Public Works
Department of Regional NSW

Nelligen Water Supply and Sewerage Scheme Transfer Mains

Review of Environmental Factors

Report Number ISR18063

November 2022

Prepared for

eurobodalla shire council

Report number ISR18063

November 2022

Document Control

Version	Author(s)	Reviewer	Approved for Issue	
			Name	Date
Draft v1	Kristen Parmeter	Liz Mathieson	Lara Hess	23.10.19
Draft v2	Kristen Parmeter	Liz Mathieson	Liz Mathieson	06.07.22
Draft v3	Kristen Parmeter	Liz Mathieson	Liz Mathieson	29.09.2022
Final	Kristen Parmeter	Liz Mathieson	Liz Mathieson	04.11.2022

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Cover image: Aerial view of Nelligen. SIX Maps, 2021

Certification

This Review of Environmental Factors (REF) has been prepared by NSW Public Works, Department of Regional NSW on behalf of Eurobodalla Shire Council. The report presents the assessment of potential impacts that may result from activities associated with the proposal to construct new water supply and sewerage system transfer mains and sewage pump station (SPS) for Nelligen.

Eurobodalla Shire Council is a public authority and a determining authority as defined in the *Environmental Planning & Assessment Act 1979* (EP&A Act). The proposal satisfies the definition of an activity under the Act, and as such Eurobodalla Shire Council must assess and consider the environmental impacts of the proposal before determining whether to proceed.

This REF has been prepared in accordance with Sections 5.5 and 5.7 of the EP&A Act and Section 171 of the *Environmental Planning and Assessment Regulation 2021* (EP&A Reg). It provides a true and fair assessment of the proposed activity in relation to its likely effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposed activity.

On the basis of this REF it is concluded that:

(1) the proposed activity is not likely to have a significant impact on the environment. An Environmental Impact Statement is not required.

(2) the proposed activity is not likely to significantly affect threatened species, populations, ecological communities, or critical habitat. A Species Impact Statement (SIS) / Biodiversity Development Assessment Report (BDAR) is not required.

(3) the proposed activity is not likely to affect or being carried out on any Commonwealth land, or significantly affect any Matters of National Environmental Significance.

Subject to implementation of the measures to avoid, minimise or manage environmental impacts listed in this REF, the proposed activity is recommended to proceed.

Author & Qualifications	Kristen Parmeter BSc (Hons)
Designation	Environmental Scientist
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 section 170 of the EP&A Regulation, and the information it contains is neither false nor misleading.	
Reviewer & Qualifications	Liz Mathieson BSc
Designation	Principal Scientist
Organisation	NSW Public Works, Department of Regional NSW
Signature	
Date	04.11.2022

Verification

I have examined this Review of Environmental Factors and the Certification and accept the report on behalf of Eurobodalla Shire Council (the proponent).

Name	BRETT GRUEN
Designation	DIVISION MANAGER WATER & SEWER
Organisation	EUROBODALLA SHIRE COUNCIL
Signature	11/11/22

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Abbreviations

ACHA	Aboriginal Cultural Heritage Assessment
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ASS	Acid Sulfate Soils
BC Act	*Biodiversity Conservation Act 2016*
CEMP	Construction Environmental Management Plan
DPE – <agency>	Department of Planning and Environment
EEC	Endangered Ecological Community
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2021*
EPA	Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ESC	Eurobodalla Shire Council
ESCP	Erosion and Sediment Control Plan
FCNSW	Forestry Corporation of NSW
FM Act	*Fisheries Management Act 1994*
LEP	Local Environmental Plan
NPW Act	*National Parks and Wildlife Act 1974*
OEH	Office of Environment and Heritage (now Department of Planning and Environment – Environment and Heritage)
OEMP	Operation Environmental Management Plan
PASSMP	Potential Acid Sulfate Soil Management Plan
POEO Act	*Protection of The Environment Operations Act 1997*
REF	Review of Environmental Factors
SEPP	State Environmental Planning Policy
SPS	Sewage Pump Station
TfNSW	Transport for NSW
TMP	Traffic Management Plan
WM Act	*Water Management Act 2000*

1 Introduction

This section provides an overview of the Proposal.

1.1 Background

Nelligen village is located on the Clyde River in the South Coast region of NSW, approximately 7 km north-west of Batemans Bay. The village is currently served by rainwater tanks for its potable water supply. Eurobodalla Shire Council (ESC) is proposing to construct reticulated potable water supply and sewerage schemes to provide the Nelligen village with a similar level of potable water supply and wastewater management services to the majority of the Eurobodalla Shire.

The Nelligen Water Supply and Sewerage Scheme project works (the Project) are being constructed as three separate packages (stages) of works including:

1. Stage 1: Construction of a new water supply reservoir at Bay Ridge (Bay Ridge reservoir), which would be connected to the existing water supply network which serves the Eurobodalla region; and a new water supply reservoir and chlorination system at Old Nelligen Road, Nelligen (Nelligen reservoir).
2. Stage 2- New Water Supply Transfer Main and Sewer Rising Main and associated Sewage Pump Station (SPS) at Nelligen, comprising:
    - a 6.6 km long gravity pressure water supply transfer main along the Kings Highways from the Bay Ridge Estate subdivision to the new Nelligen reservoir, including a trunk main connection from the Nelligen reservoir to the new water supply reticulation network for the Nelligen village.
    - a 8 km long pressure and gravity sewer rising main and a new Sewage Pump Station (SPS) at, Nelligen.
3. Stage 3 - New water supply and sewer reticulation networks within the Nelligen village area including new transfer mains connections.

Public Works has been engaged by ESC to prepare a Review of Environmental Factors (REF) for the Stage 2 works including the construction of the two water supply transfer mains, the sewer rising main and associated new SPS for Nelligen (the Proposal).

The scope of this REF is limited to the assessment of the construction and operation of the water supply and sewer transfer (trunk) mains, standpipe and the new Nelligen SPS (Stage 2 works). The proposed associated Nelligen Water Supply and Sewerage Scheme Project water supply reservoir works (Stage 1) and village reticulation network (Stage 3) will be subject to separate REF assessments.

1.2 Proposal Objectives

The Proposal is to meet the following objectives:

- Provide a reticulated potable water supply system to improve the quality, security and reliability of the water supply to Nelligen; and

- Provide a sewage collection and transfer system in Nelligen to address current wastewater defect and overflow issues.

1.3 Overview of the Proposal

The proposed Water Supply Scheme works would include:

- a 6.6 km gravity pressure trunk main along the Kings Highway from the Bay Ridge Estate subdivision to the future Nelligen reservoir site, including a trunk connection from the Nelligen reservoir to the future water supply reticulation network for the Nelligen village.

The proposed Sewerage Scheme works include:

- a 8 km pressure and gravity sewer rising trunk main along the Kings Highways to the existing Sewage Pump Station (BB08) at North Batemans Bay (including a new standpipe vent at the existing SPS BB08 site); and
- a Sewage Pump Station (SPS) and associated mains to support transfer from Nelligen at Thule Road Nelligen.

The general route for both the water and sewer transfer mains to the Nelligen village would be via the Clyde River at Nelligen (the Clyde River pipeline crossing via underboring has previously been completed as part of Transport for NSW (TfNSW) Nelligen bridge construction works and therefore, this component of the water supply and sewerage scheme works is not assessed in this REF), through local road reserves, State Forest, a power supply easement on the northern side of the Kings Highway and private land. The water supply main from Nelligen would terminate in the Bay Ridge Estate subdivision. The sewer main would continue along the Kings Highway and pass through the new Bay Ridge Estate within road reserves and public land in North Batemans Bay and terminate at the existing SPS (BB08), where a new standpipe would be installed.

A location map and an aerial overview of the proposed works are shown in Figure 1-1 and Figure 1-2. Photographs of the alignment are provided in the Flora and Fauna and Aboriginal Cultural Heritage assessments provided in Appendix B and D. Detailed plans of the works are provided in Appendix E.

1.4 Land Ownership

The proposed works would predominantly be located within an existing power supply easement and public road reserves under the control of either ESC or TfNSW. In addition, the transfer mains would also pass through the Benandarah State Forest and private freehold land for a short distance. The new stand pipe vent at the BB08 SPS site would be located within ESC-controlled land.

Land tenure along the water and sewerage scheme transfer mains route and the Nelligen SPS site is summarised in Table 1-1 below.

Table 1-1 Nelligen SPS and Transfer Mains Land Tenure

Infrastructure (Nelligen towards Batemans Bay)	Land Parcel	Land Tenure/Authority	Chainage ((m) approx.)
Nelligen SPS	Lot 1 DP 119109	ESC	-
	Bridge View Rd - Road reserve	ESC	-
Nelligen Reservoir Transfer Water Main Branch	Old Nelligen Rd Road Reserve - Benandarah State Forest	Forestry Corporation of NSW (FCNSW)	0 -150 m
	Old Nelligen Rd - Road Reserve	ESC	150 – 820 m
Water and Sewer Mains	Kings Highway (Pipeline Crossing) - Road Reserve	TfNSW	820 m
Water and Sewer Transfer Mains	Lot 260 DP 1183295 - Benandarah State Forest	FCNSW	820 – 1150 m
	Lot 7308 DP 1149322 - Benandarah State Forest	FCNSW	1150 – 1190 m
	Kings Highway - Road Reserve	TfNSW	1190 – 1840 m
	Benandarah State Forest	FCNSW	1840 – 2020 m
	Power supply easement within Benandarah State Forest	FCNSW / Essential Energy	2020 – 3220 m
	Kings Highway Road Reserve	TfNSW	3220 – 3720 m
	Power supply easement - within Benandarah State Forest	FCNSW / Essential Energy	3720 – 4850 m

(Water Main termination point)	Lot 7 DP 827787	Private Land	4850 – 4860 m
	Lot 10 DP 1164869	Private Land	4860 – 5020 m
	Lot 1 DP 807450	Private Land	5020 – 5180 m
	Clyde Rd Road Reserve	ESC	5180 – 5210 m
	Lot 3 DP 1169 262 - Bay Ridge Reservoir Site	ESC	5210 – 5290 m
	Lot 2 DP 1169262	Power supply easement within Private Land	5290 – 6610 m
Sewer Main	Bayridge Drive - Road Reserve	ESC	7000 – 7410 m
	Lot 198 DP 1141334 – Drainage Corridor	ESC	7410 – 7470 m
	Princes Highway – Road Reserve	TfNSW	7470 – 7510 m
	Lot 2 DP 1044536 – Public Reserve	ESC	7510 – 7770 m
	Lot 3 DP 1044536 – Public Reserve, Council-controlled land incl. SPS (BB08) site	ESC	7770 – 8300 m

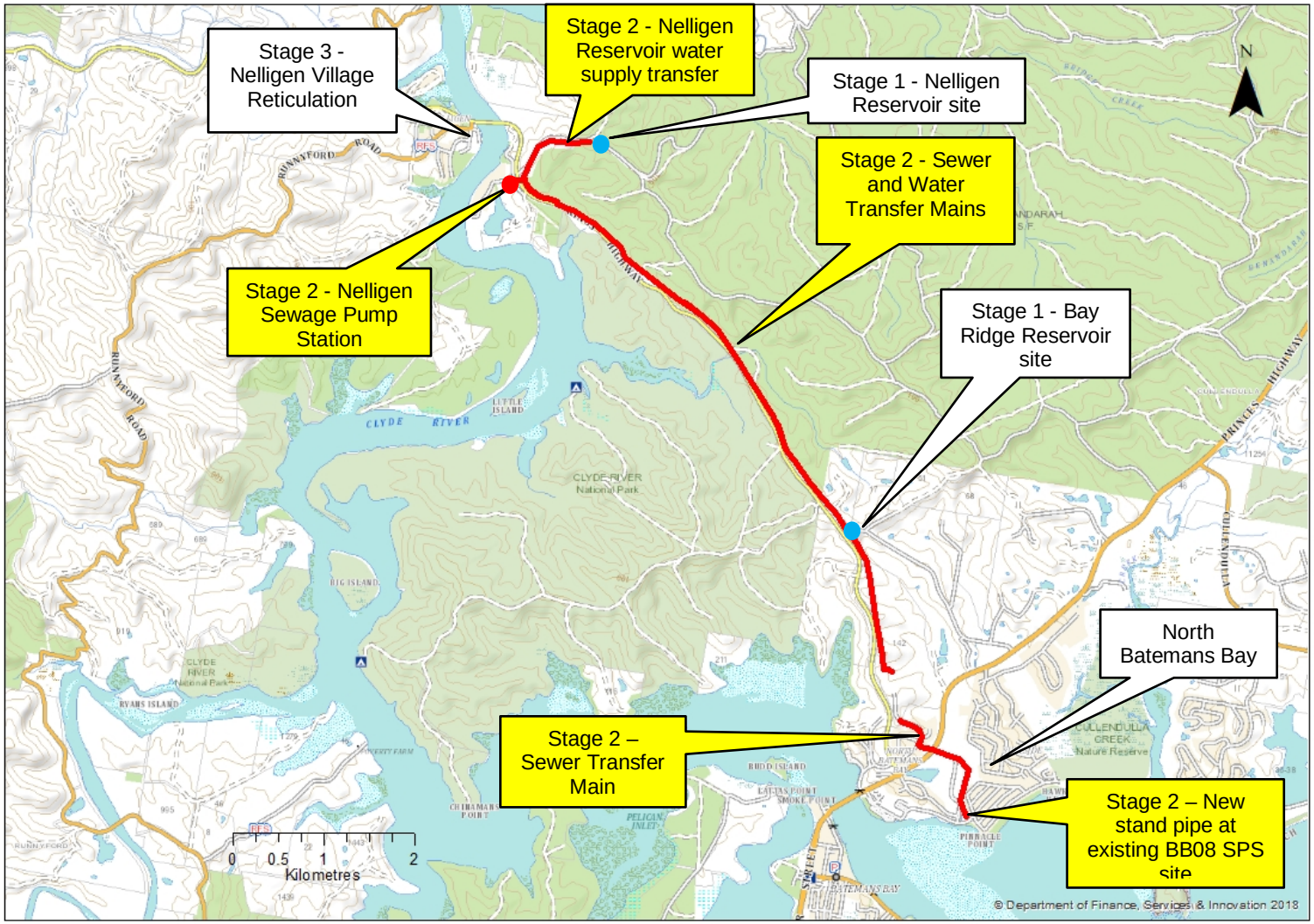


Figure 1-1 Location map of Nelligen and proposed Water and Sewerage Supply Infrastructure in relation to Batemans Bay

Source: NSW LPI Base Map, accessed October 2022

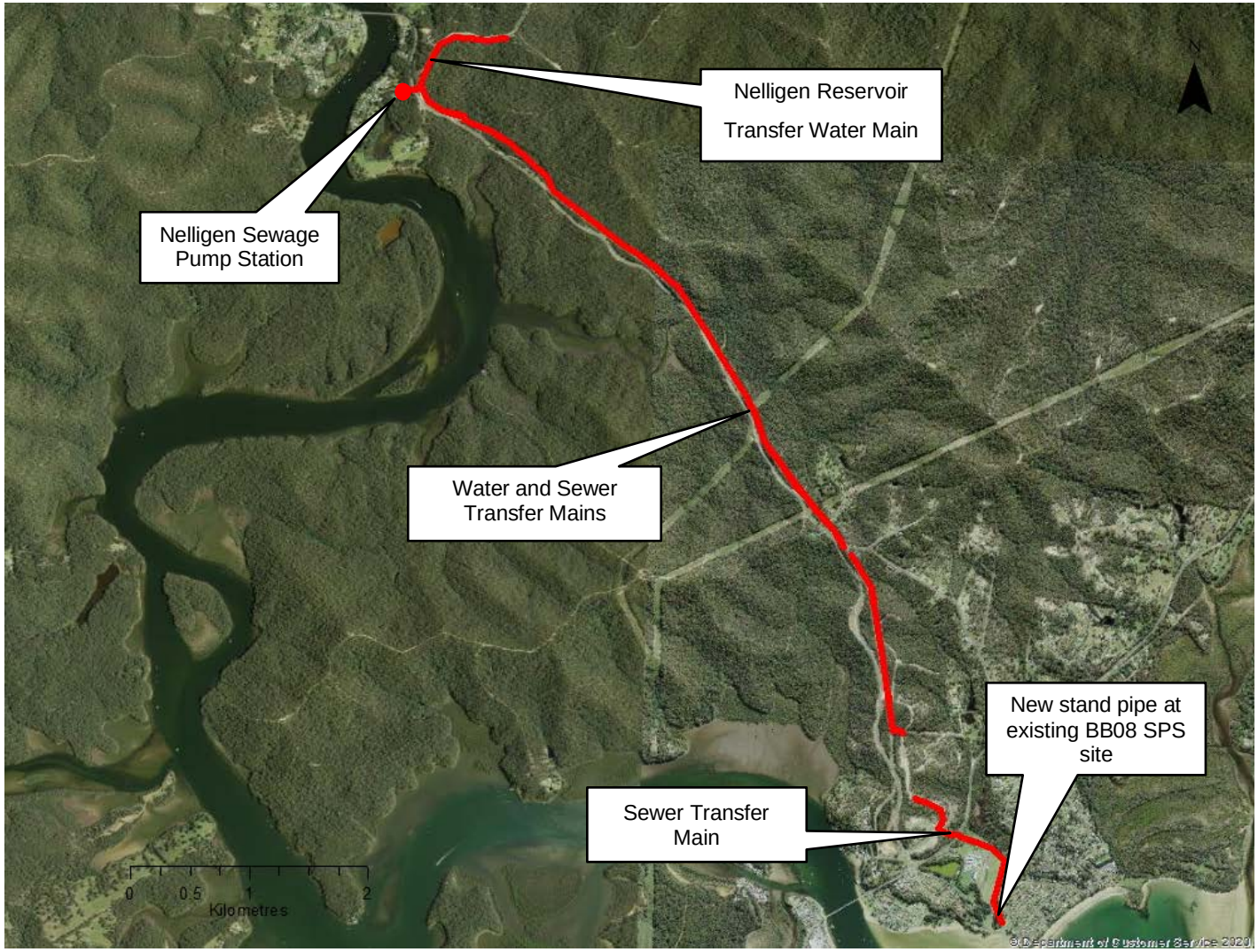


Figure 1-2 Aerial overview of the Proposal Works

Source: NSW LPI Aerial, accessed October 2022

2 Statutory Planning Framework

This section presents the statutory planning and strategic policy context for the Proposal.

2.1 Environmental Planning Instruments

2.1.1 Eurobodalla Local Environmental Plan 2012

The Proposal is located within the Eurobodalla Shire Council (ESC) local government area (LGA). The proposed works would traverse a number of land use zones under the *Eurobodalla Local Environment Plan 2012* (LEP), as listed in Table 2-1 and shown in Figure 2-1 and Figure 2-2.

The Eurobodalla LEP 2012 defines sewage reticulation system to mean *a building or place used for the collection and transfer of sewage to a sewage treatment plant or water recycling facility for treatment, or transfer of the treated waste for use or disposal, including associated:*

(a) pipelines and tunnels, and

(b) pumping stations, and

(c) dosing facilities, and

(d) odour control works, and

(e) sewage overflow structures, and

(f) vent stacks.

Under the LEP, a *water reticulation system* is defined as a building or place used for the transport of water, including pipes, tunnels, canals, pumping stations, related electricity infrastructure and dosing facilities.

The Proposal is not explicitly consistent with all of the aims of the various LEP land use zones which the proposed works would traverse. However, Section 5.12 (1) of the Eurobodalla LEP 2012 states that the LEP *does not restrict or prohibit, or enable the restriction or prohibition of, the carrying out of any development, by or on behalf of a public authority, that is permitted to be carried out with or without development consent, or that is exempt development, under State Environmental Planning Policy (Transport Infrastructure) 2021, Chapter 2.* As discussed in Section 2.1.2, *State Environmental Planning Policy (Transport and Infrastructure) 2021* is the relevant environmental planning instrument for the Proposal and therefore the development controls contained within the LEP would not be applicable to the proposed development..

Table 2-1: Land Zoning

Location	Zoning	LEP Permissibility
Nelligen SPS	C4 Environmental Living	Permitted with consent
Nelligen Reservoir Transfer Main	RU3 Forestry	Permitted with consent
	SP2 Infrastructure	Prohibited
	RU1 Primary Production	Permitted with consent
Kings Highway Water and Sewer Transfer Mains	SP2 Infrastructure	Prohibited
	RU3 Forestry	Permitted with consent
	R5 Large Lot Residential	Permitted with consent
Bay Ridge to North Batemans Bay Sewer Main terminating at BB08 and standpipe at SPS BB08	R5 Large Lot Residential	Permitted with consent
	SP2 Infrastructure	Prohibited
	RE1 Public Recreation	Permitted with consent
	C2 Environmental Conservation	Permitted with consent

Figure 2-1 Land Zoning Nelligen SPS and Reservoir site and Kings Highway Section (northern section of sewer and water transfer mains)

Source: NSW LPI and Department of Planning and Environment, accessed October 2022

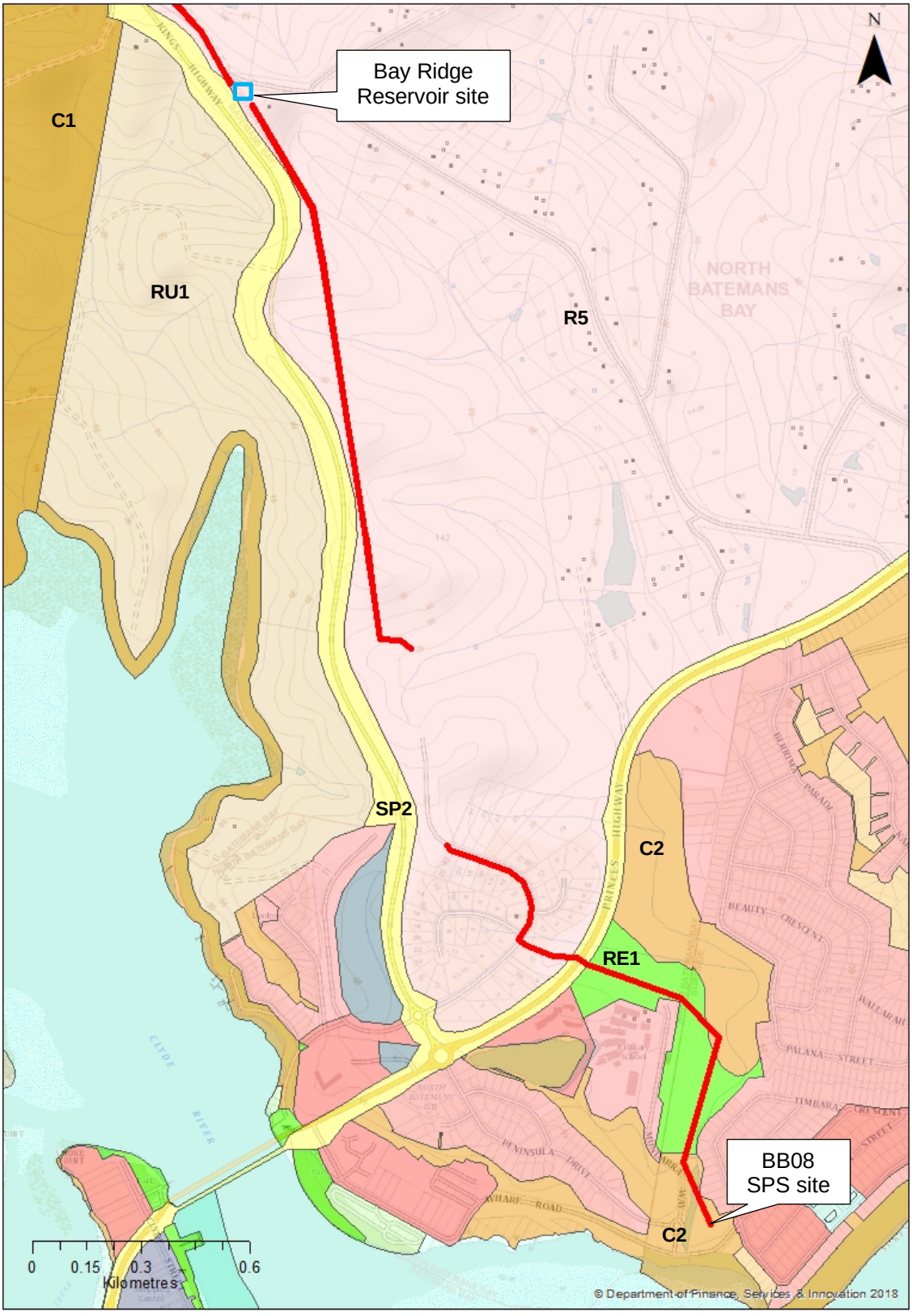


Figure 2-2 Land Zoning Bay Ridge Reservoir site, southern section of water and sewer main and sewer main Bay Ridge Estate subdivision to SPS BB08

Source: NSW LPI and Department of Planning and Environment, accessed October 2022

Acid Sulfate Soils

Council's LEP maps indicate that the Proposal area at North Bateman's Bay may be affected by Acid Sulphate Soils (ASS), as shown in Figure 2-3. Section 6.3 of the LEP identifies classes of land affected by acid sulfate soils and subsequently requires development consent for certain works below the ground surface and those which may lower the water table. It is noted that the Proposal does not require development consent and therefore these provisions do not apply. Nevertheless, the issue of acid sulfate soils as relevant to the Proposal is discussed in Section 5.3.

