and Rising Mains as illustrated in Figure 2.

Shoalhaven City Council has considered the potential environmental effects of the proposal and the effectiveness and feasibility of measures for reducing or preventing detrimental effects. It is determined that:

1. The proposed mitigation measures will be adopted and implemented;
2. Implementation of these mitigation measures will reduce the potential environmental impact of the proposed activity;
3. An Environmental Impact Statement is not required for the proposed works if all mitigation measures in this REF are implemented by Shoalhaven City Council.

Robert Horner
Acting Director

Shoalhaven Water - Shoalhaven City Council,



Date: 23 June 2020

This REF has been prepared by:



Dr Emma McIntyre
Senior Environmental Scientist

Environmental Mapping and Planning (EMAP) Consulting,

Date: 5th June 2020

References

DoEE (2018) Protected Matters Search Tool. Department of the Environment and Energy, Australian Government, Canberra. Accessed April 2020.

EMAP Consulting (2018) Review of Environmental Factors for Proposed Replacement of Surcharge Mains in Nowra.

GHD (2015a) Review of Environmental Factors for Lyrebird Park Sewer Pump Station (SPS 2) Upgrade.

GHD (2015b) Review of Environmental Factors for St Anns Pumping Station and Rising Main.

OEH (2018). BioNet Atlas of NSW Wildlife. Office of Environment and Heritage, Sydney. Accessed April 2020.

OEH (2013) Compilation map: Biometric vegetation types and endangered ecological communities of the Shoalhaven, Eurobodalla & Bega Valley local government areas. A living map. Version 2.0. Technical Report. NSW Office of Environment & Heritage, Queanbeyan.

Shoalhaven City Council's State of the Environment Web Mapping. Available from: <http://maps2.shoalhaven.nsw.gov.au/soemaps/>

Appendix A:

FIGURES

Figure 1

St Anns - Lyrebird Park Rising Main REF Addendum

Location

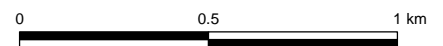


REF Addendum Study Area

- Revised Alignment of Proposed St Anns Rising Main
- REF Study Area

Previous REF Addendum Study Area

- Proposed Alignment as per Previous REF Addendum (EMAP 2018)
- Previous REF Addendum Study Area



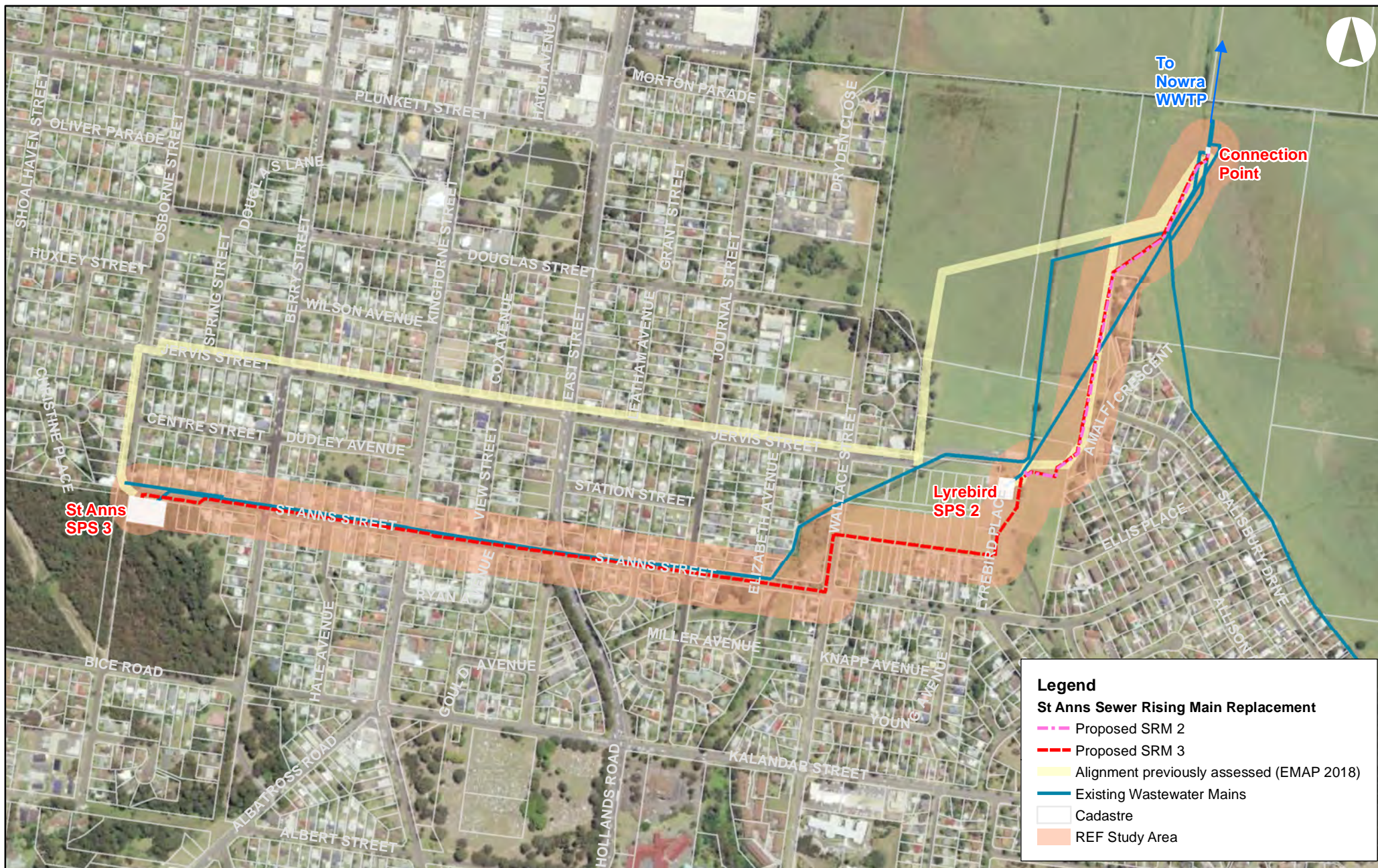
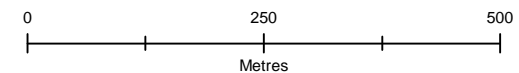
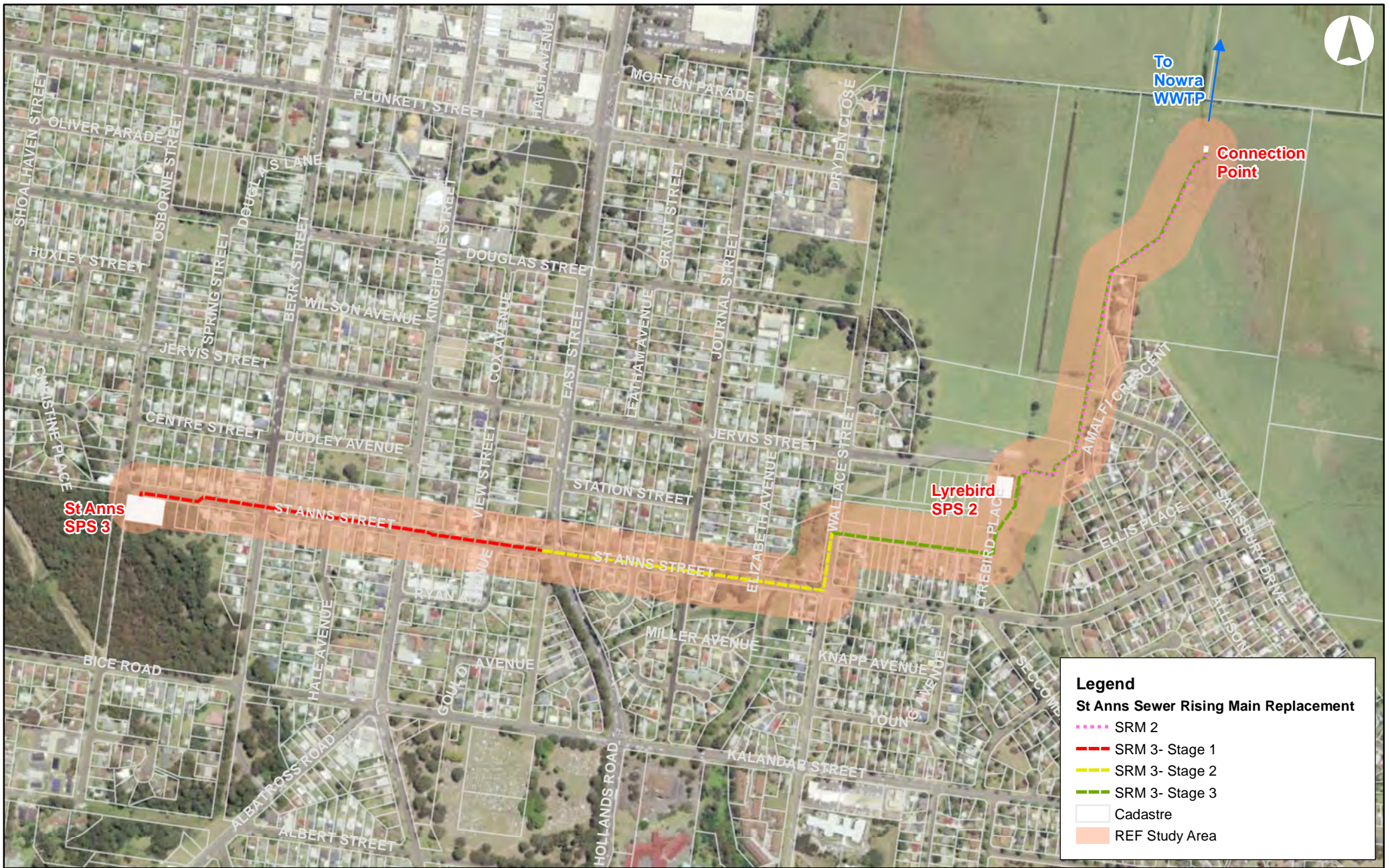


Figure 2

St Anns - Lyrebird Park Rising Main REF Addendum
Study Area

Coordinate System: GDA 1994 MGA Zone 56
 Created by EMAP Consulting on 29/04/2020 for Shoalhaven Water





Legend

St Anns Sewer Rising Main Replacement

- SRM 2
- SRM 3- Stage 1
- SRM 3- Stage 2
- SRM 3- Stage 3
- Cadastre
- REF Study Area