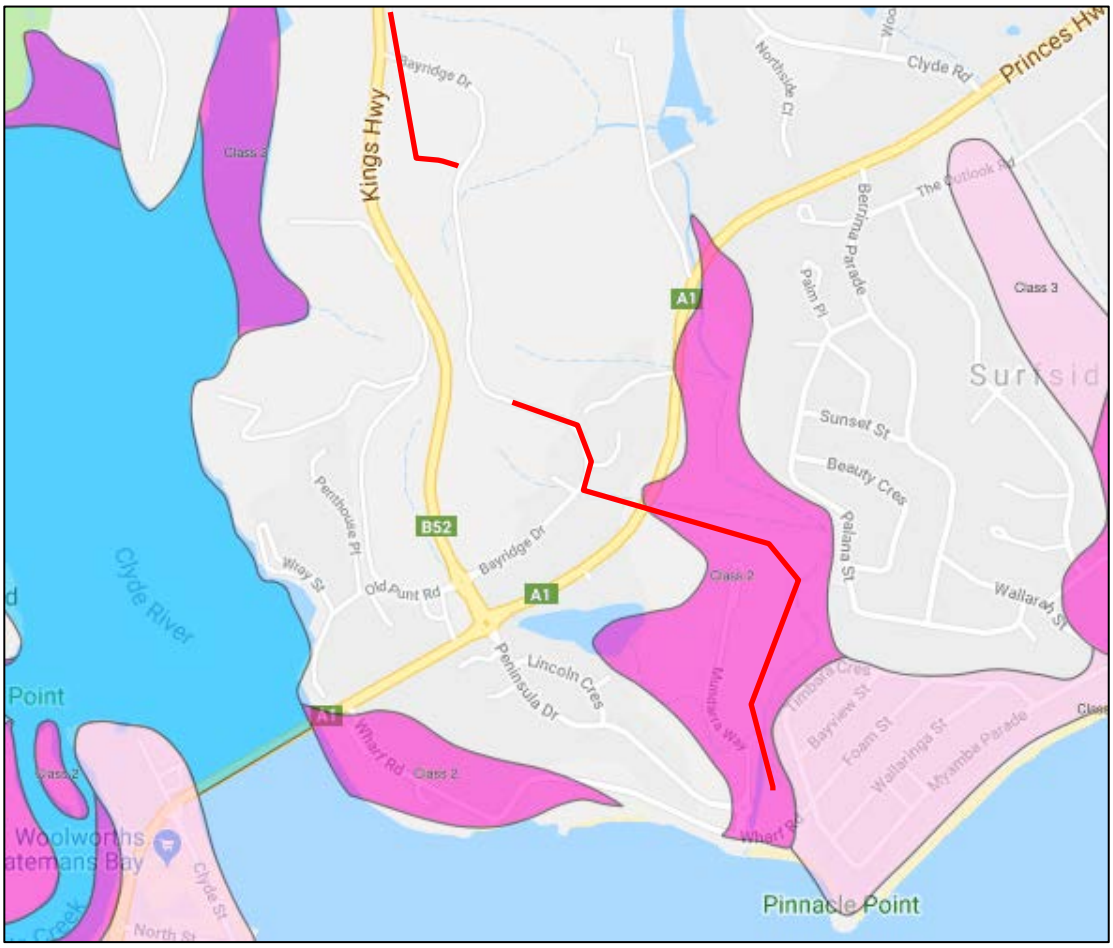


Figure 2-3 Acid Sulfate Soils LEP Map showing North Batemans Bay area

Source: Department of Planning and Environment Planning Portal, accessed March 2022

Heritage

As shown in Figure 2-4, several local heritage items listed under schedule 5 of the Eurobodalla LEP 2012 are located in the general vicinity of the proposed works near Nelligen village.

Section 5.10(3)(a) states that development consent is not required if the consent authority is satisfied that the development is of minor nature or is for the maintenance of a heritage item and would not adversely affect the heritage significance of the heritage item. As discussed in Section 5.7, the Proposal works would not impact these heritage items.

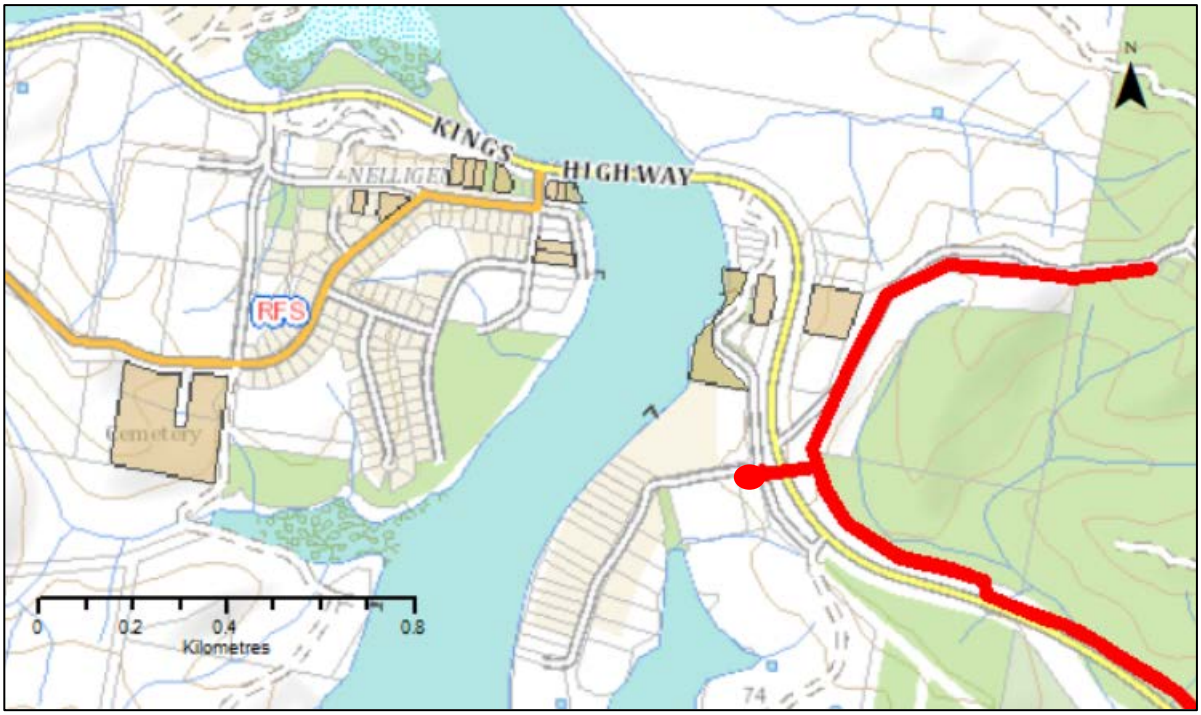


Figure 2-4 Heritage LEP Map showing Nelligen SPS and sewer and water transfer main area

Department of Planning and Environment Planning, accessed Octoberr 2022

2.1.2 State Environmental Planning Policy SEPP (Transport and Infrastructure) 2021

Chapter 2 of *State Environmental Planning Policy SEPP (Transport and Infrastructure) 2021* (SEPP (Transport and Infrastructure) 2021) aims to assist in the effective delivery of public infrastructure throughout the State by improving certainty and regulatory efficiency through a consistent planning assessment and approvals regime for public infrastructure and services across NSW. The SEPP provides clear definition of environmental assessment and approval process for public infrastructure and services facilities.

Under Section 2.125 of the SEPP (Transport and Infrastructure) 2021, 'sewage reticulation systems' are defined to have the same meaning as the Eurobodalla LEP 2012. Similarly, under Section 2.158 of SEPP (Transport and Infrastructure) 2021, 'water reticulation system' is defined to have the same meaning as the Eurobodalla LEP 2012, as described in Section 2.1.1 above, but also includes water supply reservoirs. The proposed water and sewerage supply infrastructure therefore meet the definitions of sewage reticulation system and water reticulation system.

Sections 2.126(1) and 2.126(6) of SEPP (Transport and Infrastructure) 2021 allow development for the purpose of sewage reticulation systems to be carried out by or on behalf of a public authority without consent on any land in the prescribed circumstances. Therefore, as the SEPP removes the need for development consent for the proposed sewage reticulation works, the sewerage system works would be assessed under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Furthermore, Section 2.159(1) of the SEPP (Transport and Infrastructure) 2021 permits development for the purpose of water reticulation systems carried out by or on behalf of a public authority to proceed without development consent on any land. The SEPP removes the need for development consent for the proposed water reticulation works and therefore the water supply works would be assessed under Part 5 of the EP&A Act.

2.1.3 State Environmental Planning Policy (Resilience and Hazards) 2021

State Environmental Planning Policy (*Resilience and Hazards) 2021* (Resilience and Hazards SEPP) sets the land use planning framework for coastal management and ensures implementation of the planning objectives of the *Coastal Management Act 2016* in NSW (see Section 2.2.15).

Chapter 2 of the SEPP applies to land that is mapped within one or more of the four coastal management areas identified by the *Coastal Management Act 2016,* which are:

- Coastal wetland and littoral rainforests areas, and lands in proximity to coastal wetland and littoral rainforests;
- Coastal vulnerability areas;
- Coastal environment areas; and
- Coastal use areas.

Where a site is mapped within one or more than one coastal management area, the targeted development controls within Chapter 2 of the Resilience and Hazards SEPP for these areas will apply, to guide appropriate development within the coastal zone, and give effect to management objectives under the *Coastal Management Act 2016.*

Based on the interactive maps accompanying the SEPP, some sections of proposed works site are located ‘in the proximity area for coastal wetlands’ and is within the ‘coastal environment area’ and the ‘coastal use area’ (see Figure 2-5 to Figure 2-7).

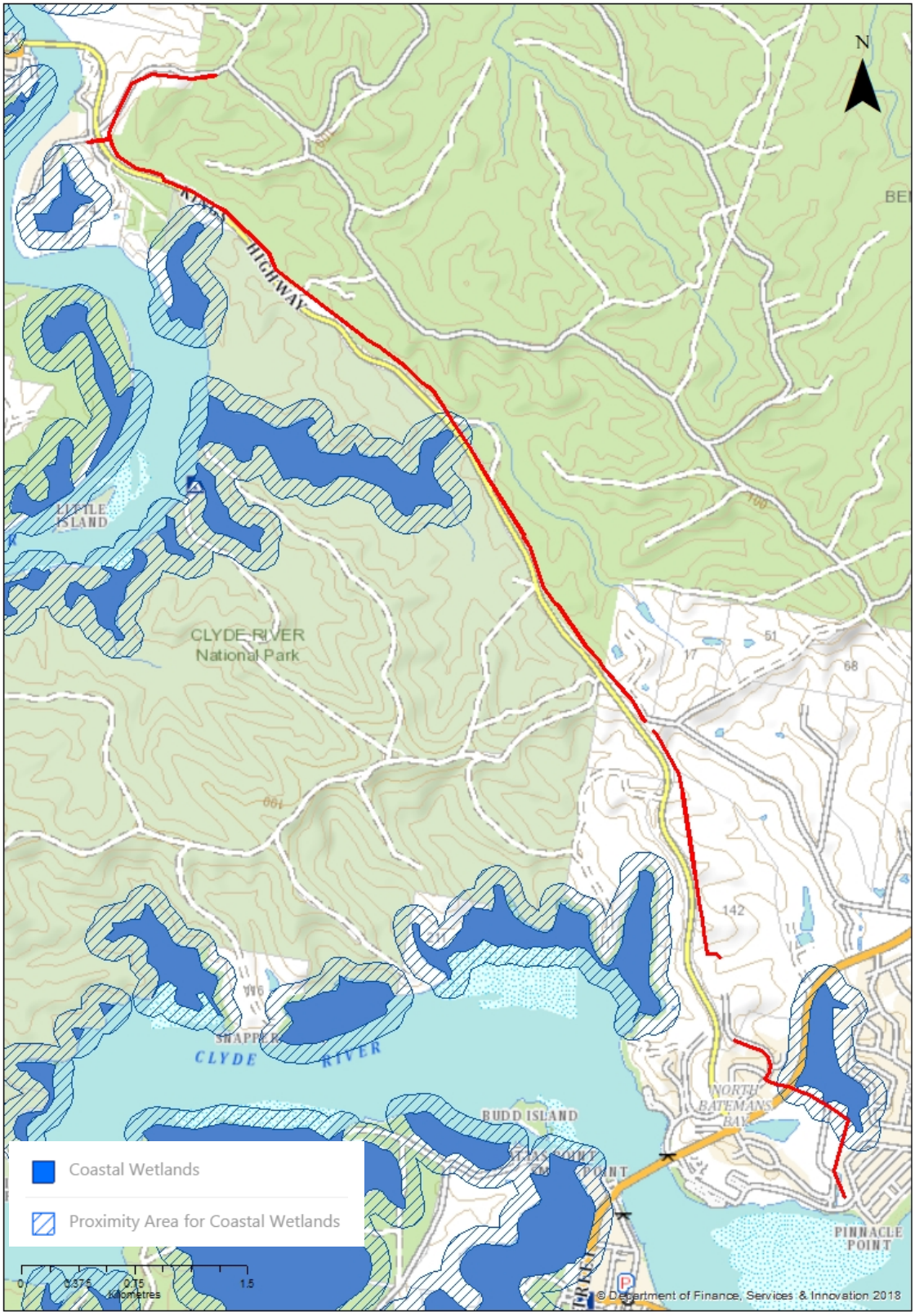


Figure 2-5: Coastal Zone Map Extract (Proximity Area for Coastal Wetlands Area)

Source: Department of environment and Planning, accessed October 2022

Figure 2-6: Coastal Zone Map Extract (Coastal Use Area)

Source: Resilience and Hazards SEPP Maps, accessed July 2018

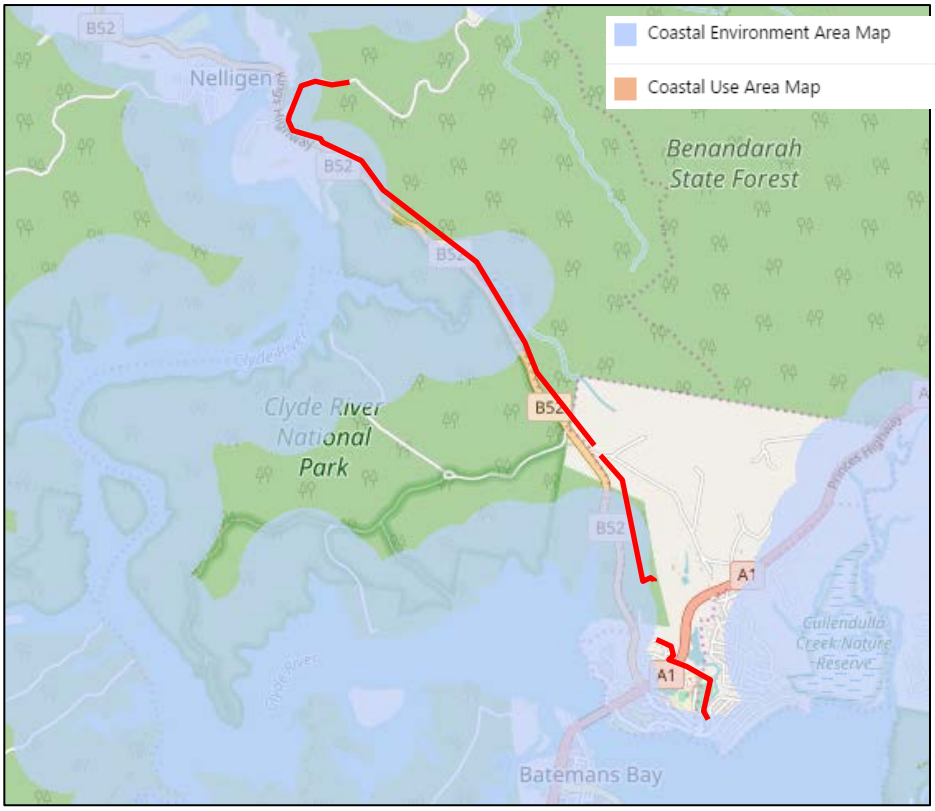


Figure 2-7: Coastal Zone Map Extract (Coastal Environment Area)

Source: Resilience and Hazards SEPP Maps, accessed July 2018

The Proposal does not require consent under Part 4 of the *Environmental Planning and Assessment Act 1979* and therefore Part 2.2, Division 1 - 4 of the Resilience and Hazards SEPP do not apply. However, the consent requirements have been considered in this REF as they are relevant to coastal works in general. These requirements are addressed in Table 2-2 below.

Table 2-2 Consent requirements in coastal management areas

Division 1, Section 2.8: Development on land in proximity to coastal wetlands or littoral rainforest	
Consent Requirement	**Response**
(1) Development consent must not be granted unless the consent authority is satisfied that the proposed development will not significantly impact on: (a) the biophysical, hydrological or ecological integrity of the adjacent coastal wetland or littoral rainforest, or (b) the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland or littoral rainforest.	The proposed works is not located on land mapped as containing littoral rainforest. However, some sections of the pipeline are located on land in proximity to coastal wetlands in Nelligen and North Batemans Bay. **Biophysical, hydrological and ecological coastal values and coastal processes** The proposed works are not anticipated to have an impact on the integrity and resilience of the biophysical, hydrological, ecological environment and coastal environmental values or coastal natural process, as the works involve installation of subsurface pipeline and associated infrastructure in areas previously cleared for residential development and a power supply easement. A Flora and Fauna assessment indicated that the proposed works would not have a significant impact on ecological values; as it is highly disturbed as a result of residential development in Nelligen and North Batemans Bay, and for the power supply easement (see Section 5.4) **Surface and ground water flows** The ground disturbance associated with the Proposal works is anticipated to present a minor risk to surface water flow due to the potential sediment and other materials movement off site. However, any such adverse impacts are not anticipated to be significant due to the proposed implementation of appropriate mitigation measures, as listed in Section 5. The Proposal is not anticipated to significantly impact surface and ground water flows as the Proposal involves a subsurface pipeline connected to managed sewer and water infrastructure networks.

Division 2, Section 2.9: Development on land within the coastal vulnerability area	
Consent Requirement	**Response**
Development consent must not be granted to development on land that is within the area identified as "coastal vulnerability area" on the *Coastal Vulnerability Area Map* unless the consent authority is satisfied that: (a) if the proposed development comprises the erection of a building or works—the building or works are engineered to withstand current and projected coastal hazards for the design life of the building or works, and (b) the proposed development: (i) is not likely to alter coastal processes to the detriment of the natural environment or other land, and (ii) is not likely to reduce the public amenity, access to and use of any beach, foreshore, rock platform or headland adjacent to the proposed development, and (iii) incorporates appropriate measures to manage risk to life and public safety from coastal hazards, and (c) measures are in place to ensure that there are appropriate responses to, and management of, anticipated coastal processes and current and future coastal hazards.	N/A There is no coastal vulnerability area map at this point in time.
Division 3, Section 2.10: Development on land within the coastal environment area	
Consent Requirement	**Response**
(1) Development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following: (a) the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment,	**Biophysical, hydrological and ecological coastal values and coastal processes** The proposed works are not anticipated to have an impact on the integrity and resilience of the biophysical, hydrological, ecological environment and coastal environmental values or coastal natural process, as the works involve installation of subsurface pipeline.

(b) coastal environmental values and natural coastal processes, (c) the water quality of the marine estate (within the meaning of the *Marine Estate Management Act 2014*), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1, (d) marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms, (e) existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability, (f) Aboriginal cultural heritage, practices and places, (g) the use of the surf zone.	The assessment results indicated that the proposed works would not have a significant impact on this vegetation community as it is highly disturbed as a result of development in Nelligen. **Water Quality** The ground disturbance associated with the proposed works is anticipated to present a minor risk to water quality due to the potential sediment and other materials movement off site. However, any such adverse impacts are not anticipated to be significant due to the proposed implementation of appropriate mitigation measures, as listed in Section 5. **Marine Vegetation and Habitats** The proposed works would not involve the removal of any marine vegetation, that would result in the harm of marine vegetation, their habitats and associated marine species. Therefore, the impact on marine vegetation and habitats is considered to be negligible. **Aboriginal Cultural Heritage** Aboriginal items are known to occur within the Proposal works area. The risk to Aboriginal sites has been assessed and recommendations and mitigation measures provided as part of an Aboriginal Cultural Heritage Assessment (see Section 5.6). However, any such adverse impacts are not anticipated to be significant due to the proposed implementation of appropriate mitigation measures, as listed in Section 5. **Open Space Use and Public Access** The proposed works would not be located within the foreshore, beach, headland or rock platform areas.
(2) Development consent must not be granted to development on land to which this section applies unless the consent authority is satisfied that: (a) the development is designed, sited and will be managed to avoid an adverse impact referred to in subsection (1), or (b) if that impact cannot be reasonably avoided—the development is designed, sited	The proposed works would be managed to mitigate any adverse impacts (refer to Section 5).

and will be managed to minimise that impact, or (c) if that impact cannot be minimised—the development will be managed to mitigate that impact.	

Division 4, Section 2.11: Development on land within the coastal use area	
Consent Requirement	**Response**
(1) Development consent must not be granted to development on land that is within the coastal use area unless the consent authority: (a) has considered whether the proposed development is likely to cause an adverse impact on the following: (i) existing, safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability, (ii) overshadowing, wind funnelling and the loss of views from public places to foreshores, (iii) the visual amenity and scenic qualities of the coast, including coastal headlands, (iv) Aboriginal cultural heritage, practices and places, (v) cultural and built environment heritage, and (b) is satisfied that: (i) the development is designed, sited and will be managed to avoid an adverse impact referred to in paragraph (a), or (ii) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or (iii) if that impact cannot be minimised—the development will be managed to mitigate that impact, and	The proposed works would be undertaken within previously disturbed areas within residential and cleared areas adjacent to a roadway, not within foreshore, beach, headland or rock platform areas. The works would require temporary fencing as a safety precaution. This would restrict public access and use of the sites and parts of the surrounding areas. However, no permanent access restrictions (e.g. fencing) are currently proposed along the foreshore, beach, headland or rock platform areas. The proposed works would not significantly alter the existing surrounding coastal and built environment as majority of the Proposal would be underground or at locations outside of the coastal use area. Works would be managed to avoid adverse any adverse impacts (Refer to Section 5. The SPS would be above ground; however, it is a relatively small structure and would not be unsuitable for the area, particularly in light of surrounding residential development proposed in the area. The risk to Aboriginal sites has been assessed, and recommendations and mitigation measures provided as part of an Aboriginal Cultural Heritage Assessment (see Section 5.6). The proposed works would be managed to mitigate any adverse impacts (refer to Section 5).

(c) has taken into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development.	

2.1.4 State Environmental Planning Policy (Biodiversity and Conservation) 2021

Chapters 3 and 4 of the *State Environmental Planning Policy (Biodiversity and Conservation)* 2021 aim to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline. The Eurobodalla LGA is identified under Schedule 2 – Local Government Areas of the SEPP, being a local government area to which this part applies. It is noted that the SEPP does not apply to proposals assessed under Part 5 of the EP&A Act, nevertheless as a best practice measure consideration of this SEPP has been undertaken as part of the REF.

A Flora and Fauna Assessment undertaken for the Proposal identified one tree species (Forest Red Gum (*Eucalyptus tereticorni*)) recognised under Schedule 3 of the SEPP as a Koala use tree (see Section 5.4). However, Forest Red Gum was considered to comprise less than 15% of the tree canopy in the vicinity of the Proposal site. Therefore, an individual Plan of Management for the conservation and management of areas of Koala habitat is not required to be prepared as part of the current Proposal.

2.2 Relevant Legislation

2.2.1 Environmental Planning and Assessment Act 1979 (NSW)

The relevant environmental planning instrument for the Proposal is SEPP (Transport and Infrastructure) 2021 which removes the requirement to obtain development consent. Therefore, the Proposal has been assessed under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Eurobodalla Shire Council is the proponent and the determining authority for the development.

This REF has been prepared in accordance with Section 5.5 of the EP&A Act, which requires that the proponent take into account to the fullest extent possible all matters affecting or likely to affect the environment due to the proposed activity. Consideration of the factors listed under Section 171 of the *Environmental Planning and Assessment Regulation* 2021 (EP&A Regulation) has been used to assist in assessing the significance of the Proposal, and is provided in Appendix A.

2.2.2 Work Health and Safety Act 2011 and Regulation 2017

The new SPS requires the use of a Ferrous Chloride system for septicity control. This chemical is classed as a Hazardous Substance (Corrosive 8) and Poison S5. under the *Australian Dangerous Good Code* (National Transport Commission 2017) (ADG Code).

The storage and handling of dangerous goods is regulated under Part 7.1 of the *Work Health and Safety Regulation 2017*. SafeWork NSW must be notified if any dangerous goods, stored and handled above statutory defined quantities are to be used (as per section 328 of the Regulation). The SPS would include storage of 7kL of ferrous chloride would therefore exceed

the storage threshold of 100kg/100 L of dangerous goods. Therefore, notification to SafeWork NSW would be required.

The *Work Health and Safety Regulation 2017* requires that a register of hazardous chemicals used, handled or stored at the workplace must be kept. The register is to include:

- A list of hazardous chemicals used, handled or stored, and
- The current safety data sheet for each hazardous chemical listed.

2.2.3 Local Government Act 1993 (NSW)

Section 60 of the *Local Government Act 1993* (LG Act) states that a Council must seek approval from Department of Planning and Environment (DPE) - Water to provide for sewage from its area to be discharged, treated or supplied to any person. As the Proposal involves only the construction of a sewage reticulation system, this requirement is not applicable to these works.

Section 60 also states that Council must not, except in accordance with the approval of the Minister for Primary Industries, construct or extend water treatment works. As the proposed water supply works for Nelligen do not require construction or extension of a water treatment works, approval is not required under the *Local Government Act* 1993.

Under Section 59A(2) and 191A(1) of the LG Act, Council, as a water utility, is permitted to enter premises (excluding National Parks and Wildlife reserve land) without a licence or permit to undertake water supply and associated works. Accordingly, the Proposal works would be permissible by Council within both private and public land (excluding National Parks and Wildlife reserve land), subject to appropriate prior written notification by Council or prior consent from the land owner or relevant government authority.

2.2.4 Pipelines Act 1967

The *Pipelines Act 1967* aims to:

- implement a timely and efficient approvals system to facilitate the construction of cross-country transmission pipelines in New South Wales;
- ensure the effect of a pipeline project commenced under the Act on the environment, landowners and native titleholders is properly considered and managed;
- ensure pipeline licensees protect the environment, pipeline employees and the public from dangers arising from both pipeline construction and the transmission of potentially hazardous substances.

Under the *Pipelines Act 1967*, any person who wishes to construct and operate a pipeline for the purposes of any substance, can do so under an authorisation or Licence.

However, Section 5 of the *Pipelines Act 1967* has a number of exemptions to a licence under that Act, including a pipeline constructed by a public authority, or a pipeline for the purpose of water supply. Therefore, this Act does not apply to the Proposal.

2.2.5 National Parks and Wildlife Act 1974 (NSW)

The *National Parks and Wildlife Act 1974* (NPW Act) provides for the statutory protection of Aboriginal cultural heritage places, objects and features. Part 6 of the NPW Act provides specific protection for Aboriginal objects and declared Aboriginal places by establishing

offences of harm. It is a defence against prosecution for unintentionally harming Aboriginal Objects if due diligence had been exercised to determine that no Aboriginal object would be harmed, or the harm or desecration was authorised by an Aboriginal heritage impact permit (AHIP).

Investigations have been undertaken into the Aboriginal cultural heritage impacts of the Proposal, including a Due Diligence Assessment and an Aboriginal Cultural Heritage Assessment (see Appendix C and D). These determined that an AHIP would be required for impacts to four Aboriginal sites which occur in the vicinity of the works at North Batemans Bay and Nelligen (see Section 5.6).

2.2.6 Heritage Act 1977

The *Heritage Act 1977* protects and aims to conserve the environmental heritage of New South Wales. Environmental heritage is broadly defined under Section 4 of the *Heritage Act* 1977 as consisting of "those places, buildings, works, relics, moveable objects, and precincts, of State or local heritage significance" (Heritage Branch, DoP 2009:4). Aboriginal places or objects that are recognised as having high cultural value (potentially of local and State significance) can be listed on the State Heritage Register and protected under the provisions of the *Heritage Act* 1977.

The SPS and transfer mains alignments would not impact any listed State or locally listed heritage items. It is considered that Proposal works can be carried out to avoid impacting any listed heritage items, as discussed in Section 5.7.

2.2.7 Protection of the Environment Operations Act 1997 (NSW)

The *Protection of the Environment Operations Act 1997* (POEO Act) regulates air, noise, land and water pollution. The Environment Protection Authority (EPA) is generally responsible for implementing the POEO Act and would be the appropriate regulatory authority for the Proposal.

Schedule 1 of the POEO Act lists scheduled activities which are required to be licensed by the EPA. Sewage treatment is listed as a scheduled activity which is defined as *the operation of sewage treatment systems (including the treatment works, pumping stations, sewage overflow structures and the reticulation system) that involve the discharge or likely discharge of wastes or by-products to land or waters*. The SPS and sewage transfer main would form part of the Bateman's Bay STP sewerage scheme, which has a licence as a scheduled activity under this Act (Environment Protection Licence (EPL) No. 1397 granted to Eurobodalla Shire Council). Should the additional load exceed the existing licence load or waste limits, a variation under section 58 of the PEPO Act would be required from the EPA.

The activity is both scheduled under the POEO Act and being undertaken by a Public Authority and therefore the EPA will be the Appropriate Regulatory Authority in relation to environmental pollution matters.

The water supply works do not constitute a scheduled activity listed under Schedule 1 of the POEO Act and therefore an EPL is not anticipated to be required.

Section 120 of the POEO Act makes it an offence to pollute waters. It is considered that the construction and operation of the Proposal can be carried out without causing water pollution; as appropriate mitigation measures would be implemented to prevent water pollution during

the works. Therefore, it is unlikely that a licence would be required under Section 120 of the POEO Act for the pollution of waters.

Other relevant provisions of the POEO Act that the Proposal would need to comply with include:

- Section 115 – It is an offence to dispose of waste in a manner that harms or is likely to harm the environment.
- Section 116 – It is an offence to cause any substance to leak, spill or otherwise escape (whether or not from a container) in a manner that harms or is likely to harm the environment.
- Section 139 – The occupier of any premises who operates any plant (other than control equipment) at those premises in such a manner as to cause the emission of noise from those premises is guilty of an offence if the noise so caused, or any part of it, is caused by the occupier's failure: (a) to maintain the plant in an efficient condition, or (b) to operate the plant in a proper and efficient manner.
- Section 167 – The occupier of any premises must maintain any control equipment installed at the premises in an efficient condition. The occupier of any premises must operate any control equipment installed at the premises in a proper and efficient manner.

2.2.8 Protection of the Environment Operations (Waste) Regulation 2014 (NSW)

The *Protection of the Environment Operations (Waste) Regulation* 2014 sets out the provisions with regards to non-licensed waste activities and non-licensed waste transporting, in relation to the way in which waste must be stored, transported, and the reporting and record-keeping requirements. The proposed works (in particular aspects such as removal of spoil) would be undertaken to be consistent with the requirements of this regulation.

2.2.9 Water Management Act 2000 (NSW)

The objects of the *Water Management Act 2000* (WM Act) are to provide for the sustainable and integrated management of the water sources of the state for the benefit of both present and future generations.

The proposed works involves the carrying out of a controlled activity (that is, carrying out of work or excavation) as defined under the WM Act. Section 91(E) of the WM Act states that a controlled activity cannot be carried out in, on or under waterfront land otherwise than in accordance with a controlled activity approval. However, Section 41 of the *Water Management (General) Regulation 2018* (WM (General) Reg) states that public authorities are exempt from the requirement to obtain a controlled activity approval. Therefore, this approval would not be applicable to the works.

Section 91B(1) of the WM Act requires a water supply works approval to be obtained for a number of works, including:

c) a work (such as a water pipe or irrigation channel) that is constructed or used for the purpose of conveying water to the point at which it is to be used.

Section 37(1)(b) of the WM (General) Reg states that a water supply works approval is not required for the construction of a water pipe for use solely for conveying water from one place to another, or for the construction of a water reticulation work on land the subject of a water use approval, except when the works are undertaken on land within a State forest within the meaning of the *Forestry Act 2012* or on waterfront land (other than waterfront land relating to a minor stream).

Waterfront land is defined under the WM Act to mean:

> *(a) the bed of any river, together with any land lying between the bed of the river and a line drawn parallel to, and the prescribed distance inland of, the highest bank of the river, or*
>
> *(a2) the bed of any estuary, together with any land lying between the bed of the estuary and a line drawn parallel to, and the prescribed distance inland of, the mean high water mark of the estuary.*

Where the prescribed distance is 40 metres or (if the regulations prescribe a lesser distance, either generally or in relation to a particular location or class of locations) that lesser distance.

Accordingly, a water supply works approval will be required for any works within State Forest or on waterfront land (other than waterfront land relating to a minor stream), under Section 91B(1) of the WM Act.

Section 91(F) of the WM Act states that an aquifer interference activity cannot be carried out without, or otherwise than as authorised by, an aquifer interference approval. However, extracting less than 3ML of groundwater per annum is exempt from requiring an aquifer interference licence.

Geotechnical investigations undertaken for the proposed upgrade works indicated that groundwater may be encountered during the works.

If more than 3ML of groundwater dewatering is required during construction works, an aquifer interference approval would be required for the works. If dewatering of less than 3ML is required for the Proposal, a water access licence exemption for aquifer interference activities taking 3 ML or less of groundwater per year should be lodged with DPE- Water (NRAR).

Water sharing plans under the WM Act govern the sharing of water in a particular water source between water users and the environment and rules for the trading of water in a particular water source. Water access licences (WALs) entitle licence holders to specified shares in the available water within a particular water management area or water source (the share component), and to take water at specified times, rates or circumstances from specified areas or locations (the extraction component). WALs may be granted to access the available water governed by a water sharing plan under the *Water Management Act 2000*.

Nelligen is located in the Clyde Estuaries Tributaries catchment and is subject to the *Draft Water Sharing Plan for the Clyde Unregulated and Alluvial Water Sources 2013.* Council currently sources water from the Deua and Tuross Rivers under existing WALs. These are subject to the *Water Sharing Plan for the Deua River Unregulated and Alluvial Water Sources 20*16, and *Water Sharing Plan for the Tuross Unregulated and Alluvial Water Source 2016.* The Eurobodalla water supply system is an integrated system and the demand for Nelligen has been modelled and can be accommodated within the existing WALs. No changes to the existing entitlement will be required.

2.2.10 Roads Act 1993 (NSW)

Under Section 138 of the *Roads Act 1993* a person must not erect a structure or carry out a work in, on or over a public road, otherwise than with the consent of the appropriate roads authority. However, Schedule 2, Section 5(1) states that a public authority is not required to obtain a roads authority's consent under Section 138 to exercise the public authority's functions in, on or over an unclassified road other than a Crown road.

The transfer mains will cross under the Kings Highway and Princes Highway as well as local roads within Nelligen, Bay Ridge Estate and North Batemans Bay. Transport for NSW (TfNSW) is the road authority for Kings Highway and the Princes Highway which are classified roads, and Council is the roads authority for unclassified roads. As the works would impact upon classified roads and TfNSW land, consent under Section 138 is required.

2.2.11 Biodiversity Conservation Act 2016 (NSW)

The Biodiversity Conservation Act 2016 (BC Act) protects species of threatened flora and fauna, endangered populations and endangered ecological communities and their habitats in NSW. It also lists Key Threatening Process that adversely affects threatened species, populations or ecological communities or that may cause species, populations or ecological communities that are not threatened to become threatened.

Amongst other matters, offences are established for damage to habitats of threatened species or threatened ecological communities. Defences to those offences include that the act was necessary for the carrying out of an activity by a determining authority within the meaning of, and after compliance with, Part 5 of the EP&A Act . Part 4 of the *Biodiversity Conservation Act 2016* sets out provisions for threatened species and threatened ecological communities and introduces a new biodiversity assessment method (BAM), a new biodiversity offset scheme (BOS) and an expanded biodiversity certification program.

A Flora and Fauna Assessment has been prepared to assess impacts to threatened species and is attached in Appendix B. The assessment concluded that there would be no significant impact to threatened flora or fauna species or their habitat, endangered populations or endangered ecological communities of State conservation significance, provided that the mitigation measures proposed are implemented (see Section 5.4). No approval under the BC Act is therefore required.

2.2.12 Biosecurity Act 2015

The *Biosecurity Act 2015* repeals the *Noxious Weeds Act 1993*, which previously provided regulatory controls and powers to manage noxious weeds in NSW. The *Biosecurity Act 2015* guides the management of weeds at the regional level throughout NSW. Under the Act, all plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant who knows or ought to know of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable. Individual land holders and managers are required under the Act to control priority weeds for their area according to the relevant biosecurity toolset.

One weed species listed under Schedule 3 of the *Biosecurity Act 2015* was identified within the Proposal works area and is discussed further in Section 5.4. This weed species would be managed in accordance with the *Biosecurity Act 2015* and the *Biosecurity Regulation 2017*.

2.2.13 Fisheries Management Act 1994 (NSW)

The objects of *the Fisheries Management Act 1994* (FM Act) are to conserve, develop and share the fishery resources of the State for the benefit of present and future generations. In particular, the objects of this Act include:

- to conserve fish stocks and key fish habitats, and
- to conserve threatened species, populations and ecological communities of fish and marine vegetation, and
- to promote ecologically sustainable development, including the conservation of biological diversity.

The Act includes schedules of threatened aquatic species, populations and ecological communities, which must be considered in accordance with Section 5A of the EP&A Act. A Flora and Fauna Assessment has been prepared to assess impacts to threatened species and is attached in Appendix B. The assessment concluded that no species or communities listed under the FM Act are considered likely to be impacted by the Proposal (see Section 5.4).

The proposed works do not involve harm to mangroves or other protected marine vegetation, or blocking of fish passage and therefore a permit under the FM Act is not required.

Section 200 of the FM Act requires a local government authority to obtain a permit for dredging or reclamation work in waterland. For the purposes of Section 200 of the FM Act, dredging works includes any work that involves excavating water land, and reclamation work includes:

(a) using any material (such as sand, soil, silt, gravel, concrete, oyster shells, tyres, timber or rocks) to fill in or reclaim water land, or

(b) depositing any such material on water land for the purpose of constructing anything over water land (such as a bridge), or

(c) Draining water from water land for the purpose of its reclamation.

Waterland includes land submerged by water whether permanently or intermittently, or whether forming an artificial or natural body of water. It is proposed to underbore the transfer pipelines where they cross 3rd order (or above) waterways (at four locations along the transfer mains alignment), and therefore a permit for dredging and reclamation works from DPI Fisheries under Section 200 of the FM Act would not be required.

2.2.14 Marine Estate Management Act 2014 (NSW), Marine Estate Management Regulation 2009 (NSW), Marine Estate Management (Management Rules) Regulation 1999 (NSW)

Some areas of the works would be located in proximity to the Clyde River near Nelligen, which is classified as Habitat Protection Zone within the Batemans Marine Park Marine Protected Area.

The Batemans Marine Park is principally concerned with ensuring that an activity does not adversely affect the marine biodiversity and ecological values of the park. These values are expressed and regulated through the *Marine Estate Management Act 2014*, the *Marine Estate Management Regulation 2009*, and the *Marine Estate Management (Management Rules) Regulation 1999.*

The objects of this Act are as follows:

(a) to provide for the management of the marine estate of New South Wales consistent with the principles of ecologically sustainable development in a manner that:

(i) promotes a biologically diverse, healthy and productive marine estate, and

(ii) facilitates:

- economic opportunities for the people of New South Wales, including opportunities for regional communities, and
- the cultural, social and recreational use of the marine estate, and
- the maintenance of ecosystem integrity, and
- the use of the marine estate for scientific research and education,

(b) to promote the co-ordination of the exercise, by public authorities, of functions in relation to the marine estate,

(c) to provide for the declaration and management of a comprehensive system of marine parks and aquatic reserves.

The purposes of marine parks, as described in Section 22 of the *Marine Estate Management Act 2014*, are as follows:

(1) The primary purpose of a marine park is to conserve the biological diversity, and maintain ecosystem integrity and ecosystem function, of bioregions in the marine estate.

(2) The secondary purposes of a marine park are, where consistent with the primary purpose:

(a) to provide for the management and use of resources in the marine park in a manner that is consistent with the principles of ecologically sustainable development, and

(b) to enable the marine park to be used for scientific research and education, and

(c) to provide opportunities for public appreciation and enjoyment of the marine park, and

(d) to support Aboriginal cultural uses of the marine park.

An operational plan is required for each marine park under section 23 of the Marine Parks Act 'to identify and define a scheme of the strategies, actions or activities that are proposed to be undertaken by the Authority (including arrangements with other agencies) to operate a marine park, consistent with the zoning plan for the marine park and the objects of the Act'.

The waters of the Clyde River lie within a 'Habitat Protection Zone', the objects of a habitat protection zone (Cl.1.8 *Marine Estate Management (Management Rules) Regulation 1999)* are:

(a) to provide a high level of protection for biological diversity, habitat, ecological processes, natural features and cultural features (both Aboriginal and non-Aboriginal) in the zone, and

(b) where consistent with paragraph (a), to provide opportunities for recreational and commercial activities (including fishing), scientific research, educational activities and

other activities, so long as they are ecologically sustainable and do not have a significant impact on any fish populations or on any other animals, plants or habitats.

The Proposal would not require a permit in terms of the *Marine Estate Management (Management Rules) Regulation 1999* as it is located outside the Habitat Protection Zone. Overall, it is anticipated that with the implementation of appropriate mitigations measures during construction works to protect surrounding ecology and water quality of the Clyde River (Section 5.3 and 5.4). The Proposal would be consistent with the aims and objectives risk of the *Marine Estate Management Act 2014*, the *Batemans Marine Park Zoning Plan* and the *Batemans Marine Park Operational Plan*.

2.2.15 Coastal Management Act 2016

The *Coastal Management Act 2016* has recently commenced and replaced the *Coastal Protection Act 1979*. *The Coastal Management Act 2016* will enable more integrated and strategic management of the NSW coast.

The objects of the *Coastal Management Act 2016* are to manage the coastal environment of NSW in a manner consistent with the principles of ecologically sustainable development for the social, cultural and economic well-being of the people of the State.

The Act defines the 'coastal zone' as the area of land comprised of the following coastal management areas:

- the coastal wetlands and littoral rainforests area,
- the coastal vulnerability area,
- the coastal environment area, and
- the coastal use area.

Based on the interactive maps accompanying the Act and the Resilience and Hazards SEPP, some sections of the Proposal are located within the coastal zone and lies within the coastal environment area and coastal use area. A review of the objects of these zones is presented below.

Coastal Environment Area

The coastal environment area means the land identified by a State Environmental Planning Policy to be the coastal environment area for the purposes of this *Coastal Management Act 2016* (see Section 2.1.3), being land containing coastal features such as the coastal waters of the State, estuaries, coastal lakes, coastal lagoons and land adjoining those features, including headlands and rock platforms.

The management objectives for the coastal environment area are as follows:

(a) to protect and enhance the coastal environmental values and natural processes of coastal waters, estuaries, coastal lakes and coastal lagoons, and enhance natural character, scenic value, biological diversity and ecosystem integrity,

(b) to reduce threats to and improve the resilience of coastal waters, estuaries, coastal lakes and coastal lagoons, including in response to climate change,

(c) to maintain and improve water quality and estuary health,

(d) to support the social and cultural values of coastal waters, estuaries, coastal lakes and coastal lagoons,

(e) to maintain the presence of beaches, dunes and the natural features of foreshores, taking into account the beach system operating at the relevant place,

(f) to maintain and, where practicable, improve public access, amenity and use of beaches, foreshores, headlands and rock platforms.

Coastal Use Area

The coastal use area means the land identified by a State Environmental Planning Policy to be the coastal use area for the purposes of the *Coastal Management Act 2016* (see Section 2.1.3), being land adjacent to coastal waters, estuaries, coastal lakes and lagoons where development is or may be carried out (at present or in the future).

The management objectives for the coastal use area are as follows:

(a) to protect and enhance the scenic, social and cultural values of the coast by ensuring that:

(i) the type, bulk, scale and size of development is appropriate for the location and natural scenic quality of the coast, and

(ii) adverse impacts of development on cultural and built environment heritage are avoided or mitigated, and

(iii) urban design, including water sensitive urban design, is supported and incorporated into development activities, and

(iv) adequate public open space is provided, including for recreational activities and associated infrastructure, and

(v) the use of the surf zone is considered,

(b) to accommodate both urbanised and natural stretches of coastline.

The proposed works are not considered to be inconsistent with the management objectives of these coastal management areas, and accordingly is consistent with the objects of the Act through promoting the protection, enhancement, maintenance and restoration of the environment of the coastal zone.

Development controls for the coastal environment and coastal use areas are provided in Sections 13 and 14 of the Act. These controls reflect those provided in the Resilience and Hazards SEPP which have been addressed in Table 2-2.

2.2.16 Forestry Act 2012 (NSW)

Several sections of the pipeline alignment would be located within the Benandarah State Forest. Where tree removal is required within State Forest land, a Level 2 permit would be required under Section 60 of the *Forestry Act 2012*. In addition, formal authority from FCNSW would also be required for use of any land within a forestry area under Section 67 of the *Forestry Act 2012,* where the pipeline construction works are located within cleared State Forest land.

2.2.17 Rural Fires Act 1997 (NSW)

Parts of the Proposal area are located within bushfire prone land (Vegetation Category 1, Vegetation Category 2 and Vegetation Buffer) as identified on the Bushfire Prone Land Map, certified by the NSW Rural Fire Service (refer to Figure 5-3). However, the Proposal is not a special fire protection purpose and therefore does not require approval from the NSW Rural Fire Service (RFS) under the *Rural Fires Act 1997*.

Overall, the bushfire risk associated with the Proposal is considered low and the new infrastructure proposed would not increase bushfire hazard in the area (see Section 5.5).

2.2.18 Native Title Act 1993 (Commonwealth)

The *Native Title Act 1993* sets up processes to determine where native title exists, how future activity impacting upon native title may be undertaken, and to provide compensation where native title is impaired or extinguished. The Act gives Indigenous Australians who hold native title rights and interests or who have made a native title claim, the right to be consulted and, in some cases, to participate in decisions about activities proposed to be undertaken on the land.

A search of the National Native Title Register found one application which covers the Proposal area (South Coast People – NC2017/003). Consultation with the NTSCORP and South Coast People is therefore required prior to proceed with the works. It is noted that these organisations were contacted as part of the Aboriginal Cultural Heritage Assessment (ACHA) consultation process.

2.2.19 Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides for Commonwealth involvement in development assessment and approval in circumstances where there exist 'matters of national environmental significance'. Matters of national environmental significance include:

- world heritage properties
- national heritage places
- wetlands of international importance
- nationally threatened species and ecological communities
- migratory species
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mining)
- a water resource, in relation to coal seam gas development and large coal mining development.

A Flora and Fauna Assessment has been prepared to assess impacts to threatened species and is attached in Appendix B. The assessment concluded that it is unlikely that the Proposal would significantly impact any matters of national environmental significance as listed under

the EPBC Act, therefore referral to the Commonwealth under the EPBC Act is not required (see Section 5.4).

2.3 Relevant Policies, Guidelines and Standards

The following general policies, guidelines and standards would need to be considered as part of the Proposal and are addressed in this REF;

- *Interim Construction Noise Guidelines* (DECC, 2009)
- *Managing Urban Stormwater: Soils and Construction - Volume 1, 4th Edition* (Landcom, 2004)
- *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW, 2010)
- *NSW Guidelines on Assuring Future Urban Water Security - Assessment and Adaption Guidelines for NSW Local Water Utilities*
- *Guidelines for Controlled Activities on Waterfront Land - Guidelines for laying pipes and cables in watercourses on waterfront land* (NSW Office of Water, 2012)
- *Controlled Activities on Waterfront Land – Guidelines for watercourse crossings on waterfront land* (NOW,2012)
- *Code of Practice – Work near Overhead Power Lines* (Workcover NSW 2006)

2.3.1 Licensing Guidelines for Sewage Treatment Plants (EPA, 2003)

These guidelines have been prepared by the NSW Environment Protection Authority (EPA) to help licensees in non-metropolitan areas, generally local councils and other water authorities, understand the process for licensing whole sewage treatment systems.

The guideline is largely concerned with reducing overflows from sewerage systems. The design of the proposed SPS has been based upon the review of the existing sewer catchment ensuring that it has sufficient capacity and emergency storage to minimise the risk of any discharges to the environment.

2.3.2 Technical Framework: Assessment and Management of Odour from Stationary Sources in NSW (DECCW, 2006)

The framework adopts odour performance criteria, which are based on a sliding scale relating to the population density of an area, as the response to an odour impact, can vary significantly over a given population. The criteria assumes that within a densely populated area there would be a greater potential for individuals within the community to be ‘annoyed’ by a given odour event as detailed in Table 2-3 below.

Table 2-3 Odour Unit Criteria and Population Density

Population of Affected Community	Criteria (OU)
Urban (>~2000) and/or schools and hospitals	2
~ 500	3
~ 125	4
~ 30	5
~ 10	6
Rural single residence (≤ 2)	7

Source: Department of Environment, Climate Change and Water Technical framework: assessment and management of odour from stationary sources in NSW November 2006

Development in the vicinity of the proposed SPS site is shown in Figure 4-2. The area immediately surrounding the propose new SPS site comprises several residential properties. Therefore, the SPS structure would generally be consistent with the surrounding environment. Accordingly, the impact assessment criterion of 4-5 OU at surrounding residents would apply, depending on the final population density. It is anticipated that the SPS can meet this odour criteria due to the proposed septicity and odour controls within the design (see Section 4.4.2).

2.3.3 Guidelines for developments adjacent to National Parks and Wildlife Service lands (EES, 2020)

The goal of these guidelines is to guide consent and planning authorities when assessing development applications that adjoin land managed by the NPWS. The aim of this advice is to avoid and minimise any direct or indirect adverse impacts on this land. The guidelines would also be of assistance to planning authorities in the development of environmental planning instruments (such as local environmental plans) applying to land adjoining, or in the vicinity of, land managed by NPWS.

Councils and other consent authorities need to consider the following issues when assessing proposals adjoining NPWS land and, in particular, their impacts:

- erosion and sediment control;
- stormwater runoff;
- wastewater;
- management implications relating to pests, weeds and edge effects;
- fire and the location of asset protection zones;
- boundary encroachments and access through NPWS lands;
- visual, odour, noise, vibration, air quality and amenity impacts;
- threats to ecological connectivity and groundwater dependent ecosystems;
- cultural heritage; and

- road network design and its implications for continued access to the park.

The impact of the Proposal on the Clyde River National Park with regard to the above issues has been assessed in Section 5. It is considered that the implementation of appropriate safeguards and mitigation measures outlined in Section 6.2 would prevent adverse impacts to the adjacent National Park area as a result of the proposed water supply and sewerage schemes.

2.3.4 Batemans Marine Park Operational Plan (MPA, 2010)

The *Batemans Marine Park Operational Plan* (MPA, 2010) details management actions being undertaken by the Marine Parks Authority for the Batemans Marine Park (see Section 2.2.14). These actions focus on meeting key objectives related to conservation of marine biodiversity, as well as provision of opportunities for ecologically sustainable use, public appreciation, enjoyment and understanding of the marine park. *The Batemans Marine Park Operational Plan* explains the role and priorities of the Marine Parks Authority and other organisations in the management of the marine park.

The *Batemans Park Marine Park Operational Plan* is consistent with and supports the Batemans Marine Park Zoning Plan (see Section 2.2.14). Marine park objectives and management actions have been organised under the following strategies;

Objective 1 – To conserve marine biodiversity, marine habitats and maintain ecological processes in the marine park, includes:

1) identification and adaptive management of threats to marine biodiversity and habitats
2) protection of high conservation areas and threatened species.

Objective 2 – To provide for ecologically sustainable uses (including commercial and recreational fishing), includes:

1) assessing developments in and affecting the marine park to minimise impacts
2) maximising voluntary compliance with the marine park zoning plan
3) ecologically sustainable management of commercial activities.

Objective 3 – To provide opportunities for public appreciation, understanding and enjoyment, includes:

1) delivering an ecological, social, cultural and economic research and monitoring program
2) promotion of sustainable tourism and recreational uses, as well as facilitating a greater appreciation of marine biodiversity
3) ensuring management is consistent with the cultural aspirations of Aboriginal people.

The Proposal is considered to be consistent with the above objectives for the Batemans Marine Park.

2.4 Summary of Approvals

The following table provides a summary of the approvals required for the Proposal. Council would be responsible for ensuring that all permits and approvals are obtained, either by Council or by others on behalf of Council, prior to commencement of the relevant works.

Table 2-4 Summary of Approvals and Requirements

Agency	Requirements	Reference
Eurobodalla Shire Council	Determination of the Proposal	Part 5 of EP&A Act
Heritage NSW	Aboriginal Heritage Impact Permit	Section 90 of NPW Act
Transport for NSW (TfNSW)	Approval for works within a classified roads and land	Section 138 of Roads Act 1993
Essential Energy	Consent/consultation for works within electricity (power supply) easement	N/A
Forestry Corporation of NSW	Occupation Permit for non-forestry land use (where tree removal is required within Benandarah State Forest) Authority/consent for construction works within Benandarah State Forest	Section 60 of Forestry Act 2012 Section 67 of Forestry Act 2012
DPE - Water	Approval for water supply works in State Forest Aquifer Interference Licence (if more than 3ML of groundwater is likely to be extracted per annum during construction works). Alternately, a water access licence exemption should be lodged with DPE- Water (NRAR) for aquifer interference activities taking 3ML or less of groundwater per year.	Section 91B(1) of the WM Act. Section 91F of the WM Act
EPA	Variation to STP EPL No. 1397 (if required for increased waste discharge or altered load limits)	Section 58 of the POEO Act
Private Landowners	Landowner/ occupier consent or notification for Council infrastructure works within private land/	Sections 191A(1) and 193 of LG Act

2.5 Consultation

A number of government agencies were consulted during the preparation of the REF. A list of agencies contacted, and a summary of their response is provided in Table 2-5 below. Copies of the responses received are provided in Appendix D.

Table 2-5 Agency consultation applicable to the transfer mains and SPS works

Agency	Summary of Comments	Addressed in REF
Roads and Maritime Services (RMS), now TfNSW	No response received.	N/A
Department of Primary Industries (DPI) Fisheries and Batemans Marine Parks (joint DPI Fisheries (Aquatic Ecosystems/Marine Operations response))	The responsibilities of DPI Fisheries include ensuring that; • Fish stocks are conserved and that there is no net loss of key fish habitats upon which they depend. To achieve this, DPI Fisheries ensures that developments comply with the requirements of the *Fisheries Management Act 1994* (FM Act) and ensuring the sustainable management of commercial, recreational and Aboriginal cultural fishing, aquaculture and marine protected areas within NSW. • Within marine parks marine biological diversity and marine habitats are conserved and ecological processes are maintained. With regard to land use planning and approvals the Department ensures that development activities comply with or are consistent with the requirements of the *Marine Estate Management Act 2014*, *Marine Estate Management Regulation 2017* and the *Marine Estate Management (Management Rules) Regulation 1999*. The potential impacts of the proposal on the aquatic habitats and fish communities in the Clyde River, its associated tributaries and wetlands during construction works and in particular the ongoing operation of the reticulated sewer system and sewage pump stations are of interest to this Department in relation to this proposal.	Noted. Section 2.2.13, 5.3 and 5.4 Noted. Section 2.2.14, 5.3 and 5.4 Noted. Works would not occur within the Clyde River or wetland areas. Third order tributaries or above would be underbored.