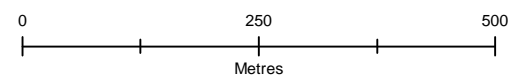
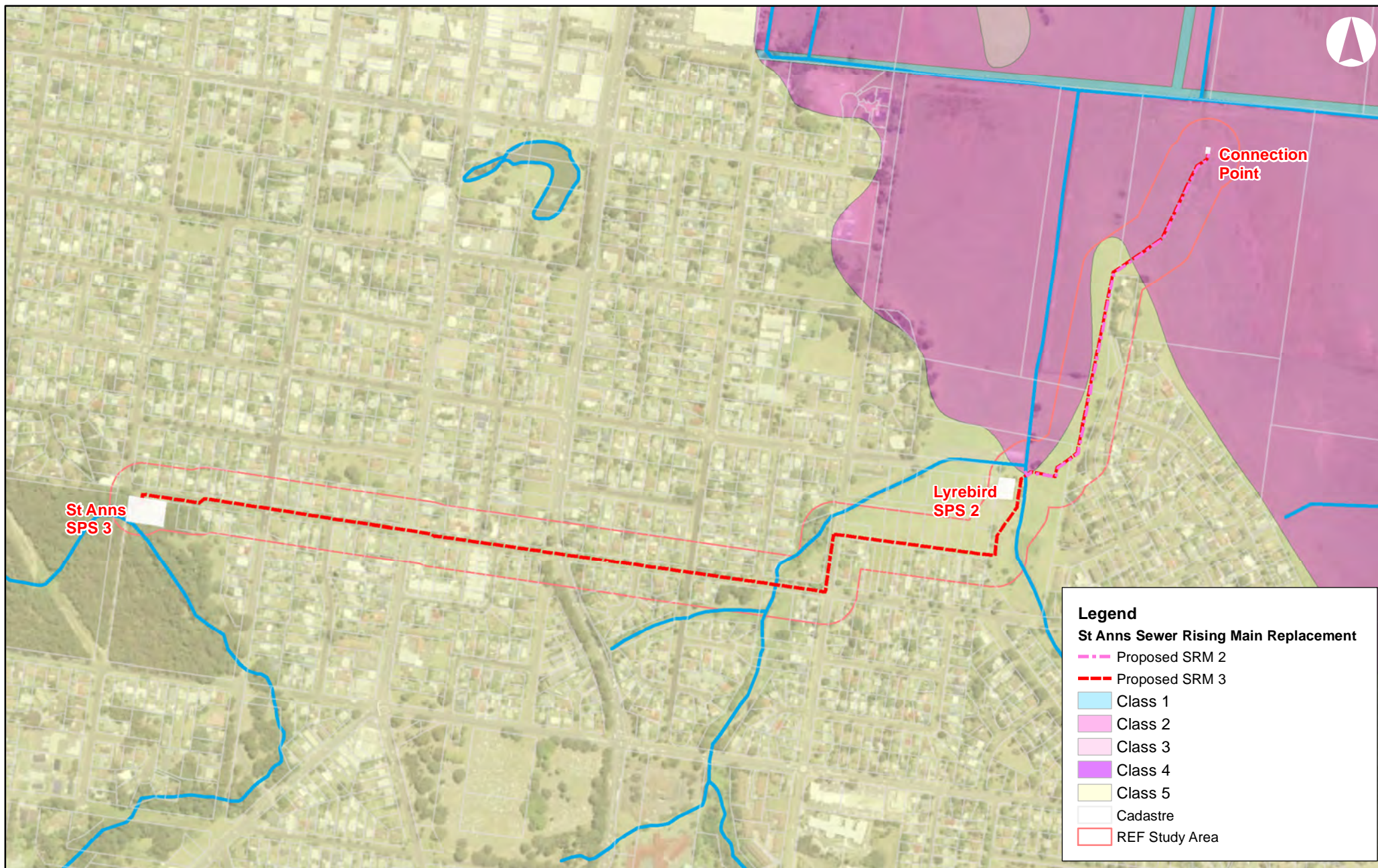


Figure 3

St Anns - Lyrebird Park Rising Main REF Addendum
Project Staging

Coordinate System: GDA 1994 MGA Zone 56
 Created by EMAP Consulting on 29/04/2020 for Shoalhaven Water