Agency	Summary of Comments	Addressed in REF
	Comments • DPI Fisheries supports the transition of coastal towns from septic to reticulated sewerage systems. The use of previously disturbed areas for the location of infrastructure is encouraged. • With respect to crossing the Clyde River DPI Fisheries understands that the required infrastructure will be attached to the new Nelligen bridge - DPI Fisheries supports the use of existing infrastructure for waterway crossings. • When installing underground infrastructure, where there is no existing infrastructure, DPI Fisheries supports the use of underboring of 3rd order or above waterways. Where underboring or existing infrastructure is used a permit for dredging and reclamation will not be required, provided adequate riparian buffers of at least 10m are maintained.	Noted Design has changed - Clyde river crossing has been underbored. Section 5.4 Noted, 3rd order or above waterways will be underbored – Sections 5.3 and 5.4
	The Review of Environmental Factors (REF) for the proposed development should include information on the following: • Location of works • Description of works to be undertaken, including proposed methodology. • Description and condition of riparian and aquatic habitat located within or adjacent to the footprint. • Analysis of any interactions of the proposed works with aquatic environments, riparian habitats and water quality, including downstream.	Section 4 Section 5.4 Section 5.3, 5.4

Agency	Summary of Comments	Addressed in REF
	• Analysis of potential effluent overflow impacts on aquatic environments, riparian habitats and water quality on adjacent waterways including downstream. • Safeguards to mitigate any construction impacts upon aquatic environments, riparian habitats and water quality. • Safeguards to mitigate any operational impacts upon aquatic environments, riparian habitats and water quality. • Potential impacts on any aquatic threatened species, populations and ecological communities listed under the *Fisheries Management Act 1994* and safeguards to mitigate any potential impacts.	Section 5.3, 5.4 Section 5.3, 5.4 Section 5.4 Section 5.4
	Approvals • Dredging and reclamation. Any dredging or reclamation in a waterway (below the high bank) (e.g. pipeline crossings) will require approval from DPI Fisheries. • Removal or movement of Large Woody Debris (snags) or boulders. Works that involve removal or movement of large woody debris or snags require approval from DPI Fisheries. • Works within a habitat protection zone. Should any of the proposed works occur below the mean high water level a permit under Cl 1.16 (2)(a) the *Marine Estate Management (Management Rules) Regulation 1999* will be required	Section 2.4 and Section 5.4 Pipeline crossings of 3rd order or above waterways will be underbored. N/A N/A- works would not take place

Agency	Summary of Comments	Addressed in REF
		within habitat protection zone
	A copy of the REF is requested to be provided to DPI Fisheries for review and comment.	To be considered by ESC
Office of Environment and Heritage (OEH) – Now DPE-Environment and Heritage including National Parks and Wildlife Service (NPWS)	**OEH – 16/11/17** The REF should comprehensively cover the potential direct and indirect impacts of the proposal on flooding, water quality, impacts in river/estuary health, biodiversity and Aboriginal cultural heritage. **NPWS - 30/04/18** An Aboriginal Cultural Heritage Assessment (ACHA) report will be produced for the proposal. The ACHA report will consider the geotechnical report as well as the construction works for the rising main. This ACHA and the need for any formal Aboriginal Impact permit (AHIP) to be issued under the *NPW Act 1974* should be referred to South East Regional Operations Division at the Office of Environment and Heritage Office (now Heritage NSW). For the main project of the pipelines an REF should be prepared to carry out the environment assessment required under *Part* 5 *of the EP&A Act 1979.*	Section 5.3, Section 5.4 and 5.6
Environment Protection Authority (EPA)	<u>Water pollution – overflows from new pumping systems</u> For new reticulation systems, EPA considers that a combination of design, construction, contingency planning and long-term maintenance should result in a system where overflows occur only in exceptional circumstances. Accordingly, the REF must demonstrate that the reticulation system would be designed and constructed so that: • Overflows from the reticulation system do not occur as a result of a failure to operate and maintain any part of the system in a proper and efficient manner.	Section 4.4

Agency	Summary of Comments	Addressed in REF
	• There is no pollution of waters as a result of sewage overflows from new sewage pumping stations in dry weather. • Wet weather overflows from the reticulation system are minimised. It is also important that new sewerage reticulation developments are designed to allow for extensions to the reticulation system which would not adversely affect the performance of the existing system. The REF should demonstrate that the licensee has in place procedures to ensure the appropriate construction, inspection and testing of the new system components. The REF must demonstrate that the design and operation of the proposal is consistent with the document "Licensing Guidelines for Sewage Treatment Systems" (NSW EPA, 2003). <u>Water Pollution - General</u> The EPA considers that particular care and attention must be placed in the design and operation of the proposal as the receiving waters, the Clyde River, form part of the environmentally sensitive and high conservation value Batemans Marine Park. The EPA also considers that through appropriate environmental assessment and planning, and the implementation of best management stormwater and sediment and erosion control practices, maximum protection of water quality can be achieved. Sediment and erosion control management must be carried out to ensure that any discharge from the site complies with Section 120 of the POEO Act. The environmental assessment should present all of the pollution control measures employed at the site (such as sediment curtain placement etc), any operational procedures, any operational procedures that would be required to prevent the pollution of waters and must also demonstrate that the measures are consistent with the 'Blue Book'. <u>Waste</u> Any waste generated during the project should be assessed in accordance with the Waste Classification Guidelines (EPA, 2014). Any waste that cannot be re-used or recycled must be transported to a place that can lawfully accept such waste for disposal in accordance with the POEO Act and the *POEO (Waste) Regulation 2014.*	Section 2.2.7, 4.4, 5.3 Section 5.3

Agency	Summary of Comments	Addressed in REF
	Noise Pollution Noise generated during the construction phase of the project must be managed in a manner consistent with the principles stated in the NSW Industrial Noise Policy (NSW EPA, 2000). The amenity of residents adjacent to the site must be considered. Air Pollution (including dust) The management of dust around the construction sites and premises once operational is required to reduce the potential for the pollution of waters or impact on amenity of adjacent residents. General Information – Construction Activities The EPA emphasises that the proposal area is within the Batemans Marine Park. In this regard, all activities must be carried out with due diligence, duty of care and in accordance with best management practices. The proponent must be aware of the strict liability provisions of the POEO Act, particularly section 120 of the Act which prohibits the pollution of waters. In this regard, all personnel involved in the works for the proposal should be aware of the details of the works plans, legislation and associated pollution controls and the environmental sensitivity of the receiving waters before any works commence.	Section 5.11 Section 5.8 Section 5.9 Section 5.3
NSW Forestry Corporation (FCNSW)	**November 2017** FCNSW has no in principle objections to any of the proposed works associated with the Nelligen Water Supply and Sewerage Scheme but there is a need to follow due process if steps have not already been taken to do so. FCNSW noted that: • Any flora and fauna, and cultural heritage investigations/assessments/etc. on State forest require the proponent to apply for a Research Permit (online on FCNSW website - http://www.forestrycorporation.com.au/about/permits) and subsequent conditional approval	Noted

Agency	Summary of Comments	Addressed in REF
	from Forestry Corporation (FCNSW). There is no fee associated with this process. A key condition of all Research Permits is providing the results to FCNSW. • For any other works/operations/investigations on State forest the entity undertaking this work require an authority letter from FCNSW' to enter State forest for this purpose. • While it would seem the most practical solution to traverse the Benandarah SF within the existing power supply easement, the current easement holder should be consulted to confirm their concurrence to this proposal to ensure that there will be no easement use conflicts. **July 2022** FCNSW advised that Level 2 permit would be required for works requiring ground disturbance and tree removal within uncleared areas of Benandarah State Forest. A timber assessment would be undertaken by FCNSW to determine the value of timber to be cleared for the works and applicable permit fee. A copy of the REF should be provided to FCNSW for review and approval of works within Benandarah State Forest prior to the commencement of work.	Noted Section 2.2.16,2.4 and 5.2 Section 2.4 and 5.2
Essential Energy	Essential Energy's records indicate there is electricity infrastructure located in close proximity to the proposal. Any activities must be undertaken in accordance with the latest industry guideline currently known as *ISSC 20 Guideline for the Management of Activities within Electricity Easements and Close to Infrastructure*. Given there is electricity (power supply) infrastructure in the area, it is the responsibility of the person/s completing any works around powerlines to understand their safety responsibilities. The *Code of Practice – Work near Overhead Power Lines/Underground Assets* provides guidance when working close to electricity infrastructure.	Section 5.2 and 5.14 Section 2.3

3 Need for the Proposal

This section provides the need and justification for the Proposal.

The village of Nelligen is currently served by rainwater tanks for its potable water supply and on-site sewerage systems for its wastewater services. ESC is proposing to provide reticulated potable water supply and sewage collection and transfer systems to improve the quality, security and reliability of the water supply and wastewater management services for the Nelligen village.

The construction of the water supply and sewerage scheme infrastructure including the village reticulation networks, trunk mains and SPS and village reticulation works which form part of the Nelligen water supply and sewerage scheme would be carried out as three separate packages of works. The village reticulation network and reservoir works are subject to a separate approval and are not assessed within this REF.

3.1 Option Assessment

The Nelligen Water and Sewerage Strategic Options Report (PWA, 2016) considered options for the implementation of reticulated water services for Nelligen.

The two potential options for provision of water supply to Nelligen included:

- Option 1 – Extract and treat water from the Clyde River.
- Option 2 – Connect to the Existing Bateman's Bay Water Supply System.

The two potential options for provision of a reticulated sewerage system to Nelligen included:

- Option 1 - Sewerage Collection System - Sub-options for the provision of a collection system included either a gravity based sewage collection system, a pressure-based system or a hybrid system including both pressure and gravity-based collection methods.
- Option 2 - Sewage Treatment and Effluent Management - The sub-options for treatment included a small STP at Nelligen or transfer back to the Batemans Bay system via a booster SPS. Effluent management options briefly considered included release to the Clyde River, onsite irrigation) or transfer to Batemans Bay.

3.1.1 Preferred Options

Water Supply System

Option 1 was discounted as water from the Clyde River at Nelligen has high salinity and would require the construction and operation of a reverse osmosis plant to treat the water to satisfy the Australian Drinking Water Guidelines (ADWG) water quality requirements. This option would involve a high capital cost and require the construction of significant power supply infrastructure, land acquisition, high operation and maintenance requirements, and ongoing management and disposal of a highly concentrated brine effluent stream.

Option 2, consisting of the construction of a new water supply reservoirs at Bay Ridge and Nelligen, was therefore identified as the preferred solution. This option also comprises a new pipeline between Batemans Bay and Nelligen along the Kings Highway and under the Clyde River for connection to a new water reticulation network in the village.

Sewerage Scheme

A hybrid of the two options was selected for the sewerage scheme. The preferred option included a pressure sewer collection system for the village, where each property would be provided with a pressure pump unit in its own small tank. Sewage would be transferred via a rising main for treatment at Council's existing Batemans Bay STP. This option involved pumping wastewater from Nelligen to an existing SPS at North Batemans Bay via a new booster SPS at Nelligen.

Due to a number of factors including a lack of available land downstream of the town and the high environmental sensitivity of the Clyde River, which has oyster leases downstream, local treatment and discharge to the river was not favoured.

Local treatment with onsite irrigation would have required ESC to purchase significant land to site an STP and irrigation system, as well as provide sufficient buffer to surrounding properties and there would still be the need to discharge into the Clyde estuary when it was not feasible to irrigate land. As transfer back to Batemans Bay was an available option, this option was not favoured.

4 Description of the Proposal

This section provides a description of the Proposal which is assessed in this REF.

4.1 Overview of the Proposed Works

The Proposal works include the provision of potable water supply and sewerage scheme transfer mains and a new SPS for the village of Nelligen.

Potable water would be provided to Nelligen by connecting to the existing Eurobodalla water supply scheme via a transfer main to Nelligen.

The provision of the new sewerage scheme to Nelligen would involve a new transfer main to the existing Batemans Bay sewerage system via a new SPS at Nelligen and a new transfer main to SPS BB08 located at North Batemans Bay.

4.1.1 Water Supply System

The following infrastructure components would be constructed for the water supply scheme as part of the Proposal works:

- A 6.6 km long DN160 mm or DN250 diameter HDPE gravity pressure pipeline along the Kings Highway from Bay Ridge Estate subdivision to Nelligen reservoir (predominantly located within a cleared power supply line passage/easement),
- Associated scour pits, air valves, stop valves, hydrants, non-return valves etc.

4.1.2 Sewerage System

The proposed sewerage scheme infrastructure would include the following as part of the Proposal works:

- An 8 km long DN125 or DN110 diameter HDPE gravity transfer rising main along the Kings Highway (predominantly located within a cleared overhead power supply passage/easement) to North Batemans Bay with associated air valves, scour valves and a new standpipe (4 m high with filter and fan unit) at the existing SPS BB08 site,
- A Sewage Pump Station (SPS) in Nelligen.

The water and sewer transfer mains crossing of the Clyde River at Nelligen have been installed via directional drilling as part of the new Nelligen Bridge works which have been undertaken by TfNSW contractors under a separate construction works project. The pipes were installed at the same time as other services connections for the town within the scope and footprint of the TfNSW construction works for the new Nelligen Bridge and is therefore, outside the scope of the proposed works by the construction contractor for this Proposal.

4.2 Population and Design Loading

4.2.1 Design Criteria

The following design criteria has been adopted for the water and sewerage scheme:

- Peak occupancy rate of 3.5 Equivalent Persons (EP) per tenement for residential tenements and 4 for non-residential tenements

- Peak Day Demand for water of 1200 Litres(L)/Equivalent Tenements(ET)/day(d) and Peak Instantaneous Demand of 0.10 L/second
- Minimum water pressure required at property connection is 20 m, and maximum static head is 80m.
- Sewage load per EP of 180 L/d

4.2.2 Design Flows for Water Supply

The design flows for the water supply system are the Peak Day Demand (PDD) which is used for sizing of the transport system including the Nelligen reservoir and the Peak Instantaneous Demand (PID) which is used for the sizing of the village reticulation system. Design demands for the Proposal are shown in Table 4-1 below.

Table 4-1 Design Flows – Water Supply

Lot Type	ET	PDD (kL)	PID (L/s)
Current			
Residential	138	165.6	13.8
Non Residential - Hotel	12	14.4	1.2
Non Residential – Caravan Park	45	54	0.6*
Non Residential – Motel	8	9.6	0.8
Total	**203**	**243.6**	**16.4**
Ultimate			
Residential	175	210	17.5
Non Residential - Hotel	12	14.4	1.2
Non Residential – Caravan Park	45	54	4.5
Non Residential – Motel	8	9.6	0.8
Non Residential - Future	60	72	6
Total	**300**	**360**	**30**

4.2.3 Design Flows for Wastewater

Anticipated sewage flows as calculated for Nelligen for the Proposal are as shown in Table 4-2 for the gravity transfer sewer system (village pressure sewer system (PSS)).

Table 4-2 Design Flows – Wastewater

				PSS	Gravity System	
Lot Type	**ET**	**EP (peak)**	**ADWF (L/s)**	**PDWF (L/s)**	**SA**	**PWWF (L/s)**
Current						
Residential	138	483	1.01	3.02	6.07	9.09
Non Residential – Hotel	18	72	0.15	0.45	0.06	0.51
Non Residential – Caravan Park	68	272	0.57	1.40	2.03	3.73*
Non Residential – Motel	12	48	0.10	0.30	0.06	0.36
Total	**236**	**875**	**1.82**	**5.17**	**8.22**	**13.69**
Ultimate						
Residential	175	612.5	1.28	3.83	7.70	11.53
Non Residential – Hotel	18	72	0.15	0.45	0.06	0.51
Non Residential – Caravan Park	68	272	0.57	1.40	2.03	3.73*
Non Residential – Motel	12	48	0.10	0.30	0.06	0.36
Non Residential – Future	27	108	0.23	0.68	0.06	0.74
Total	**300**	**1113**	**2.32**	**6.66**	**9.90**	**16.87**

Note: ADWF – average dry weather flow, PDWF - peak dry weather flow, PWWF - peak wastewater flow, SA- storm allowance

4.3 Water Supply System

4.3.1 Water Rising Main

A new approximately 6.6 km long, 125 mm water transfer main would be required to transfer water from the new Bay Ridge Estate subdivision to the connection point at the new Nelligen service reservoir (and then connect with the Nelligen village water supply reticulation mains after crossing under the Clyde River).

The proposed rising main would be a 160 mm diameter PE100 SDR 11 (PN16) HDPE pipe which would transfer water between the Bay Ridge Estate subdivision, terminating at the Nelligen reservoir site. A connection pipeline to the new Nelligen water supply reticulation network would be established from the Nelligen reservoir, crossing Kings Highway crossing near the intersection of Old Nelligen Road (comprising a 250 mm diameter HDPE pipe).

The transfer main route is approximately 6.6 km long. The general route is shown in Figure 1-2, and survey plans of the alignment are provided in Appendix E.

The rising main would predominantly follow an overhead power supply easement alignment located adjacent to the Kings Highway between Bay Ridge Estate subdivision and Old Nelligen Road, where it would then connect with the Nelligen reservoir site via a new transfer main along

Old Nelligen Road. Construction would generally be by open trench method, except for the directional drilling (underboring) crossings under the Kings Highway, Princes Highways, private land and at waterway crossings.

The rising main would generally be in an approximately 1.25 m deep and 0.5 m wide trench within an approximately 5 m wide clearing corridor. The rising main alignment and directional drilling set up areas would take advantage of cleared areas in the power supply easement and surrounding land such that the vast majority of the alignment would not require the clearing of any native vegetation. However, minor vegetation clearing would be required for some small sections of the pipeline. Scour valves and air valves would be incorporated at intervals along the rising main.

4.4 Sewerage Scheme

4.4.1 Sewer Rising Main

A new approximately 8 km long, 125 mm or 110 mm PE160 SDR 11 (PN16) HDPE sewer rising main would be constructed from the new SPS at Nelligen then conveys sewage to BB08 SPS in North Batemans Bay. The main would extend along an overhead power supply easement adjacent to the Kings Highway through the Bay Ridge Estate subdivision residential development area and North Batemans Bay to the existing SPS (BB08).

A new approximately 4 m tall sewer vent standpipe and package type odour filter and fan unit ('mcbern' model zc 300 (or similar)) would be constructed at the BB08 SPS site adjacent to the existing pump station building in a previously disturbed, grassed area. . An indicative design for the vent pipe is shown in Figure 4-1. A 1.8m high chain link mesh security fence would be installed around The new standpipe and associated odour and fan unit to prevent unauthorised access.

Construction of the pipeline would generally be via the open trench method, except for the directional drilling (underboring) crossings under the Kings Highway, private land, within the Bay Ridge Estate, waterway crossings and in North Batemans Bay around Surfside Oval to the SPS.

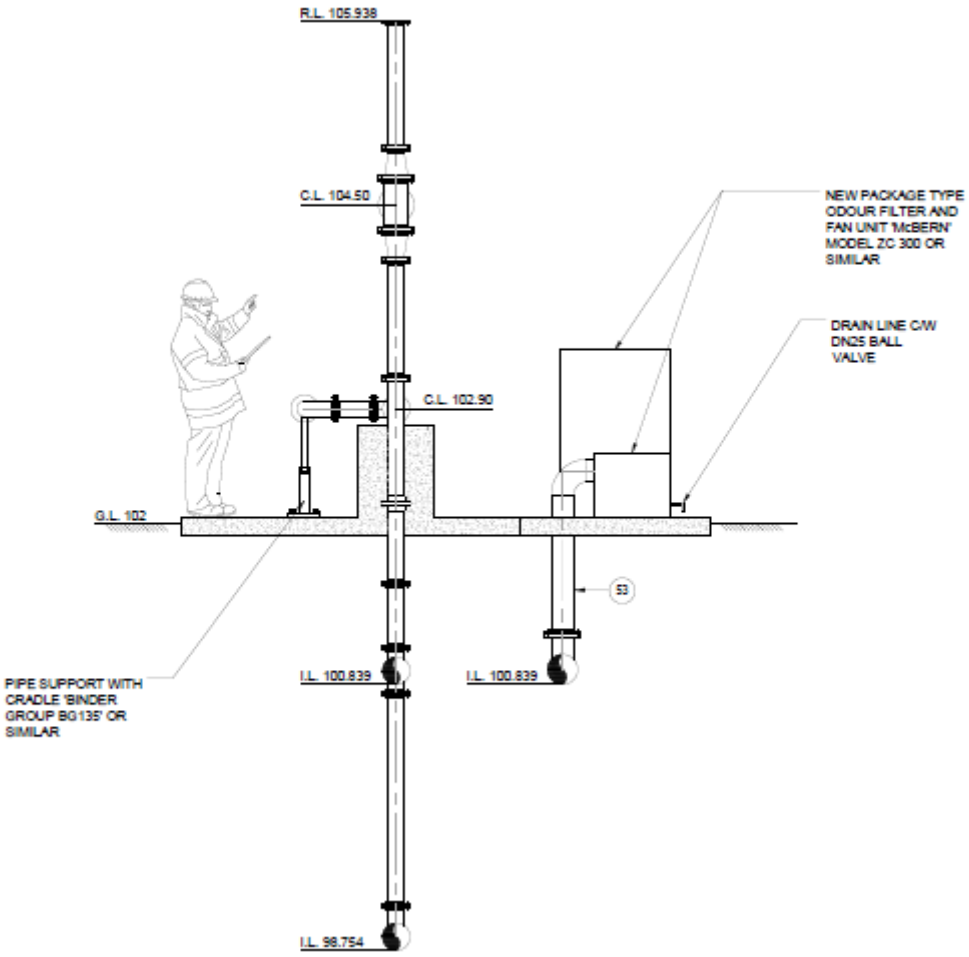


Figure 4-1 Indicative standpipe vent arrangement to be located at BB08 SPS site.

Source: PWA, 2022

4.4.2 Sewage Pump Station

Transfer of sewage for treatment at Council's existing Batemans Bay STP will require pumping from Nelligen to North Batemans Bay. The nearest connection point is an SPS (BB08) in North Batemans Bay which is 8 km away from Nelligen. Due to the relatively low flows and the high head required to pump over the ridges between Nelligen and Batemans Bay, a transfer SPS would be required.

A new SPS is therefore proposed, to be located on the corner of Bridge View and Thule Roads in Nelligen, partially within Lot 1 DP 119109. The location and layout of the SPS is shown in Figure 4-2 and Figure 4-3 respectively. A copy of the SPS plans is provided in Appendix E.

The SPS would comprise a brick building (12.5 m x 9 m) with Colorbond roof to house pump units; associated chemical dosing and storage equipment (approx. 3 m dia. tank); odour control equipment; new transformer and associated electrical equipment (e.g. generator, air conditioning, electrical Switchgear & Control Gear Assembly (SCA)), an emergency shower /eye wash unit; and external above ground reinforced concrete wet well / storage tank (including 1.8 m DIA x 3 m deep wet well and emergency storage tank approx. 7.6 m DIA x 3

m deep). The SPS infrastructure would be surrounded by a 1.8 m high chain link mesh security fence.

System Overflows and Emergency Storage

System overflows can principally occur due to four main causes:

- Power/mechanical failure at a pump station.
- Reticulation system blockage/leakage.
- Rising main break/failure.
- Excessive system inflows which exceed the capacity of the system.

Unusual excessive inflows, greater than the design peak wet weather flow may occur during extreme flood events resulting in overflows, if the capacity of the transfer main delivering flows to a pump station is greater than the station capacity. In order to minimise the potential for overflows, a sewerage system must have sufficient capacity to store sewage, which continues to flow from a catchment during extended mechanical breakdowns, electrical failures or blockages of sewer mains. To avoid this and minimise the pumping requirements, the reticulation system will be a low pressure system that significantly reduces wet weather inflow.

ESC policy is to provide 8 hours emergency storage at average dry weather inflow. There is approximately 80 kL storage available within the wet well emergency storage tank and as such, no separate emergency storage structure is required.

Septicity and Odour Control

As the SPS is located in close proximity to surrounding residential dwellings, basic odour control is proposed.

Odour would be generated at the SPS when sewage is discharged into the SPS. Odorous gases would be treated to an acceptable level prior to discharge to the atmosphere.

A Ferrous Chloride system is proposed for odour control. Ferrous Chloride dosing can be undertaken by the installation of a small dosing pump and chemical storage container at the SPS site. Dosing would be directly into the wet well of the pump station at a fixed rate when pumping occurs. The proposed Ferrous Chloride dosing system would consist of:

- 1 x 7 kL (minimum) PE storage tank
- 1 x XIOM (Orica) ‘Bullet’ chemical dosing system (including pump, calibration tube, level sensing, flow monitoring, degassing heads, injection system)

Safety handling facilities and bunded storage for this chemical, which is classed as a Hazardous Substance (Corrosive 8) and Poison S5, should be as per the Material Safety Data Sheet provided by the chemical supplier. Provision of a safety shower and loading and unloading concrete pad is required as is appropriate worker protection and training for handling the material at each location where filling is conducted.

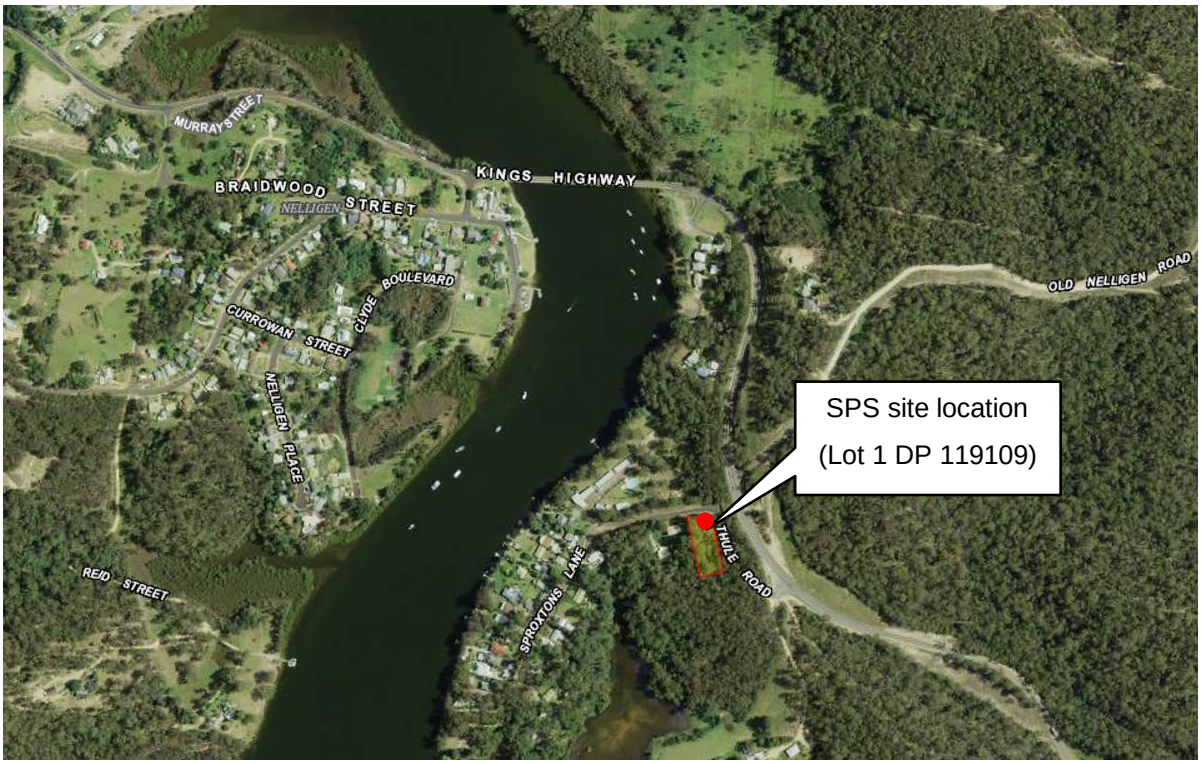


Figure 4-2 Site location of the proposed new SPS in Nelligen

Source: Six Maps, 2018

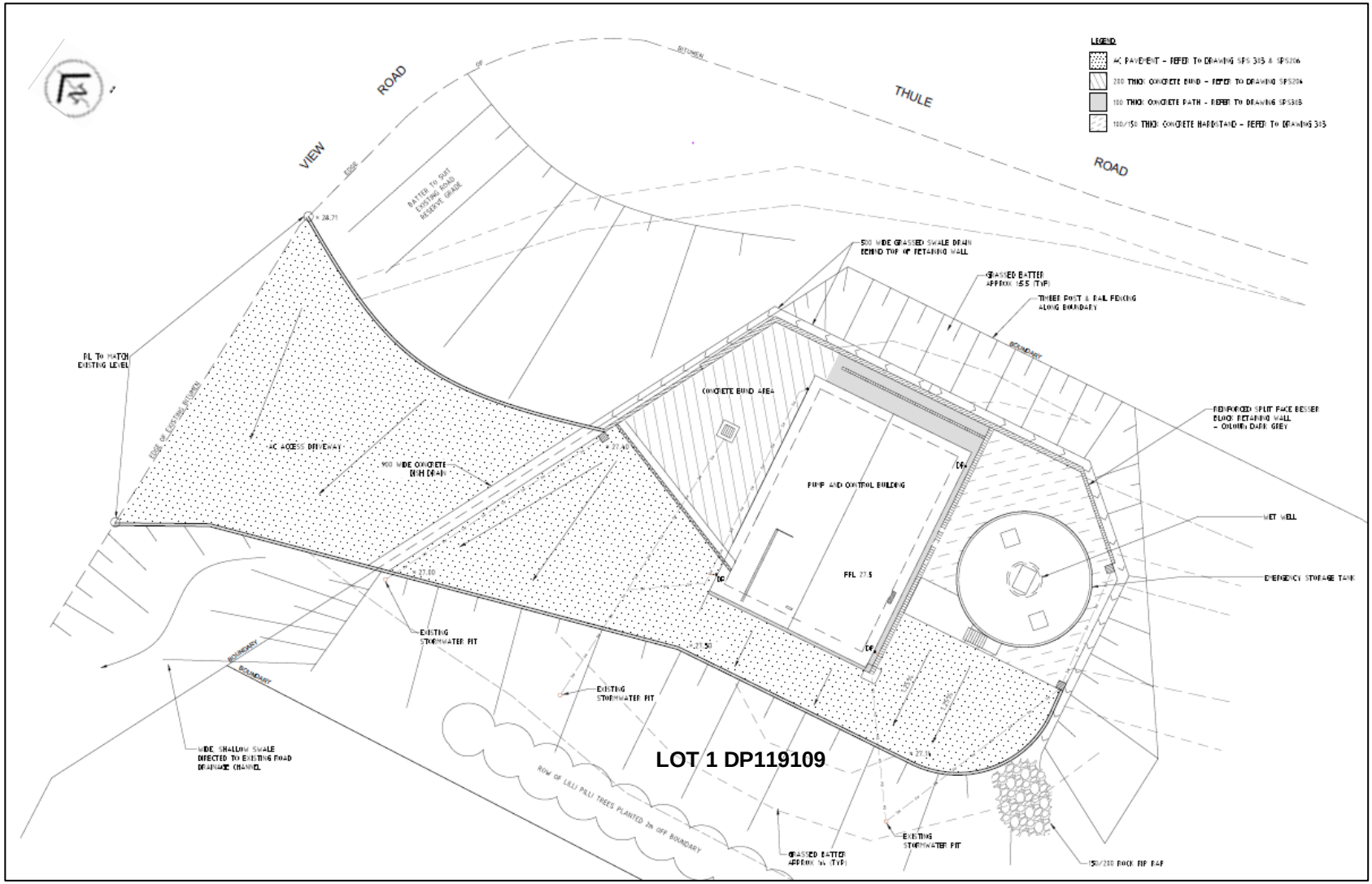


Figure 4-3 Proposed layout of Sewage Pump Station (refer to Appendix E for plan annotations)

Source: PSS, 2022

4.5 Construction Methodology

The proposed construction methodology would be dependent on several factors including the contractor's chosen method, equipment, and program. A construction methodology has been predicted based on previously constructed similar sized projects.

Works are anticipated to start early 2023 with a construction period up to 12months.

The general methodology for the Proposal works is likely to involve the following steps:

- Establish environmental and traffic controls
- Establish worker compound, storage and set down areas
- Clearing of groundcover/ vegetation (as required)
- Excavate trenches/wells
- Stockpile excavated topsoil separately
- Backfill using excavated soil and topsoil.
- Restore disturbed areas
- Remove environmental controls only once the site is stabilised

For those sections of the pipeline which would be underbored, a general construction sequence would generally be as follows:

- Establish environmental controls
- Set up boring machine and ancillary equipment in previously cleared/disturbed area
- Bore
- Commence pipe pull back process
- Test pipeline
- Remove drilling rig and ancillary equipment
- Dispose any excess drilling fluids and spoil
- Restore site

Generally, pipeline excavations should be readily achievable using conventional equipment such as a backhoe or excavator. A large hydraulic excavator may achieve depths of up to 1.5 m/2 m with occasional assistance from a rock breaker.

Restoration of disturbed surfaces to pre-construction condition would be undertaken for all ground disturbing works. Across 3rd order or above waterways, major roadways, private land, in the Bay Ridge Estate and in the North Batemans Bay area south of the Princes Highway, construction of transfer mains would be undertaken by directional drilling.

4.6 Construction Environmental Management

Construction of the Proposal would be undertaken in accordance with a Construction Environmental Management Plan (CEMP) that would be prepared by the construction

contractor/s and approved by ESC prior to commencement. The CEMP would incorporate all of the mitigation measures identified in this REF as well as management of the full extent of the works including any site compounds to be established for the construction works, any conditions of approval and any other licence/approval conditions. The CEMP would also incorporate an emergency response plan in case of a pollution incident, a complaints handling procedure and a 24-hour telephone contact number. The complete list of the mitigation measures recommended in this REF is provided in Section 6.

5 Environmental Assessment

This section identifies and characterises the existing environment, the likely potential impacts associated with the construction and operational phases of the Proposal and any associated mitigation measures. Where considered necessary, feasible mitigation measures are identified for implementation as part of the proponent's environmental management.

5.1 Assessment Methodology

The key objectives of this assessment are to:

- Identify those facets of the environment likely to be affected by the Proposal during construction and operation;
- Identify the sensitivity of the site;
- Identify and characterise the associated impacts; and
- Identify and evaluate feasible mitigation measures for the identified impacts.

Environmental issues of potential relevance to the Proposal include:

- Land use
- Geology, soils and water
- Biodiversity
- Bushfire
- Heritage (Aboriginal and historic)
- Noise and vibration
- Air quality
- Traffic and access
- Waste management
- Hazards and risks
- Visual amenity
- Utilities and infrastructure

5.2 Land Use

The new Nelligen SPS would be located within a previously cleared lot owned by ESC which is situated to the east of the Nelligen village on the eastern side of the Clyde River. The SPS site is located on the corner of Bridge View Rd and Thule Rd (part Lot 1 DP 755933), as shown in Figure 4-2.

The land tenure (indicative) for the land which the sewer and water transfer mains alignment traverses is provided in Table 1-1. The sewer rising main would commence at the SPS site and travel along the Thule Rd road reserve, crossing under the Kings Highway to the power supply easement located on the northern side of the Kings Highway. Several roads on the

eastern bank of the Clyde River at Nelligen including the Kings Highway, Thule Road and Bridge View Road are on land under TfNSW control.

The water main commences at the Nelligen reservoir site (ESC land - Lot 1 DP 1264985) and then traverses State forest and the Old Nelligen Road reserve in a southerly direction, then through road reserve land on the northern side of the Kings Highways to meet with the sewer rising main alignment. It then proceeds in an easterly direction and terminates at the new Bay Ridge Estate subdivision.

The water and sewer transfer mains would predominantly be located within a cleared overhead power supply easement which runs adjacent to the northern boundary of the Kings Highway. The easement begins on the northern side of the Kings Highway near where it traverses through the Benandarah State Forest, and several private lots to the intersection of Clyde Rd, at the location of the new Bay Ridge reservoir and Bay Ridge Estate subdivision. The sewer main would then continue from Bayridge Dr, North Batemans Bay where it would be installed within the Bayridge Dr road reserve. The sewer main then continues along Bayridge Dr through the recently developed Bay Ridge Estate, crosses under the Princes Highway and traverses the edge of Surfside Oval, adjacent to the creek line to the existing BB08 SPS, located at Mundarra Way, Surfside within Lot 3 DP 1044536.

Adjoining land uses along the pipeline alignment are varied and include National Park and State Forest, developed residential areas, public recreational space (oval) and waterways (refer to Figure 1-1 and Figure 1-2). The majority of the Proposal area is highly modified land that has been cleared of native vegetation and comprises a mix of exotic and hardy native groundcovers.

Overall, the Nelligen water supply and sewerage system transfer mains and SPS works area is generally disturbed due to previous residential and public infrastructure development impacts, and has been highly modified and cleared of native vegetation. Previous ground disturbance in the general Proposal area is likely to be variable, ranging from deep to shallow disturbance, with this area having experienced high levels of previous impact primarily in the form of overhead power line construction, road verge clearance, deep earthworks and trenching events, and residential construction within the Nelligen and North Batemans Bay areas.

5.2.1 Impact Assessment

The area of the proposed Nelligen water and sewer transfer mains and SPS works is subject to a number of land uses and ownership (refer to Table 1-1). Much of the sewer and water mains pipelines and ancillary works would be located within Council-owned road reserves and an existing power supply easement, with the SPS site located on Council-owned land. Works within Kings Highway, Princes Highways, Thule Road and Bridge View Road are under TfNSW control and therefore would require TfNSW concurrence prior to the commencement of works.

Some sections of the transfer mains would be located within Benandarah State Forest under the control and management of the Forestry Corporation of NSW (FCNSW) land. A Level 2 permit for non forestry land use including tree removal would be required from FCNSW within State Forest land. In addition, the REF should be provided to FCNSW and authority should be obtained from FCNSW for the pipeline construction works within cleared areas of State Forest land prior to the commencement of works.

Construction works associated with the proposed transfer mains may cause some temporary disruption to users/owners of adjoining private and public land, and to the residents and local road users along the alignment. Due to the temporary nature of the works and the relocation of works as the pipeline construction progresses along the alignment, these impacts are not anticipated to be significant, assuming implementation of the mitigation measures listed below.

The Nelligen SPS would be located adjacent to several residential properties and access to the site would be via Thule Rd. Therefore, the proposed works may have an impact on surrounding residents during construction works. However, the construction duration would be relatively short term and activity at the SPS site during operation would be associated with relatively infrequent scheduled maintenance activities.

Given the proper implementation of the mitigation measure provided in 5.2.2, the impact of the Proposal on land use is not expected to be significant.

5.2.2 Mitigation Measures

- Prior to commencement of construction activities, all necessary approvals, permits, licenses and agreements would be obtained from the relevant landowners/authorities.
- A permit (Level 2) would be required from the Forestry Corporation of NSW for tree removal within State Forest. For any construction works or operations on cleared State Forest land, the REF should be provided and approval would be required from the Forestry Corporation of NSW for works within State Forest, prior to the commencement of construction works.
- Consultation would be undertaken with affected landowners or the community for the potential impact on land uses during construction and any safeguards or mitigation measures that need to be implemented during the works.
- No construction activities (e.g. tree clearing, stockpiling etc.) would be undertaken on property adjoining the works areas without prior notification to or approval of the landowner.
- Appropriate security (including temporary fencing), supervision and access controls would be put in place and properly monitored to ensure no access by unauthorised personnel, either to the work area or via the work area to adjoining areas. This should include appropriate measures for the protection of the public where construction works would adjoin areas subject to regular use by the general public.
- The contractor would be required to ensure the necessary care and maintenance of property facilities and operations. However, if any damage does occur to property it would be restored to a condition equivalent to the original condition.
- As operator of the water and sewage reticulation infrastructure, ESC should provide a 24-hour telephone number so that any issues relating to the operation of the new infrastructure can be clarified and complaints dealt with by those able to respond.

5.3 Geology, Soils and Water

The following description of the Proposal area is taken from the geotechnical assessment carried out by PW for the Project.

Regional Geology

The Ulladulla 1:250,000 Geological Series Sheet SI 56-13 (First Edition, 1966) indicates that majority of the Proposal area is located within an undifferentiated sequence of sedimentary and meta-sedimentary rocks. The sequence is Ordovician in age and comprises siltstone, claystone, sandstone, quartzite and chert. The soil profile is generally thinly developed over the bedrock.

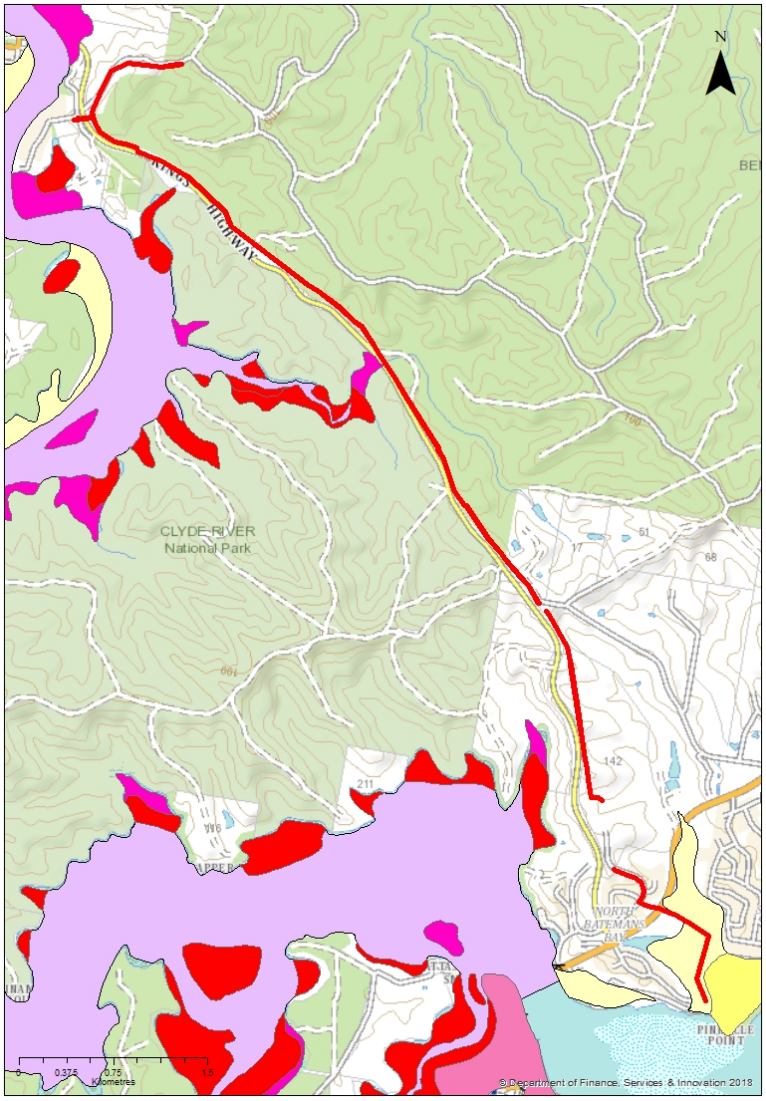
The exceptions to the above is at the junction of the Kings Highway and the Princes Highway, where there is a build-up of undifferentiated, Quaternary valley fill comprising silt, clay, fluvial sand and gravel; and the concluding section of the sewer main (approaching SPS BB08) where the alignment traverses Holocene tidal-delta flat and the sediments comprise marine sand, silt, clay, shell and gravel.

Acid Sulfate Soils

The Nelligen 1:25,000 Acid Sulfate Soil (ASS) Risk Map (Edition 2, December 1997) (See Figure 5-1) shows some minor areas of ASS risk.

The southern section of the sewer rising main alignment skirting Batemans Bay Public School and approaching SPS BB08 also has a low probability of occurrence of ASS within 1 metre of the ground surface. The map shows that ASS are not expected to occur in these areas; however, highly localised occurrences may be found. The area of low probability of ASS risk is an estuarine plain landform with an elevation of between 1m and 2m AHD.

The remainder of the Proposal area is shown as having no known occurrence of ASS under the map class description.



Map Class Description	Depth to Acid Sulfate Soil Materials	
HIGH PROBABILITY High probability of occurrence of acid sulfate soil materials within the soil profile. The environment of deposition has been suitable for the formation of acid sulfate soil materials. Acid sulfate soil materials are widespread or sporadic and may be buried by alluvium or windblown sediments.	Below water level	Bottom sediments.
		At or near the ground surface.
		Within 1 metre of the ground surface.
		Between 1 and 3 metres below the ground surface.
		Greater than 3 metres below the ground surface.*
LOW PROBABILITY Low probability of occurrence of acid sulfate soil materials within the soil profile. The environment of deposition has generally not been suitable for the formation of acid sulfate soil materials. Soil materials are often Pleistocene in age. Acid sulfate soil materials, if present, are sporadic and may be buried by alluvium or windblown sediments.	Below water level	Bottom sediments.
		At or near the ground surface.
		Within 1 metre of the ground surface.
		Between 1 and 3 metres below the ground surface.
		Greater than 3 metres below the ground surface.*
NO KNOWN OCCURRENCE Acid sulphate soils are not known or expected to occur in these environments		No known occurrences of acid sulfate soil materials.

Figure 5-1 Extract of Nelligen Acid Sulfate Soils Risk Map

Source: Department of Land and Water Conservation, 1997

Water and Flooding

Some sections of the Proposal area are located in the vicinity of the Clyde River, Sheep Station Creek and Batemans Bay which form part of Batemans Marine Park. The proposed works are also located in a proximity area for coastal wetlands in several locations south of Nelligen along the Kings Highway and in North Batemans Bay near Surfside Oval (see Figure 2-5).

The Proposal area encompassing the SPS site and transfer mains pipeline alignments including the BB08 site, are not identified as being located within flood planning areas based on ESC flood planning mapping. Therefore, impacts associated with flooding during construction or operation of the Proposal are not anticipated.

Groundwater

The groundwater depth in the proposed works was investigated as part of the geotechnical investigation. Outcomes of the groundwater investigation are summarised below.

- Groundwater was not encountered within the depths of investigation the SPS site.
- For the majority of the transfer/rising main alignments, groundwater was not encountered within the depths of investigation. However, in a hand augered borehole that was located on the banks of Sheep Station Creek, groundwater was encountered at a depth of 0.2 m.
- In the boreholes that were drilled along the section of the alignment skirting Batemans Bay Public School and approaching SPS BB08, groundwater was encountered at depth ranging from 1.3m to 1.8m.

5.3.1 Impact Assessment

The construction of the Proposal would result in ground disturbance due to excavation required for the installation of the water and sewer transfer rising mains, the SPS and the underboring activities. The trenches for the installation of the mains would be approximately 1.25 m deep and 0.5 m wide and within an approximately 5 m wide clearing corridor. It is noted that this is a conservative assumption based on open trench construction methodology. The contractor may offer an alternative construction approach utilising underboring for sections of the transfer mains, where required.

The excavation and ground disturbing activities proposed to be undertaken during construction (including underboring drilling, open trenching and ground levelling) have the potential to cause erosion and sedimentation if excavated materials are transported off-site. Therefore, construction erosion and sediment controls and stabilisation following the works would be required for activities in these areas to prevent any impacts off-site, including sedimentation of drainage lines and waterways. It should be noted that although a number of mitigation measures to protect water quality have been listed in this REF, further site specific plans and construction details would be included in the CEMP (including an Erosion and Sediment Control Plan (ESCP)) when specific details regarding the construction methodology is known. Although a substantial volume of earthworks are proposed, it is assessed that the impacts can be adequately managed through the implementation of appropriate mitigation measures and therefore the overall impact is assessed to be low.

The Proposal involves directional drilling (underboring) that would traverse waterways, private land, some roadways including the King Highway and Princes Highway, the Bay Ridge Estate

and the Surfside Oval area at North Batemans Bay. Bentonite, used to transport the cuttings, cool the drill bit and to seal and support the drilled hole is likely to be used which would generate a slurry. Bentonite is a naturally occurring clay which is self-sealing and therefore used as a lining material to seal any cracks which may result from the drilling process. The use of drilling fluid could potentially result in soil erosion and waterway contamination if it is not contained onsite. Drilling fluid would be recirculated and therefore any loss of fluid would adversely affect drilling operations and would be immediately apparent to the drilling rig operators via a loss in pressure and fluid ceasing to be pumped to the drill-head. Appropriate management measures would be implemented to ensure drill waters are appropriately recycled and contained onsite such as through the use of holding tanks.

The proposed drilling has been designed such that the entry and exit points of the drilling would either be beyond the limits of Marine Park land, mapped Resilience and Hazards SEPP coastal wetlands, outside or within highly disturbed areas, such as road reserve or along the power supply easement that do not support wetland vegetation. Therefore, disturbance to wetlands or the bed or banks of the Clyde River or Sheep Station Creek is not anticipated during the construction works. Drilling, if correctly applied, should have minor to no impact on estuarine vegetation, water quality or drainage patterns. Settling of sediment and low scale vibration may result in some highly localised turbidity directly over the proposed route. This should be of a minor scale and temporary in nature. The drilling should be designed to minimise the potential for interactions with the bottom sediments of the watercourses by specifying a minimum bore depth at least 5 m below the bottom sediments, or whatever is the sufficient depth, as indicated by a geotechnical assessment.

Some water runoff is necessary during the drilling process; however, by-product sludge is normally removed from the site with the use of a vacuum sucker truck. There is potential for the drilling to encounter acid sulphate soils (ASS) in North Batemans Bay. Any ASS that are encountered should be removed via a vacuum sucker truck. The site where the sludge is disposed of would require bunding and appropriate treatment until the sludge is considered to be safe for disposal or re-use. The proponent or the drilling contractor should be required to prepare sediment control and potential acid sulphate soil management plans. It is anticipated that ESC has designated disposal areas for drilling sludge at their sewage treatment plants, which could be utilised for appropriate disposal of drilling waste. This would be confirmed by ESC.

In addition, as part of the construction process, the water supply transfer main would be required to be disinfected with chlorinated water. To manage the wastewater from this procedure, the contractor would prepare a management plan for the disposal of the chlorinated water from water mains to avoid any potential impact on nearby waterways.

Mitigation measures listed in Section 5.4.2 of this REF for protection of aquatic habitat would assist to minimise any adverse impacts to water quality, including water courses, wetlands and the Batemans Marine Park, as a result of these works. Appropriate mitigation measures would also be implemented in the event of accidental spills of fuel and other materials from vehicles and machinery.

Groundwater

The groundwater depth in the proposed works area has been established as part of geotechnical investigations undertaken by PW, with groundwater management required as

follows. In general, the geotechnical investigation indicates that groundwater is not expected to be encountered in areas where meta-sedimentary bedrock was encountered at shallow depth. In lower-lying areas in North Batemans Bay, where deeper Holocene or Quaternary sediments were encountered, groundwater is expected at depths ranging from say 1 m to 2 m below existing surface levels, based on the program of borehole drilling.

Depending on groundwater depth, dewatering may potentially be required during construction works, particularly if the construction is preceded or carried out during prolonged wet weather periods.

Where groundwater is encountered during the construction works, it would need to be managed so that it does not result in pollution, including sedimentation, of any local waterways. Groundwater devoid of sediment or contaminants would be disposed of in a way that does not cause erosion.

If groundwater is encountered during the works, dewatering, settling, treating and filtering techniques would be required to be implemented. If it is anticipated that more than 3 ML of groundwater would be extracted in the course of construction works, an aquifer interference approval would be required from DPE - Water prior to the commencement of construction works. However, it is anticipated that less than 3 ML of groundwater in total would be extracted during the works. As such, it is recommended that the volume of water extracted during the course of the works each day should be recorded and an aquifer interference activity exemption should be lodged through DPE - Water (NRAR) by the construction contractor on behalf of the proponent (Further information on groundwater aquifer exemption requirements is available at https://www.dpie.nsw.gov.au/nrar/how-to-apply/water-licences/Groundwater).

Assuming appropriate safeguards and mitigation measures are implemented, the Proposal is not anticipated to contribute to a cumulative adverse impact on groundwater. If dewatering is required, groundwater devoid of sediment or contaminants would be disposed of in a way that does not cause erosion. Groundwater may need to be suitably settled (i.e. using baffle tanks or similar) or filtered prior to being dispersed of over vegetated ground surfaces.

Construction works for the SPS is not located in close proximity to any watercourses and would comprise excavation for footings and the wet well. However, no adverse impacts to water quality are anticipated due to the works, as groundwater was not encountered within the depths of investigation at the SPS site.

Acid Sulfate Soils

The Nelligen Acid Sulfate Soils Risk Map indicates that ASS may potentially be encountered in North Batemans Bay in the area skirting Batemans Bay Public School and approaching SPS BB08. It is noted however that the information is limited in scope. Therefore, a Potential Acid Sulfate Soils Management Plan (PASSMP) would be required, including screening and testing during construction for this area.

Any water encountered in areas potentially containing acid sulfate soils would be managed in accordance with the contractor's PASSMP prepared as part of the CEMP.

Operation

Operation and maintenance of the new water supply transfer mains may occasionally involve scouring (de-silting) as necessary, for example after a main break. In the event that scouring

is required, pollution of the environment would be prevented by collecting and disposing of silt and sediment laden water appropriately. It should be noted that the potable water supply will be provided from a water treatment plant and therefore will be filtered water. Furthermore, the sewer main scour operation involves use of a pump out pit; as such, there is no potential for discharge to the environment. Therefore, the operation of the transfer main is unlikely to result in adverse impacts to water quality.

Overflows

The potential for adverse water quality impacts during operation of the new SPS infrastructure has been minimised by the inclusion of emergency storage and provision for emergency backup power supply, as described in Section 4.4. Due to the selection of a the low pressure sewer system design, inflow and infiltration volumes have been minimised. However, in the unlikely event of an overflow, it is noted that there are no drainage lines in the vicinity of the SPS which would be affected.

Flooding

The SPS is not located within a flood planning area. The SPS building would include appropriate stormwater drainage connections to manage runoff. Overall, the presence of the SPS in this area is not anticipated to significantly adversely affect flood behaviour. It is noted that the surrounding area has previously been subject to residential development.