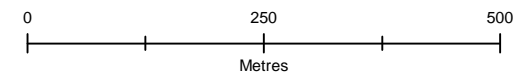
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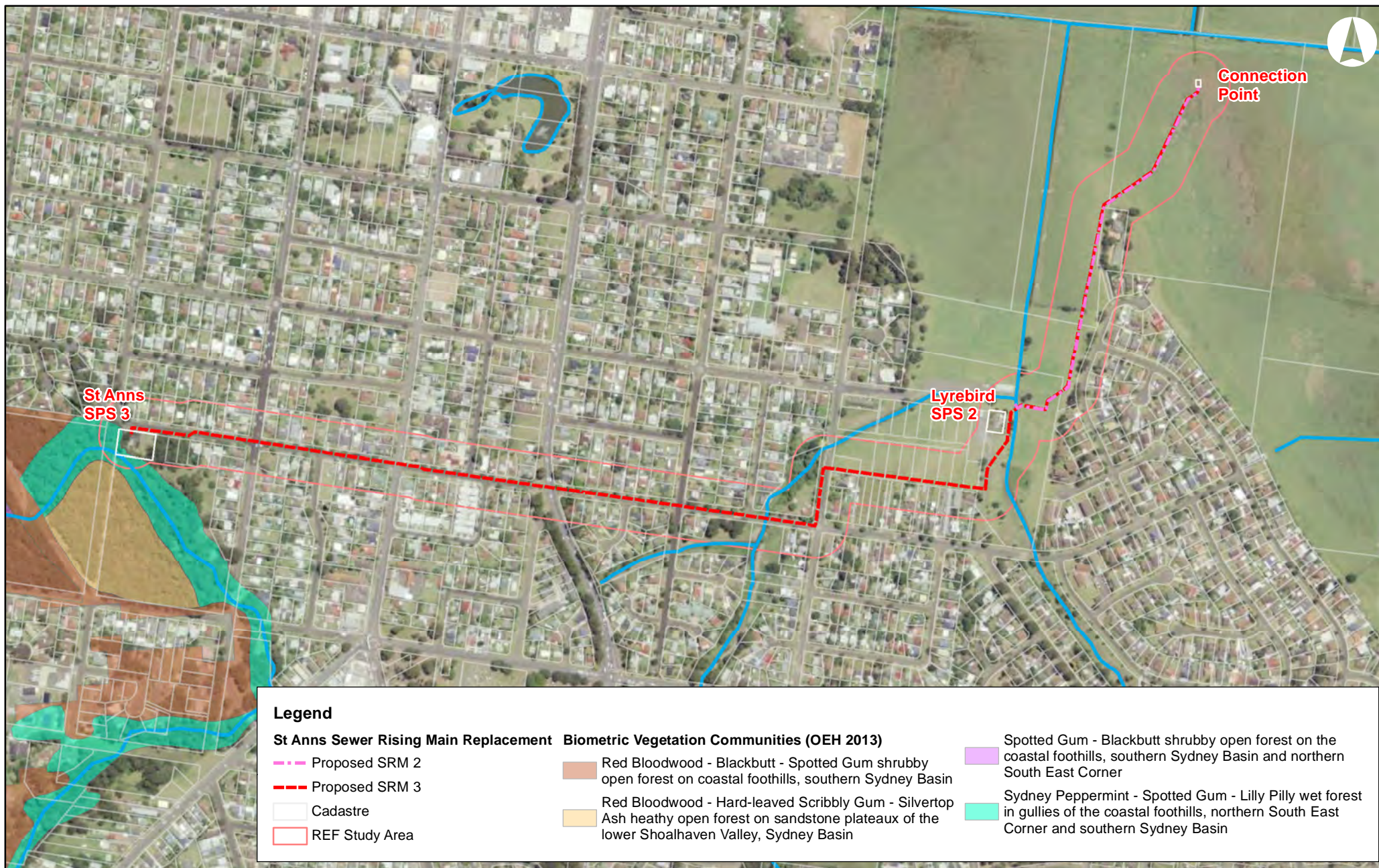
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St Anns - Lyrebird Park Rising Main REF Addendum

Potential Acid Sulfate Soils

Coordinate System: GDA 1994 MGA Zone 56
 Created by EMAP Consulting on 29/04/2020 for Shoalhaven Water