The transfer mains would be installed below ground and underbored through watercourses, private land, with the Bay Ridge Estate area and across major roadways. All pipeline excavations, and particularly watercourse crossings, would be designed to minimise impacts to the stability of the watercourses and banks and to minimise erosion and siltation, in accordance with survey and geotechnical investigations for appropriate depths of excavation. Therefore, it is considered that no operational flooding impacts would occur.

5.3.2 Mitigation Measures

- All personnel involved in construction works should be aware of the details of the works plans, legislation and associated pollution controls and the environmental sensitivity of the surrounding receiving waters before any works. All activities must be carried out with due diligence, duty of care and in accordance with best management practices.
- A detailed Erosion and Sediment Control Plan (ESCP) shall be prepared as part of the CEMP. The ESCP would describe the site specific measures to be implemented for all works areas, in accordance with the guidelines outlined in the 2004 Landcom publication *Managing Urban Stormwater: Soils and Construction*, 4th edition (“The Blue Book”) and *Volume 2a Installation of Services*. The ESCP would need to be site-specific and would need to address the following issues to prevent erosion, sediment loss and water quality impacts:
    - Minimisation of disturbance to soil and water adjacent to, and within, all watercourses in the works area.
    - Identification of site specific sediment and erosion control measures wherever erosion is likely to occur, including around the drilling entry and exit points.
    - Identification of any environmentally sensitive areas on or near construction sites to ensure runoff is diverted away from sensitive areas.

  - Requirements for vegetation clearing to be kept to a minimum.
  - Retention of all surface runoff on-site and where possible stormwater from off site would be diverted around the construction site.
  - Backfilling and stabilising of trenches once pipelines are installed.
  - Location of construction compounds (at least 50m from any drainage lines).
  - Location and management of stockpiles, such as locating stockpiles away from any drainage lines near the works areas.
  - Regular inspection of all erosion and sediment controls, especially when rain is expected and directly after any rain events.

- A Potential Acid Sulfate Soil Management Plan would be required for the North Batemans Bay area identified as containing Potential Acid Sulfate Soils (PASS) and which would be disturbed during construction. This should include screening testing during construction and should be consistent with Acid Sulphate Soils Assessment and Management Guidelines. Appropriate procedures would also be required groundwater dewatering in those areas affected by PASS.
- The CEMP would incorporate a pollution incident response management plan that defines appropriate procedures for the management and notification of pollution incidents in accordance with s. 147 to 153 of the POEO Act. The EPA is to be notified immediately of any pollution incidents or harm to the environment (as defined under Part 5.7 of the POEO Act).
- Workers are to be made aware of the provisions of Section 120 of the POEO Act with regards to water pollution.
- The potable water supply mains will be required to be disinfected with chlorinated water as part of the construction/ commissioning process. The Contractor will prepare a management plan for the disposal of the chlorinated water from water mains to avoid any potential impact on waterways.
- A drilling management plan / procedures would be developed as part of the CEMP to detail the appropriate management and disposal of drilling slurry to avoid off site impacts. This would include requirements that:
  - All sludge and drilling medium extracted is to be removed from the site.
  - The site where the sludge would be disposed of would require bunding and appropriate treatment until the sludge is considered to be safe for disposal or re-use.
- A site-specific spill management plan would be prepared and include the following requirements:
  - Emergency spill kits are to be kept at the site (vehicle kits).
  - Refueling of machinery to be undertaken in a dedicated area within the construction compound appropriately protected as outlined in the spill management plan.

  - Any chemicals and fuels are to be stored in a bunded area at least 50 metres from any waterway or drainage line.
  - Any hazardous materials stored on site would be stored in the compounds and within impervious and bunded enclosures capable of storing 120% of the volume of material stored there.
  - Workers would be trained in the spill management plan and the use of the spill kits.
- The drill operator must be appropriately experienced and licensed.
- Works should not be scheduled when heavy rainfall is forecast and works involving soil disturbance should not take place during heavy rainfall periods, other than work necessary to stabilise the site.
- Any excess spoil would be removed off site for disposal in accordance with EPA requirements.
- All stockpiles of materials would be protected from scour and erosion.
- Access tracks would be designed so as to provide adequate drainage and stormwater control.
- Any water discharged to the environment should comply with the water quality benchmarks for estuaries of the catchments within the Batemans Marine Park (Clyde River, Sheep Station Creek and Batemans Bay) as expressed in the NSW Water Quality Objectives (WQOs) developed in accordance with the ANZECC 2000 Guidelines on Water Quality.
- Works are considered likely to encounter groundwater in low laying areas of North Batemans Bay and therefore mitigation measures to manage groundwater would be incorporated into the CEMP, including:
  - Dewatering techniques during excavation;
  - Measures to ensure groundwater quality is not impacted during construction;
  - Techniques to settle, treat or filter groundwater encountered during excavation works i.e. diverting groundwater through baffle tanks or filter membranes; and
  - Appropriate treatment and monitoring regimes in the event that groundwater flows come to the surface, including disposal of groundwater in such a way as to prevent adverse impacts (such as erosion and water pollution). Groundwater should not be discharged to a waterway during construction.
- Where less than 3 ML of groundwater is extracted during the works. The volume of water extracted during should be recorded daily and an aquifer interference activity exemption should be lodged through DPE - Water (NRAR) by the construction contractor on behalf of the proponent on the completion of works (Further information is available at https://www.dpie.nsw.gov.au/nrar/how-to-apply/water-licences/Groundwater). If more than 3 ML of groundwater is anticipated to extracted during the works, an aquifer interference approval would be required from DPE- Water prior to the commencement of works.
- All areas where ground disturbance has occurred would be stabilised following completion of works to ensure there is no erosion hazard and restored to their pre-construction

condition. This would involve, where required, reshaping the ground surface, covering it with topsoil excavated from the site and re-establishing an appropriate vegetation cover (this may include respreading dead accumulated or cleared vegetation where possible).

- During operation of the pipelines, any water containing silt and sediment generated as a result of scouring pipelines would be treated (if required) and disposed of as appropriate. Depending on the resultant water quality, this may involve discharge to a waterway or land application. Any water discharged to a waterway or recycled must be consistent with the requirements of the *Protection of the Environment Operations Act 1997*.

5.4 Biodiversity

A Flora and Fauna Assessment was undertaken by Lesryk Environmental (2022) to assess the entire Nelligen Water Supply Scheme Project area, including the transfer mains alignment and SPS site. The following is a summary of the assessment, which is provided in Appendix B.

It is noted that the Nelligen village water supply and sewage transfers mains would connect to existing water and sewer pipelines which have been installed by TfNSW under the Clyde River as part of the Nelligen Bridge and Kings Highway realignment construction works. As such, assessment of works involving the subsurface directional drilling of the Nelligen water and sewer transfer mains and other utilities under the Clyde River at Nelligen previously carried out by TfNSW at the location of the Nelligen bridge crossing are outside the scope of the specialist ecological assessment carried out for this Project.

Vegetation mapping

The vegetation within the study area has been typed by OEH (now DPE - Environment and Heritage) with reference to the classifications of Tozer *et al.* (2010). A review of this information identified the vegetation within, and near to, the proposed pipeline as being mapped as:

- Spotted Gum - White Stringybark - Burrawang shrubby open forest on hinterland foothills, northern South East Corner
- Spotted Gum - Grey Ironbark - Woollybutt grassy open forest on coastal flats, southern Sydney Basin and South East Corner
- Mangrove forest in estuaries of the Sydney Basin and South East Corner
- Spotted Gum - Blackbutt shrubby open forest on the coastal foothills, southern Sydney Basin and northern South East Corner
- Silvertop Ash - Blue-leaved Stringybark - Red Bloodwood dry shrubby open forest on ridges of the hinterland foothills, northern South East Corner
- Swamp Oak - Prickly Tea-tree - Swamp Paperbark swamp forest on coastal floodplains, Sydney Basin and South East Corner
- Turpentine - Red Bloodwood - Sydney Peppermint shrubby open forest on the foothills, southern Sydney Basin and northern South East Corner.

Of these, Swamp Oak - Prickly Tea-tree - Swamp Paperbark swamp forest on coastal floodplains, Sydney Basin and South East Corner is considered to conform to *Swamp Oak*

Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (hereafter referred to as Swamp Oak Floodplain Forest).

Swamp Oak Floodplain Forest is listed as an Endangered Ecological Community (EEC) under both the EPBC and BC Acts.

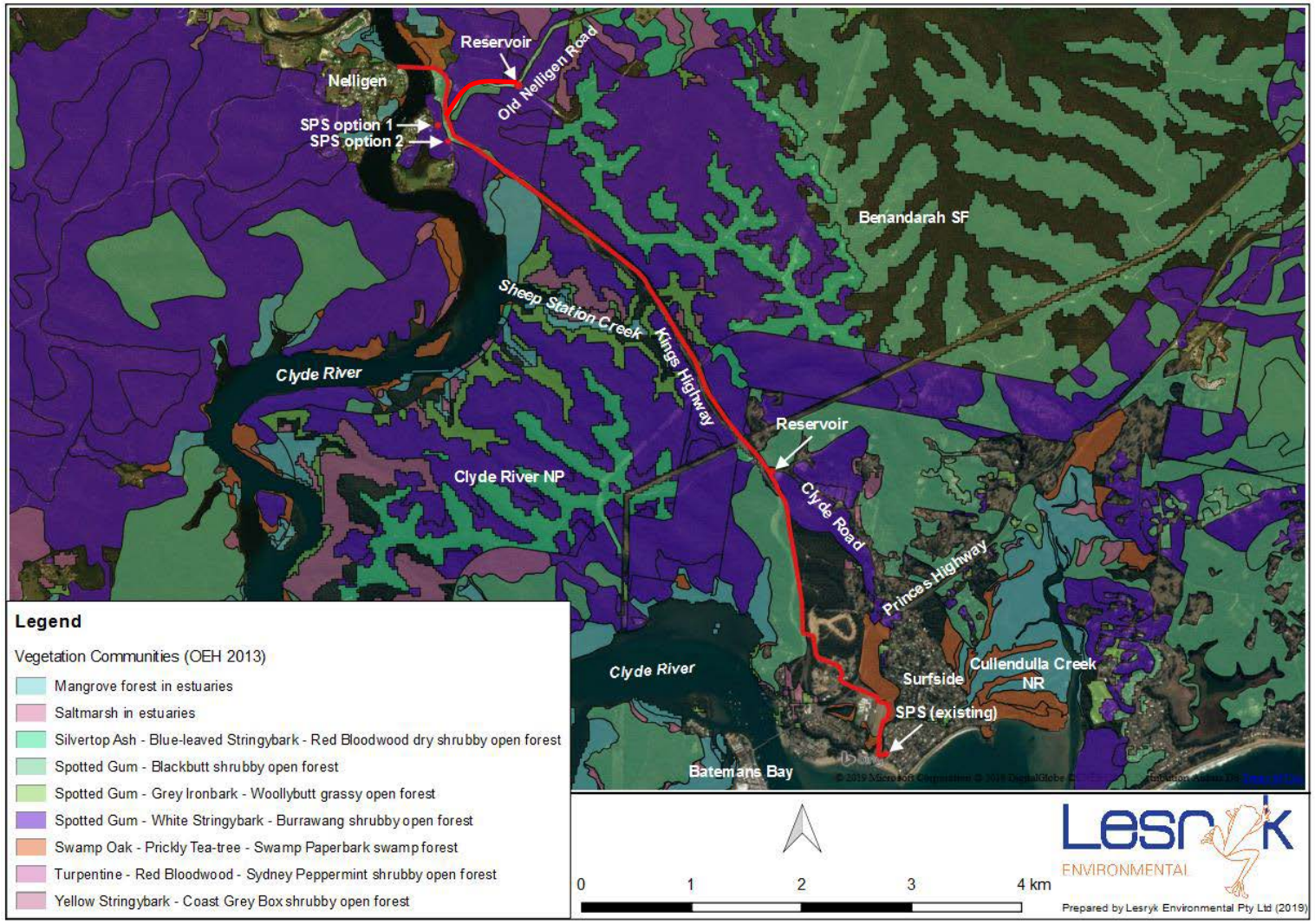


Figure 5-2 Vegetation mapping within the study area

Source: Lesryk Environmental, 2022

Vegetation Communities

The Proposal study area consists of:

- streetscape vegetation
- Rough-barked Apple Woodland
- Spotted Gum/Blackbutt Woodland
- Red Bloodwood/White Stringybark woodland
- Swamp She-Oak Forest
- shrubland/grassland.

The location of each identified vegetation community in relation to the Proposal works areas and its conservation significance has been provided below. A description of each vegetation community is provided in full in Appendix B.

Streetscape vegetation

This area consists of the cleared and regularly maintained (slashed/mown) road reserves/verges, grasslands, street plantings and landscaped gardens that occur in association with the Nelligen and North Batemans Bay townships. This area is of no conservation value and generally consists of introduced grasses, herbs, forbs, shrubs and trees, though some native plants do occur.

Rough-barked Apple Woodland

Rough-barked Apple Woodland occurs around the Cowper Street area of the Nelligen township. This vegetation community is of no conservation significance.

Spotted Gum/Blackbutt Woodland

This vegetation community occurs around the SPS site and at the Bay Ridge reservoir site. The Spotted Gum/Blackbutt Woodland is of no conservation significance.

Red Bloodwood/White Stringybark woodland

This vegetation community occurs at the Nelligen reservoir site and along Old Nelligen Road. The Red Bloodwood/White Stringybark woodland is of no conservation significance.

Swamp She-Oak open forest

This vegetation community occurs around the existing SPS site (BB08) at North Batemans Bay near, and along the unnamed creek.

The Swamp She-Oak open forest is considered to conform to Swamp Oak - Prickly Tea-tree - Swamp Paperbark swamp forest on coastal floodplains, Sydney Basin and South East Corner as mapped by OEH (2013). This community is considered to be a part of the Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions which is listed as endangered under the BC Act.

It is noted that, while Swamp Oak Floodplain Forest is synonymous with the Commonwealth listed Coastal Swamp Oak Forest of South-east Queensland and NSW, the community within

the subject site does not meet the required characteristics provided under the EPBC Act that would afford it protection. The subject site's Swamp She-Oak open forest does not conform to the EPBC Act listing given:

- its lack of an intact understorey
- dominance by weed species.

Shrubland/grassland

Shrubland/grassland dominates the area investigated and occurs in association with the transmission line easement. The shrubland/grassland community is generally a derivative of the adjacent woodland areas. The shrubland/grassland is of no conservation significance.

Threatened Flora Species

Databases searches (NSW and Commonwealth) identified 10 threatened plants listed under the EPBC Act and/or the schedules of the BC Act that have been previously recorded, or are considered to have habitat, in the Proposal study region. Based on the consultation of standard texts and vegetation mapping, there is the possibility that the study area may provide potential habitat for some of these species. Therefore, during the course of the field investigation, efforts were made to target these plants and populations, or occurrences of their necessary vegetation associations.

No threatened flora species, or flora of conservation significance, were detected within the Proposal study area during the flora and fauna survey. However, based on the presence of suitable habitat, it is considered that the East Lynne Midge Orchid has the potential to occur. To determine the presence of any orchid species within the subject site, targeted orchid searches were undertaken at five locations during a period when the orchid was confirmed to be in bloom at nearby reference sites. A recognized expert on orchids, particularly within the Shoalhaven area, was consulted through email around the time of the investigation to discuss the orchid species and its reference sites. At each location, transects of various lengths were established. The orchid was not identified at any of the targeted search locations. To further consider the impact of the Proposal on the East Lynne Midge Orchid assessments that refer to the EPBC Act's Significant Impact Guidelines and Section 7.3 of the BC Act were undertaken.

Threatened Fauna Species

Consultation of the Commonwealth, NSW databases and applicable background data, identified 54 threatened animals listed under the schedules of the EPBC, BC and/or FM Acts that have been previously recorded, or are considered to have habitat, in the study region. Based on a consideration of the habitat needs of those threatened species, combined with the identification of those habitats present within the study area, it was considered there is the potential for some of these animals to occur within, or in the vicinity of, the study area. As such, during the course of the field investigation, targeted surveys for these species, or their necessary habitats, were undertaken.

By the completion of the field investigations three native mammals, 59 native birds, two reptiles and three amphibians had been recorded within, or in the vicinity of the Proposal study area. In addition, several introduced animals were detected.

Of the fauna species detected, two are listed under the Schedules to the BC and/or EPBC Acts, these being the:

- Glossy Black-Cockatoo (*Calyptorhynchus lathami*) – listed as vulnerable under the BC Act.
- Australian Reed-Warbler (*Acrocephalus australis*) – listed as a marine species under the EPBC Act.

The remaining native species recorded during the field investigation are protected, as defined by the NPW Act, but considered to be common to abundant throughout the surrounding region. The species recorded would not be solely reliant upon those habitats present within, or in close proximity to, the subject site.

Threatened Aquatic Fauna

As none of the drainage lines present in the Proposal area would be directly disturbed, no habitats for fish species including the Australian Grayling (*Prototroctes maraena*) would be affected by the scope of work proposed.

Fauna Habitats

Three habitat types available to native fauna were recorded within the study area, these being:

- modified environment
- eucalypt woodland
- aquatic environment.

No rocks, rock outcropping, caves, ledges or crevices are present within the study area.

Modified Environment

The modified environment incorporates the majority of the Proposal subject area and includes the:

- road reserve
- power supply easement
- Existing SPS site at North Batemans Bay (BB08).

This environment dominates the areas that would be affected by the scope of work proposed and has been affected by past and present land use practices, including the installation of infrastructure, the maintenance of road verges and the clearing of areas to permit the construction of roads, a bridge, urban and semi-rural developments.

Within this habitat type a mixture of gravel, cleared and regularly maintained (slashed/mown) road reserves/verges are present; consisting of native and exotic grasses with weeds, with the occasional isolated tree to 10 m in height being present; though none were observed to be hollow-bearing. Cleared and level areas (i.e. the existing SPS at North Batemans Bay) are also present; in addition, regenerating saplings and native shrubs, up to 0.5 m and 1.5 m respectively, are also present at various locations. Within the SPS (BB08) site at North Batemans Bay a sparse to medium density of shrubs to 0.5 m in height is present, with a sparse to high density of grasses to 0.4 m.

The power supply easement that traverses the Proposal subject site is either disturbed and regularly maintained (slashed) or composed of medium to high density layer of grasses and shrubs to 1.5 m; (also noted to be regularly slashed and/or maintained). Existing subsurface telecommunication assets are located within this easement.

Adjacent to the Proposal subject site is the Kings Highway, which traverses a large portion of the area investigated. This highway is a two to three lane bitumen road being about 15 m wide, including its 2 m wide verges. An additional network of two lane suburban roads are present within the area investigated, these being up to about 6 m wide.

Eucalypt woodland

The Proposal study area consists predominantly of native woodland, generally with a continuous and relatively uniform canopy, with several stands occurring in proximity to the proposed works at the following locations:

- north of the new SPS site off Thule Road, east side of Clyde River
- the SPS site
- Bay Ridge Estate.

The woodland on the eastern side of the Clyde River at Nelligen supports trees that are up to 20 m in height, with the occasional hollow-bearing tree observed in the area off Thule Road. The middle-storey is to 15 m, while the understorey is to 4 m in height. The ground cover is open and consists of grasses, ferns, cycads and seedlings. Leaf litter and ground debris is common.

The SPS site is generally cleared. The adjacent woodland supports trees that are between 15m and 20 m in height. No hollow-bearing trees were observed in close proximity to the proposed SPS site. Exotic and native groundcover species and a sparse to medium density of shrubs to 2 m is present at the woodland interface.

The woodland near the Bay Ridge Estate and reservoir area is similar; however, no middle-storey is present and the ground cover is either absent or composed of isolated grasses and forbs.

Leaf litter, ground debris and small 100 mm surface rocks are present in several locations.

Seven hollow-bearing trees were recorded within, or close to, the Proposal study area. Four of these were observed within and adjacent to the transmission line easement, adjacent to Kings Highway between the townships of Nelligen and Batemans Bay while three were identified near to the proposed reservoir site off Old Nelligen Road. Due to their proximity to the proposed work, the locations of these hollow-bearing trees have been provided (see Appendix B) and their position recorded using a GPS, the coordinates being:

- E242234; N6050445 – adjacent to the power supply alignment
- E242320; N6050424 – adjacent to the power supply alignment
- E242364; N6050395 – adjacent to the power supply alignment
- E243471; N6049583 – adjacent to the power supply alignment
- E242298; N6051255 – proposed Nelligen reservoir site

- E242288; N6051243 – proposed Nelligen reservoir site
- E242282; N6051239 – proposed Nelligen reservoir site

Other hollow-bearing trees were observed at various locations within, and beyond the limits of, the study area, However, given the location of these trees, none will be directly or indirectly disturbed.

Aquatic environment

The main water body present within the Proposal subject site is the Clyde River; traversing through the north of the subject site at Nelligen and flowing in a southerly direction for about 16.8 km to its confluence with Batemans Bay at North Batemans Bay. The water and sewer transfer mains would cross under the Clyde River at Nelligen (not undertaken as part of the Proposal works).

Sheep Station Creek is a smaller creek line that traverses the subject site about half way between Nelligen and North Batemans Bay. This creek line flows in a westerly direction where it feeds into the Clyde River.

A number of unnamed ephemeral drainage lines occur within proximity to the proposed pipeline alignment, all being feeder creeks for the Clyde River.

In the southern limits of the Proposal subject site, near the existing SPS (BB08) site at North Batemans Bay, the sewer main would also traverse a small unnamed creek line and an unmapped drainage line.

With reference to DPI mapping of Key Fish Habitat within NSW, the Eurobodalla map indicates that both the Clyde River and Sheep Station Creek are mapped as Key Fish Habitat.

Koala Habitat

Within the entire Nelligen Water Supply Scheme Project survey area, four eucalypt species were recorded, one of which (Forest Red Gum (*Eucalyptus tereticornis*)) is listed under Schedule 3 of SEPP (Biodiversity and Conservation) as a Koala Use Tree. Forest Red Gum is however considered to comprise less than 15% of the tree canopy in the vicinity of the Proposal sites.

Weeds

Of the introduced plant species recorded during the field survey for the Proposal, one is listed under Schedule 3 of the NSW *Biosecurity Regulation 2017* (Blackberry *Rubus fruticosus agg. spp*.). With reference to the DPI NSW Weedwise database, this weed, and three further weed species (Bridal Creeper *Asparagus asparagoides*, Asparagus Fern *Asparagus aethiopicus* and African Lovegrass *Eragrostis curvula*) are also listed as 'priority weeds' in the South East NSW region.

Blackberry, Bridal Creeper and Asparagus Fern are also included on the list of Weeds of National Significance, which is part of a combined State and Commonwealth initiative to combat invasive species.

5.4.1 Impact Assessment

Vegetation Communities

The Proposal has been designed to avoid impacts to undisturbed and remnant native vegetation within the study area, and as such, it is not anticipated that the Proposal would significantly impact directly or indirectly on any of the native vegetation communities. Impacts would be limited to the streetscape vegetation, shrubland/grassland, Spotted Gum/Blackbutt Woodland, Rough-barked Apple Woodland and degraded Swamp Oak Floodplain Forest vegetation communities which are of negligible conservation significance.

Endangered Ecological Communities

The Swamp She-Oak open forest is considered to conform to Swamp Oak - Prickly Tea-tree - Swamp Paperbark swamp forest on coastal floodplains, Sydney Basin and South East Corner. This community is considered to be a part of the Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions which is listed as endangered under the BC Act.

The Swamp Oak Floodplain Forest present within the subject site is, however, highly degraded. While Swamp Oak Floodplain Forest is synonymous with the Commonwealth listed Coastal Swamp Oak Forest of South-east Queensland and NSW, the community within the subject site does not meet the required characteristics provided under the EPBC Act that would afford it protection. Therefore, the subject site's Swamp She-Oak open forest does not conform to the EPBC Act and are not protected as the ecological community.

The Proposal would result in the removal/disturbance of a maximum of 100 m^2 of degraded Swamp Oak Floodplain Forest. It is noted that this primarily consists of groundcover species; no trees expected to be removed from the community. The works in North Batemans Bay at and near the existing SPS (BB08), including the sewer vent standpipe works, would require only grasscover removal and avoid disturbance or removal of the existing mature trees that constitute the State listed Swamp Oak Floodplain Forest EEC.

Given the scope of works proposed, no significant areas of Swamp Oak Floodplain Forest habitat would be removed or affected by the proposed work. The expected impacts associated with the Proposal on the Swamp Oak Floodplain Forest are considered to be minimal.

Threatened Flora

The proposed development would result in the removal of approximately 2.1 ha of potential East Lynne Midge Orchid habitat. While this is the case, the undertaking of the Proposal would not disturb, remove, modify or fragment any habitats critical to the life cycle requirements of the East Lynne Midge Orchid. Therefore, it is not considered that the Proposal would have a significant impact on this threatened species, its population or habitat.

Threatened Fauna

The Glossy Black-Cockatoo is a thinly distributed species in central and south eastern Australia, living in eucalypt woodland and feeding almost exclusively on casuarina fruit. Within its range it is tied to groves of its food trees, *Casuarina* spp. and *Allocasuarina* spp.

During the investigation, a pair of Glossy Black-Cockatoos were observed within a Casuarina tree that is present adjacent to / on the edge of the power supply easement. In addition, a

number of Glossy Black-Cockatoo feed trees were identified both within, and adjacent to, the Proposal study area (as evidenced in the form of crushed Black She-Oak cones).

The Proposal is not considered to have a significant impact on the local status of the Glossy Black-Cockatoo. The work would not remove any significant portions of this species' roosting or breeding sites and no major foraging areas would be significantly affected. The work would not present a barrier to the dispersal or movement patterns of the Glossy Black-Cockatoo. Therefore, it is not considered that the Proposal would have a significant impact on this species or its habitat.

The Australian Reed-Warbler was heard calling from those reed beds that occur in association with the wetland that is present to the north of Batemans Bay Public School. The wetland would not be directly or indirectly disturbed by the scope of work proposed and the habitat occupied by this species would not be disturbed by any component of the proposed works. The scope of work proposed would not affect any of this species' habitat requirements, such that the presence of the Australian Reed-Warbler would be adversely affected. As its habitat will not be removed, the undertaking of the Proposal will not affect the short or long term presence of this species.

Threatened Aquatic Fauna

Based on an assessment of those habitats observed in association with both the Clyde River and Sheep Station Creek, there is the potential (if present in either of these drainage lines) for the Australian Grayling to migrate along these waterways. While this is the case, as directional drilling will be employed to establish the proposed pipelines across waterways, no habitat for this species will be directly or indirectly disturbed. Beyond existing impacts, the scope of work will not fragment or isolate any aquatic habitats or present a barrier to the movement of this, or any other fish, species.

Therefore, the proposed works are not considered to result in any fish species, aquatic-associated animals or their populations becoming extinct in the locality.

Fauna Habitats

The proposed works would predominantly be carried out in modified environment areas which have been affected by past and present land use practices, including the installation of infrastructure, the maintenance of road verges and the clearing of areas to permit the construction of roads, a bridge, urban and semi-rural developments.

The assessment concluded that the Proposal would not have a significant effect on threatened species recorded or potentially occurring, or any areas of their habitats due to the low level of vegetation removal required for the Proposal.