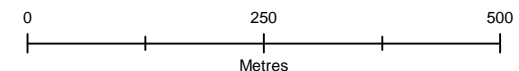
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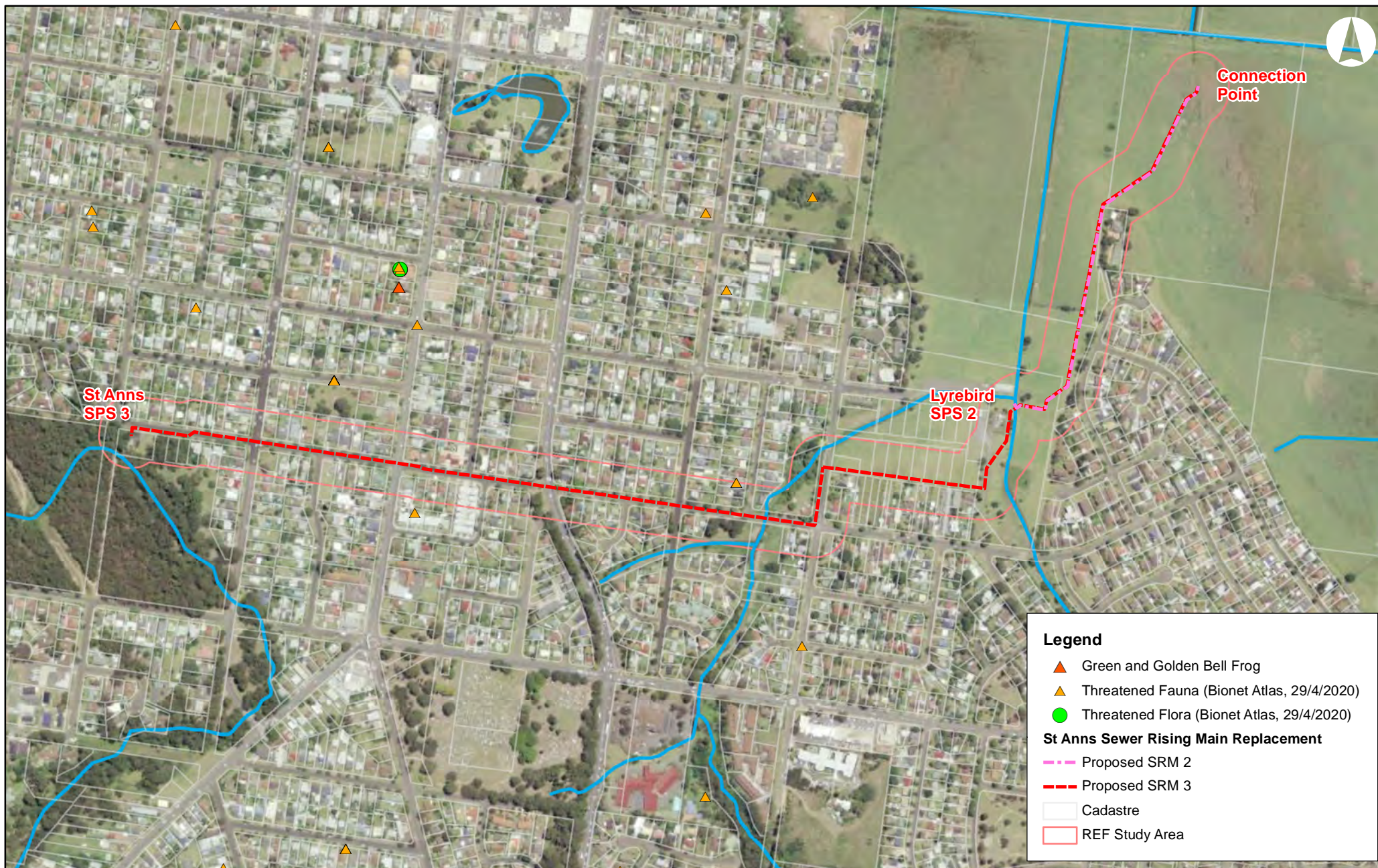
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St Anns - Lyrebird Park Rising Main REF Addendum

Vegetation Communities

Coordinate System: GDA 1994 MGA Zone 56
 Created by EMAP Consulting on 29/04/2020 for Shoalhaven Water





Figure

6

St Anns - Lyrebird Park Rising Main REF Addendum

Threatened Species Records

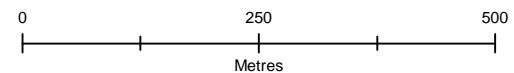
Coordinate System: GDA 1994 MGA Zone 56
 Created by EMAP Consulting on 29/04/2020 for Shoalhaven Water

Legend

- ▲ Green and Golden Bell Frog
- ▲ Threatened Fauna (Bionet Atlas, 29/4/2020)
- Threatened Flora (Bionet Atlas, 29/4/2020)

St Anns Sewer Rising Main Replacement

- Proposed SRM 2
- Proposed SRM 3
- Cadastre
- REF Study Area



Appendix B:

THREATENED SPECIES TABLES

Impact Assessment of Threatened Flora Species

(CE = Critically Endangered, E = Endangered, V = Vulnerable)

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Likelihood of Occurrence	Potential to be affected by proposal
<i>Acacia bynoeana</i>	Bynoe's Wattle	E	V	Low	Negligible Impacts
<i>Acacia pubescens</i>	Downy Wattle	V	V	Low	Negligible Impacts
<i>Caladenia tessellata</i>	Thick-lipped Spider-orchid	E	V	Low	Negligible Impacts
<i>Cryptostylis hunteriana</i>	Leafless Tongue Orchid	V	V	Low	Negligible Impacts
<i>Cynanchum elegans</i>	White-flowered Wax Plant	E	E	Low	Negligible Impacts
<i>Eucalyptus langleyi</i>	Albatross Mallee	E	V	Low	Negligible Impacts
<i>Genoplesium baueri</i>	Bauer's Midge Orchid	E	E	Low	Negligible Impacts
<i>Haloragis exalata</i> subsp. <i>exalata</i>	Wingless Raspwort	V	V	Low	Negligible Impacts
<i>Hibbertia puberula</i>	-	E	-	Low	Negligible Impacts
<i>Hibbertia stricta</i> subsp. <i>furcatula</i>	-	E	-	Low	Negligible Impacts
<i>Melaleuca biconvexa</i>	Biconvex Paperbark	V	V	Low	Negligible Impacts
<i>Melaleuca deanei</i>	Deane's Paperbark	V	V	Low	Negligible Impacts
<i>Pericaria elatior</i>	Knotweed	V	V	Low	Negligible Impacts
<i>Pterostylis gibbosa</i>	Illawarra Greenhood	E	E	Low	Negligible Impacts
<i>Pterostylis pulchella</i>	Waterfall Greenhood	V	V	Low	Negligible Impacts
<i>Pterostylis ventricosa</i>		E	-	Low	Negligible Impacts
<i>Pterostylis vernalis</i>	Halbury Rustyhood	E	CE	Low	Negligible Impacts
<i>Rhizanthella slateri</i>	Eastern Underground Orchid	V	E	Low	Negligible Impacts
<i>Rhodamnia rubescens</i>	Scrub Turpentine	E	-	Low	Negligible Impacts
<i>Solanum celatum</i>		E	-	Low	Negligible Impacts
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	E	V	Low	Negligible Impacts
<i>Thesium australe</i>	Austral Toadflax	V	V	Low	Negligible Impacts
<i>Triplarina nowraensis</i>	Nowra Heath Myrtle	E	E	Low	Negligible Impacts
<i>Xerochrysum palustre</i>	Swamp Everlasting		V	Low	Negligible Impacts
<i>Zieria baeuerlenii</i>	Bomaderry Zieria	E	E	Low	Negligible Impacts
<i>Zieria tuberculata</i>	Warty Zieria	V	V	Low	Negligible Impacts

Impact Assessment of Threatened Fauna Species

(CE = Critically Endangered, E = Endangered, V = Vulnerable, P = Protected, M = Migratory)

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Likelihood of Occurrence	Potential to be affected by proposal
BIRDS					
<i>Anthochaera phrygia</i>	Regent Honeyeater	E	CE	Moderate	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Apus pacificus</i>	Fork-tailed Swift	P	M	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Ardea ibis</i>	Cattle Egret	P	M	Moderate	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Ardenna pacificus</i>	Wedge-tailed Shearwater	P	M	Moderate	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Ardenna tenuirostris</i>	Short-tailed Shearwater	P	M	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V		Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Botaurus poiciloptilus</i>	Australasian Bittern	E	E	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Burhinus grallarius</i>	Bush Stone-curlew	E		Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	P	M	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Calidris ferruginea</i>	Curlew Sandpiper	E	CE,M	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Calidris melanotos</i>	Pectoral Sandpiper	P	M	Moderate	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V		Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	V		Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Circus assimilis</i>	Spotted Harrier	V		Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V		Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
Dasyornis	Eastern	E	E	Low	Negligible impacts.

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Likelihood of Occurrence	Potential to be affected by proposal
brachypterus	Bristlebird				No limiting foraging or breeding habitat within the study area.
Epthianura albifrons	White-fronted Chat	V	-	Moderate	Negligible impacts. No limiting foraging or breeding habitat within the study area.
Falco subniger	Black Falcon	V	-	Moderate	Negligible impacts. No limiting foraging or breeding habitat within the study area.
Gallinago hardwickii	Latham's Snipe	P	M	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
Gelochelidon nilotica	Gull-billed Tern	P	M	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
Glossopsitta pusilla	Little Lorikeet	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
Grantiella picta	Painted Honeyeater	V	V	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
Haematopus longirostris	Pied Oystercatcher	E	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
Haliaeetus leucogaster	White-bellied Sea-Eagle	V	M	Moderate	Negligible impacts. No limiting foraging or breeding habitat within the study area.
Hieraaetus morphnoides	Little Eagle	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
Hirundapus caudacutus	White-throated Needletail	P	V,M	Moderate	Negligible impacts. No limiting foraging or breeding habitat within the study area.
Hydroprogne caspia	Caspian Tern	P	M	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
Ixobrychus flavicollis	Black Bittern	V	-	Moderate	Negligible impacts. No limiting foraging or breeding habitat within the study area.
Lathamus discolor	Swift Parrot	E	CE	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
Limnodromus semipalmatus	Asian Dowitcher	P	M	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
Limosa lapponica	Bar-tailed Godwit	P	M	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
Limosa limosa	Black-tailed Godwit	V	M	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Likelihood of Occurrence	Potential to be affected by proposal
<i>Lophoictinia isura</i>	Square-tailed Kite	V	-	Moderate	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Merops ornatus</i>	Rainbow Bee-eater	P	M	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Neophema chrysogaster</i>	Orange-bellied Parrot	CE	CE	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Neophema pulchella</i>	Turquoise Parrot	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Ninox strenua</i>	Powerful Owl	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Numenius madagascariensis</i>	Eastern Curlew	P	CE,M	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Numenius phaeopus</i>	Whimbrel	P	M	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Pachyptila turtur subantarctica</i>	Fairy Prion (southern)		V	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Pandion cristatus</i>	Eastern Osprey	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Petroica boodang</i>	Scarlet Robin	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Petroica rodinogaster</i>	Pink Robin	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Plegadis falcinellus</i>	Glossy Ibis	P	M	Moderate	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Ptilinopus superbus</i>	Superb Fruit-Dove	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Rostratula australis</i>	Australian Painted Snipe	E	E	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Sterna hirundo</i>	Common Tern	P	M	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Stictonetta naevosa</i>	Freckled Duck	V	-	Moderate	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Thinornis rubricollis</i>	Hooded Plover	E	V	Moderate	Negligible impacts. No limiting foraging or breeding

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Likelihood of Occurrence	Potential to be affected by proposal
					habitat within the study area.
<i>Tringa nebularia</i>	Common Greenshank	P	M	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Tringa stagnatilis</i>	Marsh Sandpiper	P	M	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Tyto novaehollandiae</i>	Masked Owl	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Tyto tenebricosa</i>	Sooty Owl	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
Common Name	Scientific Name	BC Act Status	EPBC Act Status	Likelihood of Occurrence	Potential to be affected by proposal
MAMMALS					
<i>Arctocephalus pusillus doriferus</i>	Australian Fur-seal	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	V	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V	E	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Dugong dugon</i>	Dugong	E	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Isodon obesulus obesulus</i>	Southern Brown Bandicoot (eastern)	E	E	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Macropus parma</i>	Parma Wallaby	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Miniopterus australis</i>	Little Bent-winged Bat	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Miniopterus</i>	Large Bent-	V	-	Low	Negligible impacts.