Locations of the seven hollow-bearing trees that are present adjacent to the Proposal works area would be included on any plans provided to the construction contractor.

Of these, the three located near the proposed Nelligen reservoir are expected to require removal. Given the location of the four other hollow-bearing trees, none of these are considered to be directly or indirectly disturbed.

As discussed, numerous hollow-bearing trees were observed at various locations within, and beyond the limits of, the Proposal study area. Whilst this is the case, given the location of these trees, none will be directly or indirectly disturbed for the Proposal.

Aquatic Environment

Where the proposed pipeline route involves the crossings of creek lines and drainages present, directional bore drilling would be implemented.

With reference to the mapping of Key Fish Habitat, beyond existing levels of disturbance and usage, the proposed works would not have a significant impact on the Clyde River, Sheep Station Creek or unnamed creek lines. No areas of aquatic habitat are to be removed, fragmented, isolated, significantly modified or disturbed.

Of the Key Threatening Processes (KTP) listed under Schedule 6 of the FM Act, 'Degradation of native riparian vegetation along NSW water courses' is relevant to the Proposal. The riparian vegetation present in association with the unnamed creek that occurs near the existing SPS site at North Batemans Bay is the only area of riparian vegetation within the Proposal area that has the potential to be disturbed. The disturbance of a small portion of this vegetation is not expected to cause instability of the creek's banks or reduce the quality of the water within it. Given the small amount of riparian vegetation that maybe disturbed, the Proposal is not considered to contribute significantly to this KTP. It is acknowledged that, at this location, the two transfer main will be established via directional drilling, thereby minimising the impact on the riparian vegetation.

Koala Habitat

Forest Red Gum comprises less than 15% of the tree canopy in the vicinity of the subject site. As such, the study area does not qualify as Potential or Core Koala Habitat, pursuant to SEPP (Biodiversity and Conservation). No further provisions of SEPP (Biodiversity and Conservation) apply, and the Proposal does not require the preparation of a Plan of Management for the conservation and management of areas of Koala habitat.

Weeds

Where the four priority weed species occur, they must be controlled to result in their suppression. This should be done at the commencement of work to avoid the further spread of these species.

Assessments of Significance

An assessment of significance on the criteria provided under Section 7.3 of the BC Act was undertaken for the EEC (Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions) and threatened fauna species observed during the survey period or with potential to occur within the study area or immediate surrounds. The assessments concluded that the Proposal would not have a significant effect on the EEC or threatened species recorded or potentially occurring, or any areas of their habitats.

Assessments referring to the EPBC Act's Significant Impact Guidelines that are relevant to EECs, vulnerable and migratory species have been carried out on the threatened species likely to occur on the within the study area or immediate surrounds or with potential to be indirectly affected by the Proposal. The assessment concluded that the proposed work would not have a significant effect on the East Lynne Midge Orchid, Greater Glider, Grey-headed Flying-fox, Eastern Osprey or Satin Flycatcher. Therefore, it is considered that these matters do not

require referral to the Federal Minister for the Environment for further consideration or approval, nor is the preparation of an SIS/BDAR.

As the proposed work is not located within the Commonwealth marine area, this being from 3 to 200 nautical miles from the coast, no assessment using the EPBC Significant Impact Guidelines that are relevant to the Commonwealth marine environment has been carried out with regard to the Australian Reed-Warbler, Eastern Osprey and Satin Flycatcher.

With reference to the assessment criteria provided under Part 7A, Division 12, Subdivision 221ZV of the FM Act, it is considered that the Proposal would not have a significant impact on any threatened aquatic species, their populations, ecological communities or habitats. As such, the preparation of a SIS that further considers the impacts of the Proposal on fish is not required.

It is considered that with adherence to the recommendations provided in Section 5.4.2, no ecological constraints to the Proposal proceeding as planned were identified or considered likely to occur. The adoption of the mitigation measures provided below would ensure that the development is undertaken in an ecologically sustainable manner.

5.4.2 Mitigation Measures

- Vegetation clearing should be limited to the minimum required to successfully complete the Proposal.
- Hollow-bearing trees present on site should be retained where possible, giving preference to those plants that contain the larger hollows, and should be identified and clearly marked by a qualified independent ecologist prior to the undertaking of any clearing work.
- Locations of the hollow-bearing trees to be retained should be included on any plans provided to the contractor. These trees will require protection during the construction activities, including barriers to avoid root damage within the drip line of any retained tree.
- Where possible, any felled trees should not be mulched but should be relocated locally within the subject site to provide habitat for native species and their prey.
- Sewer main installation works and standpipe vent at the southern limits of the Proposal site, near the existing SPS (BB08) site at North Batemans Bay, should avoid the disturbance of the mature trees that constitute the State listed Swamp Oak Floodplain Forest EEC.
- Underboring sites should be located within areas previously disturbed and cleared of middle and over storey plants and provide adequate riparian buffers of at least 10m from the bank.
- Preference should be given to traversing and driving over ground cover and understorey vegetation, as opposed to clearing it. Traversing this vegetation will permit it to regenerate post-disturbance.
- The works should be planned and staged to ensure that long sections of trench are not left open. If left open overnight:
    - , the pipeline trench should be inspected for entrapped animals (such as ground traversing native species – reptiles, frogs, mammals).

- options to permit entrapped animals to escape (e.g. hessian bags, long branches, 'ladders') should be placed within the trench.

- Vehicles and machinery should be stored and parked in cleared areas away from trees.
- The storage of materials and stockpiling of equipment should also occur within sites/areas that have been previously disturbed and cleared.
- Any animals injured during the clearing work should be collected and taken to a local veterinarian or wildlife carer.
- In accordance with the *Biosecurity Act 2015*, listed weeds identified on site must be controlled to result in their suppression.
- Post-development, the pipeline alignments should be regularly monitored to manage any occurrences of weeds and other non-native species.

5.5 Bushfire

The proposed works would traverse areas of land which is identified as bushfire prone, including vegetation category 1, vegetation category 2 and vegetation buffer (refer to Figure 5-3).

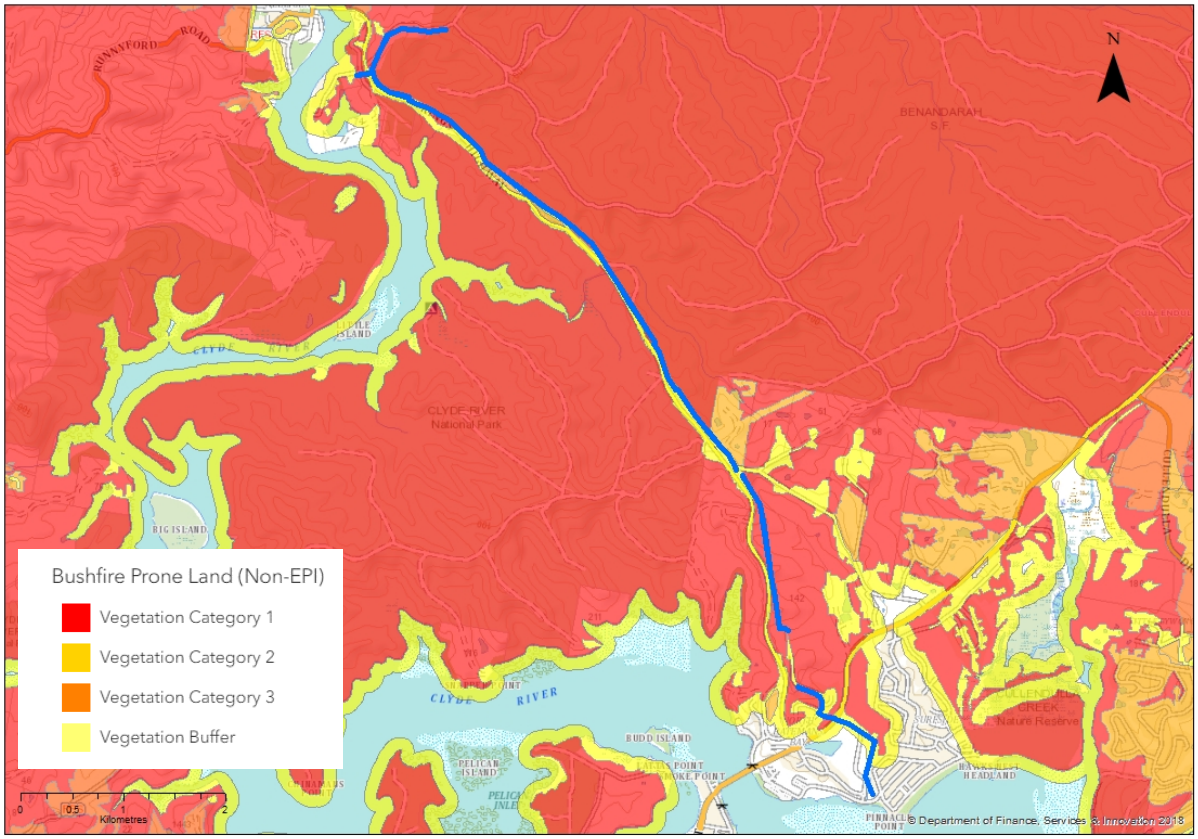


Figure 5-3 Bushfire Prone Land Map for region of the Nelligen water supply and sewerage scheme works.

Source: NSW Rural Fire Service, accessed October 2022

5.5.1 Impact Assessment

Design of the aboveground infrastructure at the SPS site should take into consideration the potential bushfire risk at the site, in accordance with the relevant principles of the RFS publication *Planning for Bushfire Protection 2019*. However, it is noted that the clearing of vegetation would reduce the ongoing risk of bushfire at the SPS site.

Although the construction activities are not anticipated to pose a significant bushfire risk, mitigation measures listed below would be implemented to ensure that the works do not start a bushfire in grassland and surrounding vegetated areas.

The proposed transfer mains would be installed underground and are therefore unlikely to be affected by bushfire during operation.

5.5.2 Mitigation Measures

- Construction staff to be made aware of the location of the proposed works in bushfire prone land and the potential for bushfire risk.
- During catastrophic to high bush fire danger rating days, no construction activities would be undertaken that pose a risk of starting a bushfire (e.g. welding).
- Design of the above ground infrastructure at the SPS should take into consideration the potential bushfire risk at the site, in accordance with the relevant principles of the RFS publication *Planning for Bushfire Protection 2019*.
- No maintenance activities should be undertaken at the SPS site which pose a risk of starting a bushfire during high risk bush fire danger rating days.

5.6 Aboriginal Heritage

A Due Diligence Assessment including field survey was undertaken for the Project by NSW Archaeology in October 2017 and June 2019. The findings of the assessment are summarised below and provided in full in Appendix C.

A search of the Aboriginal Heritage Information Management System (AHIMS) was undertaken on 30 September 2017 in respect of the study area (AHIMS #304613). The search covered an area of 64 square kilometres, encompassed by Eastings: 239000 - 247000, Northings: 6045000 - 6053000, with a buffer of 50 metres.

The results indicated that there are 89 known previously recorded Aboriginal sites located in or near the Project works area. Some of the sites are associated with adjoining areas of predicted moderate to high archaeological potential. The location of the previously recorded AHIMS sites are shown in Figure 5-4 to Figure 5-6 below.

The AHIMS database searches carried out as part of the Due Diligence assessment identified that seven previously recorded sites are in or very near to the Proposal works area. During the field survey, new Aboriginal object sites were found in the Proposal activity area.

The assessment also found that the entire Project subject area located south-east of the Princes Highway in and around the Batemans Bay Public School contains an extensive known midden (location shown in Figure 5-7) and human burials. Generally, the midden is highly disturbed. The potential for further human remains (some of which could be relatively undisturbed (i.e. below surficial disturbance) is present.

Accordingly, the Due Diligence assessment concluded that an Aboriginal Cultural Heritage Assessment (ACHA) and an Aboriginal Heritage Impact Permit (AHIP) would be required for the Proposal. The AHIP submission should be timed so that the permit is received prior to the commencement of works in the area of the Aboriginal sites to be impacted by the works, and so that it will not lapse prior to the completion of construction works.

Figure 5-4 Location of AHIMS sites in respect of the proposed works – north west end.

Source: NSW Archaeology, 2022

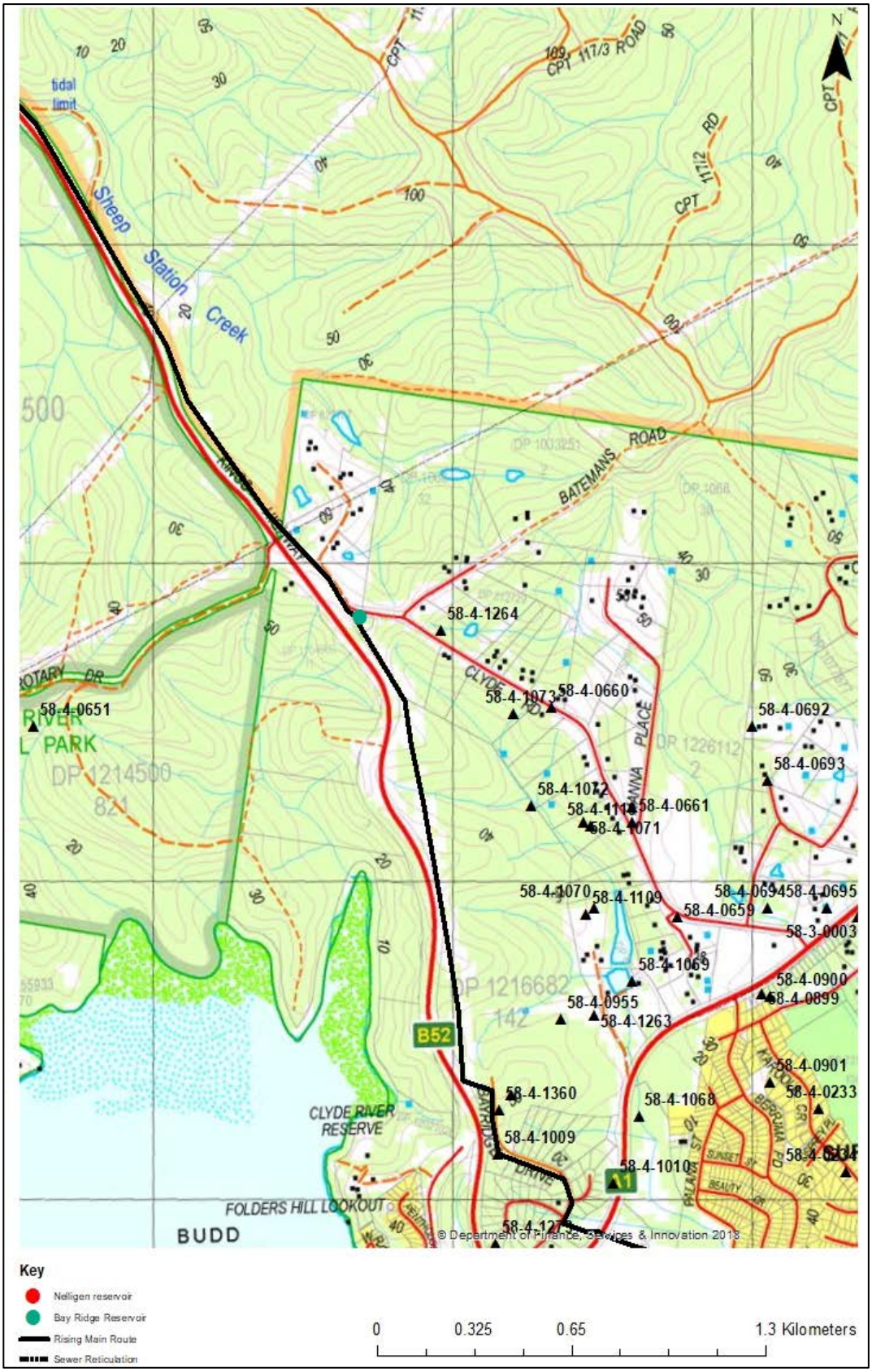


Figure 5-5 Location of AHIMS sites in respect of the proposed works – mid area.

Source: NSW Archaeology, 2022

Figure 5-6 Location of AHIMS sites in respect of the proposed works – south east end. Note grid references for 58-4-0426 and 58-4-1083 are incorrect. Source: NSW Archaeology Pty Ltd; May 2022.

Source: NSW Archaeology, 2022

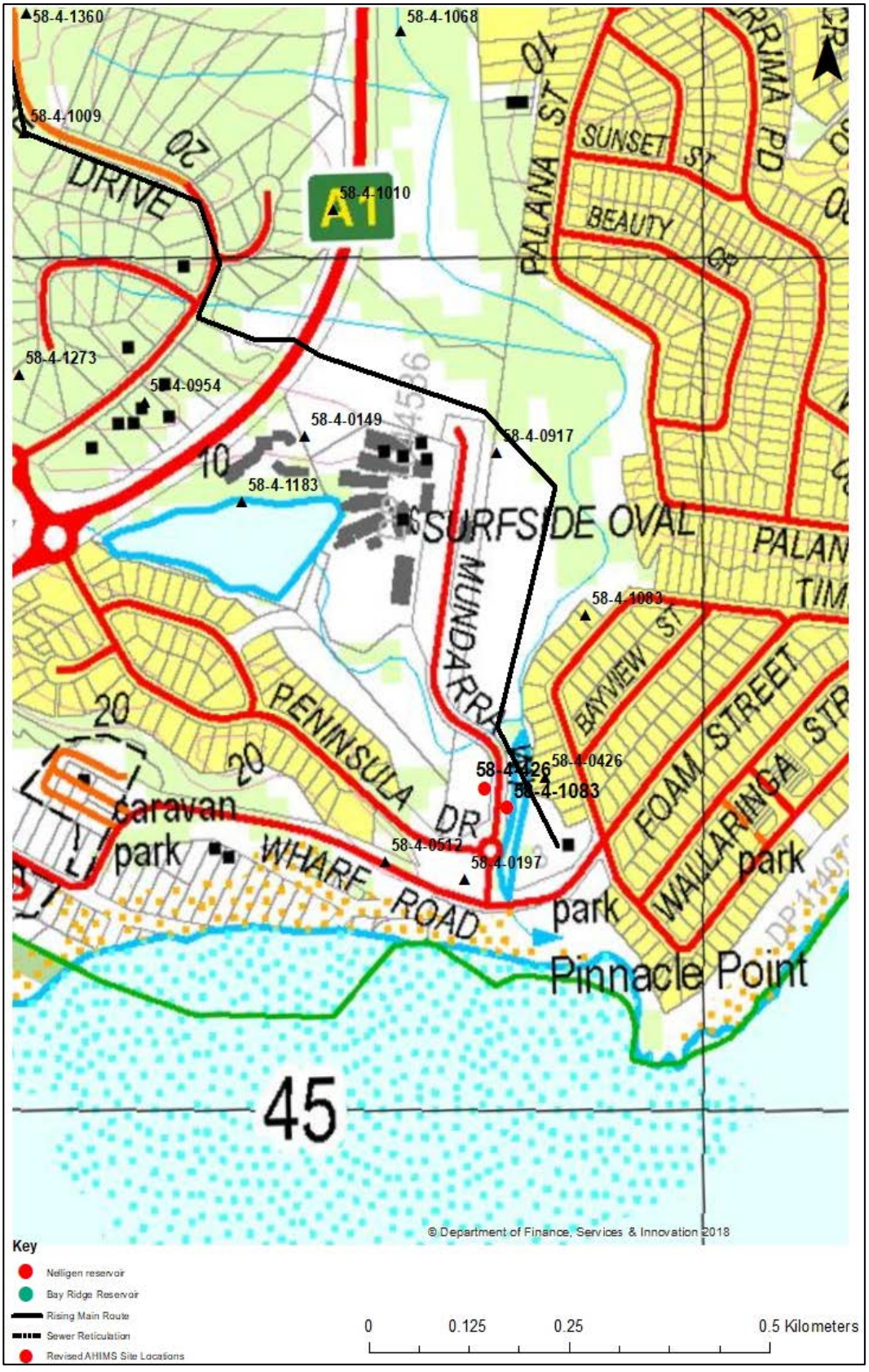


Figure 5-7 Revised (approximate) location of AHIMS sites 58-4-426 and 58-4-1083.

Source: NSW Archaeology, 2022

An ACHA, including field survey, was undertaken by NSW Archaeology (2022) and is provided in Appendix C. This was undertaken in accordance with the relevant requirements of the following:

- *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW, 2010)*
- *Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW, 2010)*
- *Guide to investigation, assessing and reporting on Aboriginal Cultural heritage in NSW (OEH, April 2011)*

A further search of the Aboriginal Heritage Information Management System (AHIMS) was undertaken on 30 January 2022 in respect of the study area (AHIMS #655053). The search covered an area of 64 square kilometres, encompassed by Eastings: 239000 - 247000, Northings: 6045000 - 6053000, with a buffer of 50 metres. The results indicated that there are 92 known previously recorded Aboriginal sites located in or near the Project works area.

In order to identify, notify and register Aboriginal people who may hold cultural knowledge relevant to determining the cultural significant of Aboriginal objects and/or places in the area of the proposed Project, correspondence dated 10 January 2022 was sent to seven stakeholder agencies and an advertisement appeared in the 12 January 2022 edition of the local newspaper (Batemans Bay Post). The NTSCORP provided a report via email on 14 January 2022 listing the South Coast People as Native Title applicants with a registered interest. In accordance with the Heritage NSW list of known Aboriginal parties for the Eurobodalla Local area (received 24 January 2022), further correspondence dated 31 January 2022 was sent to these parties.

Information about the Project, proposed consultation Project and assessment methods was forwarded to nine Registered Aboriginal Parties (RAPs) and Batemans Bay LALC on 26 February 2022. One response was received from Thoorga Nura regarding the consultation process and methods documents, who indicated that they had no comments.

Visual inspection of the land was undertaken to inform the Due Diligence and ACHA assessment process. The entire area of impact was subject to a pedestrian survey. The field inspection was conducted by staff from NSW Archaeology Pty Ltd, on 28 October 2017. A further survey was conducted by NSW Archaeology staff and Mr Les Simons (representative from Batemans Bay Local Aboriginal Land Council) on 6 April 2018 and 25 March 2022. The Project area was divided into six Survey Units, whereby the total archaeological survey area covered a length of approximately 12 kilometres including a survey area of approximately 12 hectares.

The field survey found that the entire Project area has been highly disturbed by previous impacts. Frequently, the landforms have been fundamentally altered by either removal, such as in deep road cuttings, or significant changes due to clearance and erosion or mechanical levelling. These prior impacts have acted to either remove and potential artefact bearing soil profiles or otherwise to disturb them in such a manner as to render their archaeological integrity totally compromised.

The Nelligen village survey units were found to be significantly modified by road and drainage works. The power supply easement between Nelligen and North Batemans Bay is regularly slashed to control vegetation beneath the powerline. The easement traverses a series of crests and simple slopes through which low order drainage systems flow. The ground surfaces are highly eroded with no remaining topsoil. The Bay Ridge Estate development area is highly disturbed by recent road works and residential development.

The Batemans Bay School site has a long history of land use and is also highly disturbed. The site is a late Holocene sand dune landform and would have originally been comprised of a system of dune crests and swales. The site has been levelled probably on numerous occasions, the last of which was during construction of the school. An unnamed creek flows through the landform to the sea and is partly tidal. The southern 300 m of the creek has been modified since the 1950's by infilling and straightening. The land has been used for agriculture, infilling for development contexts, levelling for the construction of playing fields in the 1970s and 1980s, the installation of services and roads and more recently the construction of the Batemans Bay Public School.

Two new artefact sites were recorded during the 2017 field surveys. The location of the two new sites is shown in Figure 5-4. No additional sites were recorded in the 2022 survey. The first artefact -*Old Nelligen Road 1 (OldNR1)* comprised a single stone artefact found on a recreational bike/pedestrian track adjacent to an old bush track on the south side of Old Nelligen Road. An additional artefact was located during the 2022 survey: a silcrete flake fragment measuring 22 x 11 x 3 mm. This site is located in the route of the proposed pipeline to the Nelligen reservoir site.

The second artefact site *Kings Highway 1* (*KingsH1*) comprised three stone artefacts found on a track junction on the power supply easement adjacent to the Kings Highway. The artefacts were found over an area measuring 25 x 15 m. This site is located along the proposed sewer and water pipelines beneath the power supply easement.

A summary of existing recorded sites and the new Aboriginal sites identified in or near the Proposal impact areas based on the field survey are provided in Table 4 below.

Table 5-1 Summary description of Aboriginal object sites located in the Proposal area

Site ID	Easting	Northing	Description	Proposed Impacts
Old Nelligen Road 1 **AHIMS** **58-4-1378 (Duplicate site: 58-4-1375)**	241942	6051258	Two artefacts on a crest landform. Highly disturbed. Very low density artefact distribution. No subsurface potential	In area of pipeline to the Nelligen Reservoir; impacts probable.

Kings Highway 1 ***AHIMS*** ***58-4-1374***	242800	6050053	Three stone artefacts on a crest. Highly disturbed. Very low density artefact distribution. No subsurface potential.	In area of water and sewer pipeline; impacts possible
AHIMS **58-4-1009**	245154	6045147	One artefact on a crest landform. Highly disturbed particularly by recent development. Very low density artefact distribution. No subsurface potential.	In area of sewer pipeline; impacts probable. Previous permits issued for this site: 2099; 2100.
AHIMS *58-4-1360*	245157	6046287	One artefact on a crest landform. Recorded as having associated midden, but shell is fresh. Highly disturbed particularly by recent development. Very low density artefact distribution. No subsurface potential.	No impacts
AHIMS *58-4-0149*	245504	6045791	Large artefact scatter site on low elevation crest. Disturbed. Low density artefact distribution. Limited subsurface potential.	No Impacts
AHIMS **58-4-0917**	245744	6045771	Artefact scatter with shell at the site of the Batemans Bay Public School which was predicted, at the time of recording, to extend across the wider landform. Highly disturbed by successive impacts including road and playing field construction.	In area of sewer pipeline; impacts would occur to site. Note grid reference denotes north end only.
AHIMS 58-4-0426	245727	6045380	Aboriginal skeletal remains, with artefacts and shell located in the area west side of the school road (Mundarra Rd) north of the roundabout at the east end of Peninsular Drive. Highly disturbed by successive impacts.	No impacts.
AHIMS 58-4-0197	245704	6045271	Artefacts and shell located in the area at the south end of Mundarra Rd. Highly disturbed by successive impacts.	No impacts
AHIMS 58-4-1083	245754	6045356	Aboriginal skeletal remains found and redeposited during installation of services, on the east side of the school road (Mundarra Rd) north of the roundabout at the east end of Peninsular Drive. Highly disturbed.	No impacts

5.6.1 Impact Assessment

The nature of the proposed works are such that the landscape will be minimally impacted. In respect of Aboriginal objects and associated archaeological deposits, direct harm will occur because of the activity. However, given each artefact locale is expected to be a component of the wider artefact distribution in the landscape, generally, the degree of harm would be partial and the consequence would be partial loss of value only.

Most of the Survey Units in the Proposal area are assessed to be of relatively low archaeological heritage value, primarily because of their low density and high degree of previous impacts and disturbance. The exception is Survey Unit 6. This landform contains highly midden and human burials (refer to Figure 5-8). Because of the high disturbance, the archaeological value is low. However, although the known and predicted human burials are likely to be considerably disturbed, they nevertheless have a high significance and cultural value.