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Likelihood of Occurrence	Potential to be affected by proposal
<i>orianae oceanensis</i>	winged Bat				No limiting foraging or breeding habitat within the study area.
<i>Myotis macropus</i>	Southern Myotis	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Petauroides volans</i>	Greater Glider	P	V	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Petaurus australis</i>	Yellow-bellied Glider	V	-	Moderate	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Petaurus norfolcensis</i>	Squirrel Glider	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	E	V	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Phascolarctos cinereus</i>	Koala	V	V	Moderate	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Potorous tridactylus</i>	Long-nosed Potoroo	V	V	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Pseudomys novaehollandiae</i>	New Holland Mouse		V	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	V	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Sminthopsis leucopus</i>	White-footed Dunnart	V	-	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
REPTILES					
<i>Chelonia mydas</i>	Green Turtle	V	V	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Hoplocephalus bungaroides</i>	Broad-headed Snake	E	V	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
AMPHIBIANS					
<i>Heleioporus australiacus</i>	Giant Burrowing Frog	V	V	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Likelihood of Occurrence	Potential to be affected by proposal
<i>Litoria aurea</i>	Green and Golden Bell Frog	E	V	High	Negligible impacts. No limiting foraging or breeding habitat within the study area.

FISH

<i>Macquaria australasica</i>	Macquarie Perch		E	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.
<i>Prototroctes maraena</i>	Australian Grayling		V	Low	Negligible impacts. No limiting foraging or breeding habitat within the study area.

Appendix C:

AHIMS

Emma McIntyre
24 Hunter Street
BALGOWNIE New South Wales 2519
Attention: Emma McIntyre
Email: emma@emapconsulting.com.au

Date: 01 May 2020

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -34.8902, 150.5932 - Lat, Long To : -34.8758, 150.6161 with a Buffer of 50 meters, conducted by Emma McIntyre on 01 May 2020.

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 the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

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

Appendix D:

LETTER TEMPLATE FOR COMMUNITY CONSULTATION

STAKEHOLDER AND COMMUNITY CONSULTATION LETTER - Template

Dear <CONTACT NAME>

RE: Review of Environmental Factors Addendum – Proposed Replacement of St Anns and Lyrebird Sewer Rising Mains

Shoalhaven City Council, through Shoalhaven Water, manages the collection, treatment and distribution of water, along with the collection, treatment and disposal of wastewater back into the environment.

As part of the infrastructure utilised in undertaking these functions, Shoalhaven City Council maintain and operate a series of sewer rising mains to transfer sewage waste from sewage pump stations to a wastewater treatment plant. These assets need to be replaced and maintained in order to minimise risk associated with mains breakages and asset failure.

Shoalhaven City Council are planning to replace the following sewer rising mains:

- Rising Main 2 from Lyrebird Sewer Pump Station to a connection point in Wondalga Farm
- Rising Main 3 from St Anns Street Sewer Pump Station to a connection point at Wondalga Farm.

The northern end of these sewer rising mains, from the connection point at Wondalga Farm to the Nowra Wastewater Treatment Plant is complete.

Shoalhaven City Council is both the proponent and the determining authority for the proposed activity under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). As such, a Review of Environmental Factors (REF) is required to fulfil Council's obligations for environmental assessment of the proposed activity. Previous REFs have assessed the upgrade of the pump stations, and the original proposed alignment of the sewer rising mains. The proposed alignment of the rising mains has been altered in the meantime, and as such this REF Addendum has been prepared to assess potential environmental impacts of the new alignment.

As part of Council's measures to reduce impacts of this project on the local community, we invite <ORGANISATION_NAME>/<LANDHOLDER_NAME> to review the Review of Environmental Factors Addendum on our website at <URL> during the exhibition period, which will be <NUMBER> weeks from <DATE>.

Please provide comment on the REF document to Council's Project Manager, <PROJECT_MANAGER> by <END_DATE> using contact details below:

<PROJECT_MANAGER_NAME>

<POSTAL ADDRESS>

<EMAIL>

<PHONE>

Yours faithfully

NAME and SIGN

Appendix E:

TESTS OF SIGNIFICANCE (NSW BC ACT)

Tests of Significance as per Section 7.3 of the *NSW Biodiversity Conservation Act (2016)* have been conducted for the following:

Frogs: Green and Golden Bell Frog *Litoria aurea*

Test of Significance (s7.3 of the NSW BC Act 2016)	
Threatened Fauna: Frogs	Green and Golden Bell Frog - <i>Litoria aurea</i>
a. in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,	<p>The proposed activity includes potential habitat disturbance for the Green and Golden Bell Frog.</p> <p>Mitigation measures outlined in Section 6 will assist to avoid and minimise any potential impacts on this species.</p> <p>The proposed activity is not likely to have an adverse effect on the life cycle of these species such that a viable population of these species is likely to be placed at risk of extinction.</p>
<p>b. in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:</p> <p>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</p> <p>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.</p>	N/A – not an EEC
<p>c. in relation to the habitat of a threatened species or ecological community:</p> <p>i. the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and</p> <p>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</p> <p>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,</p>	<p>In the absence of a field survey to determine the exact extent of the potential habitat that exists in the REF study for these threatened species, it is estimated from Nearmap imagery and OEH (2013) mapping that up to 4.14 ha of potential fauna habitat may be removed or modified as a result of the proposed activity.</p> <p>The proposed activity is linear infrastructure which has the potential to fragment sections of mapped. However, due to the restricted width of the proposed activity and the associated disturbance area, and implementation of a Vegetation Management Plan following construction, it is unlikely to become fragmented or isolated from other areas of habitat.</p> <p>It is unlikely that the habitat to be removed or disturbed as part of the proposed activity is important to the long-term survival of these species in the locality, due to extent of other available habitat in nearby areas.</p>
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),	The proposed activity is unlikely to have any adverse impacts on any declared areas of outstanding biodiversity value. This has been confirmed by accessing and analysing the “Area of Outstanding Biodiversity register” on the DPIE website, accessed January 2020.

Test of Significance (s7.3 of the NSW BC Act 2016)	
Threatened Fauna: Frogs	Green and Golden Bell Frog - <i>Litoria aurea</i>
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.	The proposed activity may constitute "Clearing of native vegetation" which is identified as a Key Threatening process in Schedule 4 of the BC Act. Mitigation measures outlined in Section 6 will minimise the area of fauna habitat that is to be cleared or modified as part of the proposed activity. Further, it is anticipated that following construction, any habitat that has been either directly or indirectly impacted by the proposed activity will be regenerated as per the Vegetation Management Plan.
Conclusion	In light of the consideration of the above factors, the proposed activity is unlikely to have a "significant impact" on Green and Golden Bell Frog as a result of the proposed activity. A Significant Impact Statement is not required.

Appendix F:

GREEN AND GOLDEN BELL FROG MANAGEMENT PLAN

Green and Golden Bell Frog

Status: The Green and Golden Bell Frog is listed as 'Endangered' under the NSW BC Act and as 'Vulnerable' under the Commonwealth EPBC Act.



Description:

The Green and Golden Bell Frog is a relatively large dull olive to bright emerald green frog that can range in size from around 45 millimetres to 100 millimetres. Its distinctive characteristics are a gold or creamish white stripe running along the side, extending from the upper eyelids almost to the groin, with a narrow dark brown stripe beneath it, from nostril to eye. It is active by day and usually breeds in summer when conditions are warm.

Habitat:

Green and Golden Bell Frogs can occupy a broad range of habitats, including natural, artificial and disturbed habitats, and breed in ephemeral ponds (Pyke & White 1996, DEC 2005). They have been recorded associated with coastal swamps, marshes, dune swales, lagoons, lakes and other estuarine wetlands as well as riverine floodplain wetlands and billabongs and constructed water bodies such as storm water detention basins, farm dams, bunded areas, drains and ditches (DEC 2005).

Best Practice Management

Site Induction	Distribution of this Management Plan to all contractors for implementation during all stages of works
Stop Work Procedure	Implement a stop work or unanticipated find procedure for when Green and Golden Bell Frogs are observed within the construction area. The procedure will include a process to notify the Site Representative, follow the relocation procedure and confirm when it is okay to re-commence works.
Sediment and erosion control	Establish appropriate sediment and erosion control to prevent silt, sediments, spills and other contaminants from reducing water quality in frog habitat. These controls should be regularly inspected, particularly after heavy rain events.
Acid sulfate soils management	Develop appropriate procedures to manage acid sulphate soils during construction and operation. Management of acid sulphate soils should be carried out in accordance with the Acid Sulfate Soils Management Plan prepared for this project.
Hygiene Protocol for disease control (Chytrid – <i>Batrachochytrium dendrobatidis</i>)	<ul style="list-style-type: none">• Vehicles initially entering the Project area must not be tracking soil/mud and/or vegetative material. If soil/mud and/or vegetative material are found on these vehicles, they must be cleaned in a hard stand area within the site compound area.• Any organic waste collecting during the washdown process would be removed from site.• Restrict vehicles to parking within project boundary and site compound parking areas• Provide parking and turn-around points on hard, well-drained surfaces.• Disinfect boots with cleaning products containing benzalkonium chloride (eg 'Toilet Duck') or methylated spirits diluted in town water (70:30 ratio) for ALL personnel.• Disinfect hands or change gloves between the handling of individual frogs and between each site. - Only handle frogs when necessary. Use the 'one bag-one frog' approach.
Relocation procedures	<ul style="list-style-type: none">• If live GGBF individuals are located during construction works, they can be relocated to a nearby area of suitable habitat (eg drainage line).• If diseased GGBFs are found, they are to be placed in a small plastic container with a small amount of water (one per frog). Contact Taronga Zoo to organise transport for diagnosis and treatment.

If any frogs are found during works, please contact Department of Environment, Energy and Science Threatened Species Unit (Nowra):

Name: Lachlan Wilmott

Email: Lachlan.Wilmott@environment.nsw.gov.au

Phone: (02) 4422 2335