The Aboriginal objects in the Proposal impact area have been considerably disturbed in the past by numerous previous activities. Therefore, avoidance or the mitigation of harm has not been considered as an option in relation to the proposed activity. The nature of the Aboriginal objects and the proposed impacts are of insufficient significance to warrant the implementation of avoidance or impact mitigation strategies. The exception is the potential for human skeletal material to present in Survey Unit 6. Management strategies are required in this regard in this area. However, underboring of the pipeline in Survey Units 5 and 6 (as proposed), in the Bay Ridge Estate area and in the vicinity of Batemans Bay Public School around Surfside oval to the existing SPS (BB08) site would result in minimal to no disturbance of potential archaeological material in these areas.

No areas of the Proposal area have been identified which warrant further archaeological investigation to formulate appropriate management and mitigation strategies. The predictions relating to the archaeological nature and potential of the proposed impact areas are made with a high level of confidence.

It is assessed that the archaeological resource in the Proposal area does not surpass significance thresholds which warrant any form of impact mitigation in the form of salvage. However, the development of a monitoring strategy is required for works in Survey Unit 6 where human skeletal material may be present.

The NSW Archaeology ACHA concluded that there are no overall cultural archaeological or cultural heritage constraints in regard to the proposed works, and that no further cultural and archaeological heritage investigations are required in respect of the proposed activity. A draft of the completed ACHA report was sent to RAPs for a review on 17th May 2022. A follow-up reminder was sent to RAPs on 8th June 2022. No responses were received. The ACHA was subsequently amended and the draft ACHA re-issued to the RAPs for review on 13th September 2022.

An Aboriginal Cultural Heritage Management Plan should be developed that would provide guidance in regard to managing and mitigating impacts during construction.

Four Aboriginal object sites identified in Table 5-1 occur in the Proposal works impact area. Therefore, a Section 90 AHIP is required from Heritage NSW prior to undertaking works which would impact those sites.

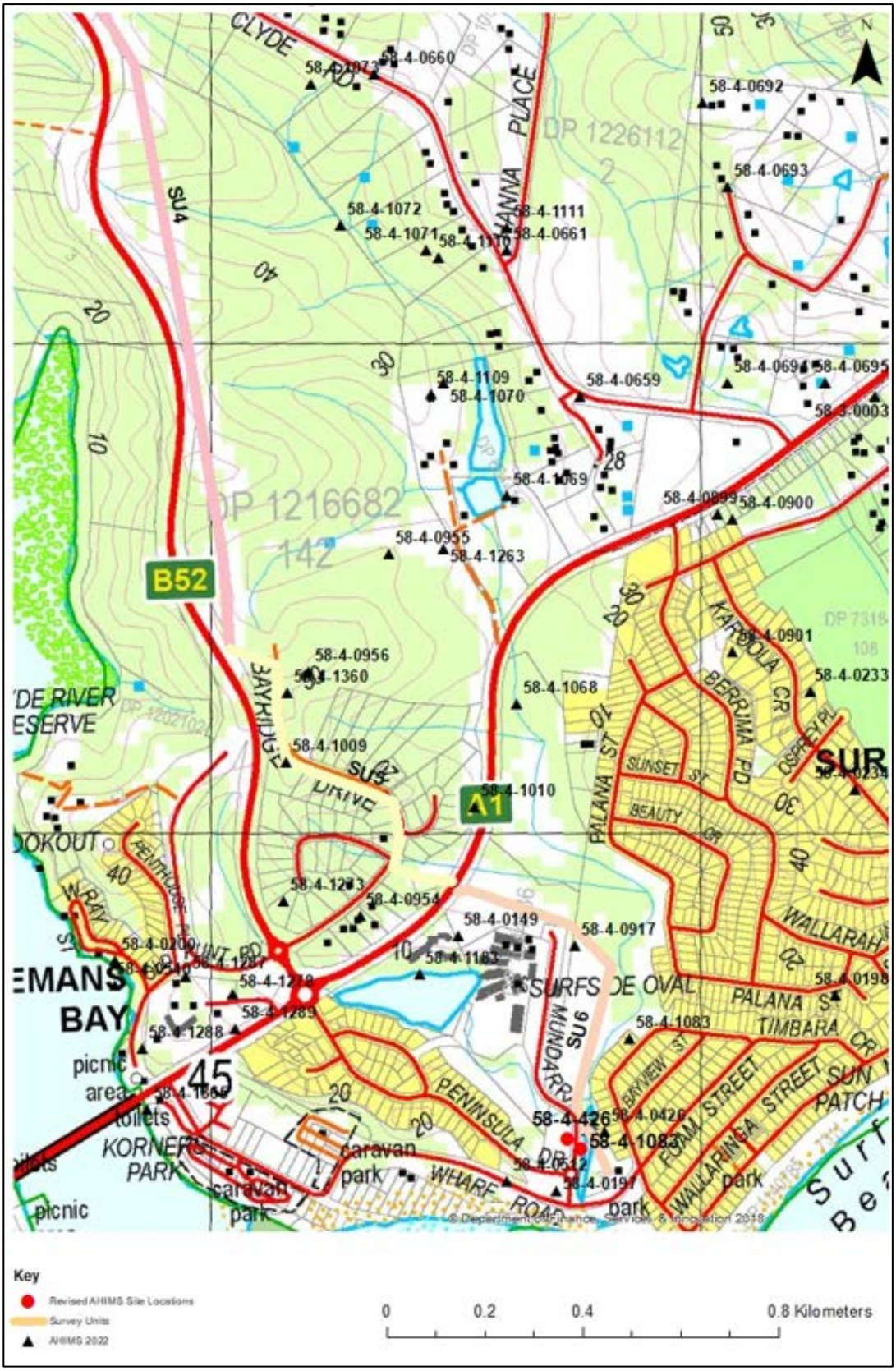


Figure 5-8 Location of AHIMS site recordings and Survey Unit 5 (yellow) and Survey Unit 6 (salmon), southern Proposal area in North Batemans Bay

Source: NSW Archaeology, 2022

5.6.2 Mitigation Measures

- A s90 AHIP is required for impacts to four Aboriginal sites in the vicinity of the works. No works should occur within the vicinity of the AHIMS sites until an AHIP is issued.
- Monitoring of excavations in the Survey Unit 6 area of the ACHA report (i.e. South of the Princes Highway in North Batemans Bay) is required for the purposes of managing the potential for human skeletal material to be present. Monitoring should be undertaken by a qualified archaeologist with a representative of the Aboriginal community.
- An Aboriginal Cultural Heritage Management Plan should be developed that would provide guidance in regard to managing and mitigating impacts during construction.
- In the event that potential Aboriginal objects are encountered (including skeletal material), the following Unanticipated Finds Protocol should be followed:

Unanticipated Finds Protocol:

- All ground surface disturbance in the area of the finds should cease immediately once the finds are uncovered.
- The discoverer of the find(s) would notify machinery operators in the immediate vicinity of the find(s) so that work can be halted; and the Principal's Authorised Person would be informed of the find(s).
- If there is substantial doubt regarding an Aboriginal origin for the finds, then gain a qualified opinion from an archaeologist as soon as possible. This can circumvent proceeding further along the protocol for items which turn out not to be archaeological. If a quick opinion cannot be gained, or the identification is positive, then proceed to the next step.
- Immediately notify the following authorities or personnel of the discovery:
    - Heritage NSW; and
    - Relevant Aboriginal Community Representatives.
- Facilitate, in co-operation with the appropriate authorities and relevant Aboriginal community representatives:
    - The recording and assessment of the finds;
    - Fulfilling any legal constraints arising from the find(s). This would include complying with Heritage NSW directions; and
    - The development and conduct of appropriate management strategies. Strategies would depend on consultation with stakeholders and the assessment of the significance of the find(s).
- Where the find(s) are determined to be Aboriginal Objects, any re-commencement of construction related ground surface disturbance may only resume in the area of the find(s) following compliance with any consequential legal requirements and gaining written approval from Heritage NSW (as required).

5.7 Historic Heritage

The Australian Heritage Database, State Heritage Register and Inventory and Eurobodalla LEP 2012 were reviewed and searched for historical heritage items in the vicinity of the proposed transfer mains alignment and SPS site.

Two historic heritage items listed under on the Eurobodalla LEP 2012 are located in the general vicinity of the proposed transfer mains and SPS site. The two heritage items are located in the Nelligen village area on the eastern side of the Clyde River. No listed heritage items are located in the vicinity of the Proposal works in the Bay Ridge or North Batemans Bay areas.

No heritage items listed on the State Heritage Register are located in the vicinity of the proposed water supply and sewerage scheme transfer main or SPS works. A list of the local heritage items in the vicinity the Proposal works is provided in Table 5-2 and their locations are shown in Figure 5-9.

Table 5-2 Historic Heritage Listings in proximity to the Proposal works

Type of Heritage Listing/ Register	Name of Heritage Listing	Item Number	Heritage Significance on Listing	Location
Eurobodalla LEP 2012	Punt Loading Site	I276	Local	Thule Street, Nelligen Lot 7013 DP1052890
Eurobodalla LEP 2012	Ferry Masters Residence	I315	Local	23 Thule Road, Nelligen Lot 1 DP 1236685

Figure 5-9 Location of listed heritage items under the Eurobodalla LEP 2012 in the vicinity of the Proposal works (near Nelligen)

Source: Department of Planning and Environment Planning Portal, accessed October 2018

5.7.1 Impact Assessment

The proposed transfer mains and SPS site are located in the vicinity of two of listed local heritage items, as summarised in Table 5-2 above.

No impacts are anticipated to occur to the heritage items, as the proposed works for the transfer mains and SPS would be subsurface and not undertaken in close proximity to or within the curtilage of the two listed local heritage items.

No historic archaeological items are considered likely to be found, as the Proposal works area comprises previously disturbed land and road reserve.

5.7.2 Mitigation Measures

- Construction staff would be made aware that archaeological relics are protected under the *Heritage Act 1977*. In the event that any relics are discovered during the course of the works, work would cease in the affected area and Heritage NSW would be contacted.

5.8 Noise and Vibration

The area immediately surrounding the water and sewer transfer mains alignment is a mixture of bushland areas, located predominantly adjacent to the cleared power supply easement, and

low density development within the Nelligen and North Batemans Bay areas. The Bay Ridge Estate is currently undergoing development, as such, this area generally comprises road easements surrounded by cleared or vegetated land, with few surrounding sensitive noise receivers. The section of the water supply transfer main from Nelligen reservoir site is located in a relatively secluded location adjacent to cleared vacant land to the north and the Benandarah State Forest. One residential noise receiver is located approximately 500 m to the west of the alignment.

The SPS site is located within a low density residential and bushland area. A residential dwelling is present immediately adjacent to the site approximately 30 m to the west. A vacant lot is located to the north across Bridge View Road, a vacant shed situated within bushland is present to the south of the site, with the Kings Highway located approximately 50 m to the east beyond Thule Road and a narrow band of bushland.

Noise monitoring was not undertaken as part of the REF, however background noise levels in the Proposal areas are likely to vary from 35-40 dB(A) around the State Forest, up to 55 dB(A) in residential areas and higher where works would take place adjacent to the Kings Highways, due to vehicles travelling at high speeds.

5.8.1 Impact Assessment

Construction

The typical A-weighted sound power levels for equipment which may be required to undertake the construction works are listed in Table 5-3 below (it is noted that this list is not definitive and these levels are taken from the *Australian Standard AS2436-2010 Guide to Noise Control on Construction, Demolition and Maintenance Sites*).

Table 5-3 Construction Equipment Sound Power Level

Equipment	Typical Sound Power Levels (dB)	Sound Pressure Level at 30m distance (dB(A))	Sound Pressure Level at 100m distance (dB(A))
Excavator	118	80	70
Truck	117	79	69
Light vehicles	106	68	58
Jackhammer	121	83	73
Rock breaker	118	80	70
Machine mounted drill	116	78	68
Compressor (silenced)	101	63	53

Equipment	Typical Sound Power Levels (dB)	Sound Pressure Level at 30m distance (dB(A))	Sound Pressure Level at 100m distance (dB(A))
Concrete agitator truck	109	71	61
Hand Tools	102	64	54
Crane (mobile)	104	66	56

Notes: The method specified in AS2436 suggests that errors are introduced for distances greater than 100m from the sound source.

The total duration of construction works is anticipated to be approximately 10 months. However, construction of the transfer mains would progress relatively steadily along the alignment and thereby minimise noise and vibration impacts at any one location. Noise and vibration impacts would be experienced at the SPS site for longer than the rest of the proposed pipeline installation works however this would be less than the total 10 month construction period. Furthermore, the sites are located in areas with few surrounding sensitive noise receivers; therefore, noise and vibration during construction would impact a relatively small number of sensitive receivers.

Under the *Interim Construction Noise Guideline* (DECCW, 2009) construction noise criteria for residences where the construction duration is greater than three weeks is the rating background noise plus 10 dB(A), and the resultant noise management level for the residential areas would be 65 dB(A) and for the bushland areas would be 50 dB(A) (internal). Based on the typical sound power levels in Table 5-3 and using the methodology in the *Australian Standard Guide to Noise Control on Construction, Demolition and Maintenance Sites* and the *Interim Noise Construction Guideline*, the maximum predicted noise levels at the closest residences, and in bushland areas during construction may exceed the recommended noise affected level as well as the highly affected noise level (75 dB(A)) above which there may be strong community reaction to noise (DECCW, 2009).

Noise levels would vary depending on the nature of the activities being undertaken. The use of several items of construction equipment simultaneously is only expected to occur intermittently, if at all. In addition, construction hours would be restricted to the normal daytime construction hours as specified by EPA and the nature of the works would be temporary. Works would progress rapidly along the transfer mains alignments and therefore there would not be impacts in the same area for the entire construction duration. Although construction works would have a longer duration at the SPS site compared to the works at any one location along the pipeline alignments, any impacts are not anticipated to be significant due to the limited development in the immediate vicinity of the SPS site.

The use of the construction equipment listed in Table 5-3 also has the potential to cause some vibration impacts, although it should be noted that no blasting would be undertaken during the works.

The vibration generated from construction works for the transfer mains and SPS would vary depending on the level and type of activity carried out at each site during each activity. Potential vibration generated to receivers for the works would be dependent on separation distances, the intervening soil and rock strata, dominant frequencies of vibration and the receiver structure.

Dominant vibration generating plant include:

- Drilling
- Bulldozer
- Excavator
- Compactor
- Truck movements along unsealed roads
- Rock Breaker (heavy)

In some areas along the transfer mains alignment and at the SPS site, there is the potential for the nearest affected receivers to be affected by the above listed construction plant.

It is recommended that any required site-specific buffer distances for vibration significant plant items (e.g. vibratory rollers, compactors) be determined on site where works are within 10-15m from a building or structure depending on the blow energy used as, unlike noise, vibration cannot be readily predicted.

For any residences located in close proximity to any such works, more accurate buffer distances should be determined on site by measuring vibration emission levels from each plant item prior to its operation or alternative construction methods and equipment are to be used. Control measures to minimise noise and vibration impacts would be implemented during construction for all components of the Proposal as part of the contractor's Construction Environmental Management Plan (CEMP).

Control measures to minimise noise and vibration impacts would be implemented during construction as part of the contractor's CEMP.

During operation, the proposed SPS may generate some operational noise due to the operation of the pumps and transformer. This would be a new noise source in the immediate vicinity, as there is no existing mechanical equipment at this site. However, the transformer noise is not anticipated to be significant and the pumps would be located within an acoustically designed building and therefore any noise emitted is anticipated to be minimal and would not significantly impact on surrounding residential or other land users. The detailed design of the pump station must comply with the requirements of the EPA Industrial Noise Policy, which limits noise increases to 5 dB(A) above background noise level at the closest receiver. Therefore, is not anticipated to significantly impact on nearby residential or other land users.

5.8.2 Mitigation Measures

- The new SPS would be designed to ensure it complies with the *Noise Policy for Industry (EPA, 2017)*.
- Community notification would be undertaken where appropriate and where work is likely to cause vibration or offensive noise and impact the public and nearby residents.

- Works would be undertaken during normal work hours i.e. 7am to 6pm Monday to Friday; 8am to 1pm Saturdays; and no work would be undertaken on Sundays, Public Holidays or outside these work hours without notification to the affected community and EPA. Notification would provide the following details:
    - The locations and types of surrounding receivers likely to be affected;
    - The nature of the proposed works;
    - The noise characteristics of any powered equipment likely to be used;
    - Measures to be taken to reduce noise emissions; and
    - Any other information EPA may request.
    - All reasonable practical steps shall be undertaken to reduce noise and vibration from the site.
- Control measures to minimise noise and vibration impacts on adjoining land would be implemented during construction as part of the contractor's CEMP, which would require review by ESC prior to commencement of works. The CEMP would address site specific issues, including limited work hours and noise and vibration reduction practices, taking into consideration DECCW's Interim Construction Noise Guideline (in particular Tables 4 – 10) and Assessing Vibration: A Technical Guideline (in particular mitigation measures in Section 3). Mitigation measures to minimise noise and vibration impacts may include the following:
    - Optimum siting of work areas, vehicle and plant parking areas, materials stockpiles and equipment storage areas in locations where potential acoustic and vibration impacts would be minimised;
    - Regular maintenance of all plant and machinery used for the Project;
    - Identify locations where construction noise and vibration is most intrusive and develop strategies to reduce impacts for these areas.
- All construction machinery is to be turned off when not in use.
- Work generating high noise levels should be scheduled during less sensitive time periods if practicable.
- Noise generating activities with impulsive, tonal or low frequency characteristics (such as rock breaking, etc) should only be carried out:
    - in continuous blocks, up to but not exceeding 3 hours each; and
    - with a minimum respite period of one hour between each block.
- Use quieter and less noise emitting construction methods where feasible and reasonable.
- All plant and equipment to be appropriately maintained to ensure optimum running conditions, with periodic monitoring.
- Simultaneous operation of noisy plant within discernible range of a sensitive receiver is to be limited/ avoided where possible.
- The offset distance between noisy plant and adjacent sensitive receivers is to be maximised where practicable.

- Plant used intermittently to be throttled down or shut down when not in use where practicable.
- Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site.
- Non-tonal reversing beepers (or an equivalent mechanism) should be fitted and used on all construction vehicles and mobile plant regularly used on site for periods of over two months where practicable.
- Where reasonable and feasible, use structures to shield residential receivers from noise such as:
    - site shed placement;
    - earth bunds;
    - temporary or mobile noise screens (where practicable)
    - enclosures to shield fixed noise sources such as pumps, compressors, fans etc (where practicable); and
    - consideration of site topography when situating plant.
- High noise generating plant and equipment, such as rock hammers, should be used only when required (if hard rock is encountered).
- The contractor would undertake noise measurements to verify that the operation of the new SPS complies with the *Noise Policy for Industry (EPA, 2017)*.

5.9 Air Quality

Air quality is expected to be good, with the main influence on air quality in the area being vehicle emissions associated with moderate and low traffic volumes along the Kings Highway and local roads, respectively. There are no point sources of air pollution in the vicinity of the Proposal works area. However, in high wind events, dust can be a major source of air particulates.

5.9.1 Impact Assessment

The main impact to air quality during construction would be expected to arise from the generation of airborne localised dust associated with earthworks and from trucks transporting materials to and around the construction sites on unsealed roads. This is not anticipated to cause notable adverse environmental impacts unless the weather is particularly windy. Dust suppression methods, including the use of water carts, would be applied on windy days to prevent dust being transported off site.

Local air quality may be affected by emissions from construction traffic. These emissions would, however, occur only intermittently, and are expected to be minor and temporary. It would be unlikely that they would contribute to a permanent detectable reduction in local air quality.

Construction vehicles and machinery would generate greenhouse gas emissions during the works. The Proposal involves the pumping of water and sewage that would require energy derived from fossil fuel use and therefore result in the generation of greenhouse gases. The

greenhouse gas emissions generated from the construction and operation of the Proposal would not be expected to be significant.

With implementation of the recommended mitigation measures, potential air quality impacts during construction are considered minor and unlikely to be significant.

Septicity and odour control measures, as described in Section 4.4.2, for the new SPS (which are also in operation at SPS BB08), will mitigate any odour issues associated with the operation of the SPS and the new sewer standpipe vent at BB08.

5.9.2 Mitigation Measures

- Construction vehicles and equipment would be suitably serviced within the six-month period prior to commencement of construction activities and all necessary maintenance undertaken during the construction period to meet EPA air quality requirements.
- The excessive use of vehicles and powered construction equipment would be avoided.
- All construction machinery would be turned off when not in use to minimise emissions.
- Construction contractors would monitor dust generation potential.
- Dust suppression methods including the use of water carts would be applied where required (i.e. on windy days when earthworks and vehicle movements are generating dust).
- Any stockpiled spoil/fill would be protected to minimise dust generation to avoid sediment moving offsite.
- Vehicles transporting spoil from the sites would be covered.

5.10 Traffic and Access

The water and sewer transfer mains would be predominantly located in the power supply easement adjacent to the Kings Highway and within road reserves in Nelligen, the Bay Ridge Estate and North Batemans Bay areas under the control of ESC, with several local roads on the eastern side of the Clyde River (Thule Road), the Princes Highway and the Kings Highway under the control of TfNSW. The Kings Highway experiences moderate to high levels of traffic, with local roads generally experiencing low levels of traffic with moderate traffic levels during holiday periods.

The SPS site is located within a low-traffic residential area with off-street parking available and with existing informal access off Bridge View Road.

5.10.1 Impact Assessment

The majority of the transfer mains and SPS works areas would be accessed via existing sealed roads and unsealed access tracks. Clearing of groundcover vegetation and the creation of a new access tracks may potentially be required for some sections of transfer rising mains for access to the power supply easement. No access would be required from waterways, with all construction areas suitably accessible by land.

Impacts to vehicle and pedestrian traffic and access will occur during the construction works however such impacts will be minimised as the works will progress rapidly and any impacts would be short term only. Although construction works would have a longer duration at the SPS site compared to the works at any one location along the transfer mains alignments, any

impacts are not anticipated to be significant due to the limited development in the immediate vicinity of the SPS site.

Existing access roads may require upgrades to be made suitable for heavy vehicles and machinery. The anticipated increased traffic movements due to construction vehicles would be short term and relatively infrequent in any given area along the transfer mains and village reticulation alignments, and therefore are not expected to result in a significant impact on the local road network. Works would be carried out so as to minimise interruption to access for adjoining landowners.

There is likely to be some impacts to road users such as through reduced speed limits, partial road closures and general disruptions to traffic flow during the construction works however as the majority of the works would be located within the existing power supply easement, impacts to road users would be minimal.

5.10.2 Mitigation Measures

- Obtain all necessary approvals under the *Roads* Act *1993* for works proposed within TfNSW road reserves.
- The contractor would prepare a Traffic Management Plan (TMP) as part of the CEMP, to be reviewed by ESC prior to commencement of works. The TMP would include measures to minimise traffic impacts ensure public safety and would be prepared in accordance with:
    - *TfNSW's Traffic Control at Work Sites Manual, (February 2022), and*
    - *Australian Standard 1742.3 - 2009 Traffic Control for Works on Roads.*
- Prior to the commencement of works, existing access tracks and roads that would be used by heavy vehicles would be assessed for adequacy and upgraded where necessary. Any upgrades would be subject to further impact assessment if the upgrades extend outside the existing road alignment. Appropriate drainage would be provided for any unsealed tracks utilised during the works to ensure that vehicle movements do not cause erosion and sedimentation of nearby waterways.
- Any disturbance to landowners as a result of vehicle movements and noise would be minimised by adhering to the working hours outlined in Section 5.8.2 of the REF. The contractor would avoid any inconvenience to residences/landowners, and all access gates would be in their original condition following completion of the works.
- Any temporary access tracks required for the works would be located so as to minimise disturbance to the existing environment, with preference given to traversing and driving over ground cover and understorey vegetation, as opposed to clearing it, to facilitate vegetation regeneration post-works. Following completion of the works the temporary tracks would be removed, topsoil provided and re-grassed. Damage to existing tracks would be restored after completion of the works.
- Trucks would not access the sites in weather conditions that would cause damage to ground surface or properties.
- All traffic would comply with all applicable traffic laws and regulations including speed limits. All construction vehicles would comply with the speed limits set for the roads accessing the site.

5.11 Waste Management

5.11.1 Impact Assessment

The construction of the Proposal would generate waste including excess spoil, vegetation and general building wastes such as packaging, off cuts, excess materials and workers wastes such as drinks containers, food scraps, etc. Portable toilets would be provided for workers at each site and along the alignment as necessary. Excavated material would generally be used to backfill pipe trenches and minimal excess spoil is predicted.

Directional drilling (underboring) for the Kings and Princes Highways, private land, waterway crossings and at North Batemans Bay (Surfside Oval area) would require drilling fluid / slurry, which would need to be disposed of at the completion of the works at an appropriately licensed waste facility. Drilling works and associated waste can be managed to avoid any adverse environmental impacts (See Section 5.3 above).

The potential for acid sulfate soils associated with low laying areas of North Batemans Bay may mean spoil from these areas of the route are treated and disposed of offsite. A Potential Acid Sulfate Soils Management Plan (PASSMP) would be prepared as part of the Contractor's CEMP including addressing any dewatering in Acid Sulfate Soil areas. Dewatering of trenches may be required due to infiltration of rain water. A Dewatering Plan would be prepared as part of the Contractor's CEMP. Liquid waste may be generated due to dewatering.

To ensure that environmental harm does not occur as a result of uncontrolled or inappropriate collection, transport and disposal, the relevant provisions of the following Acts would be implemented:

- *Waste Avoidance and Resource Recovery Act 2001*
- *Protection of the Environment Operations Act 1997*
- *Protection of the Environment Operations (Waste) Regulation 2014*

The waste management and contamination control procedures and/or measures listed below would be implemented for the proposed works.

Operational wastes are predicted to be minimal. Wastewater and sediment generated from pipeline maintenance (scouring) activities is discussed in Section 5.3.1. All wastewater and sediment resulting from pipe scouring and pigging would be captured and allowed to infiltrate / evaporate with the remaining silt and sediment to be removed off site for disposal in accordance with the appropriate waste classification.

5.11.2 Mitigation Measures

- The contractor undertaking the works would detail waste management procedures in a Waste Management Plan to be incorporated into the CEMP. The contractor is to assume responsibility for the appropriate disposal of any waste generated. Adequate procedures should be established and detailed in the CEMP, including notification requirements to EPA for incidents that cause material harm to the environment. The WMP would also follow the resource management hierarchy principles embodied in the *Waste Avoidance and Resource Recovery Act 2001*. Namely, to:
    - avoid unnecessary resource consumption;

  - recover resources (including reuse, reprocessing, recycling and energy recovery); and
  - dispose (as a last resort).

- Any required concrete would be mixed off-site and transported to the construction areas. Excess concrete would be removed off-site for recycling.
- All waste removed from the site, including waste from drilling operations, would be classified and disposed of appropriately, and all non-recyclable waste would be disposed of at an appropriate licensed waste disposal facility.
- If any contaminated material is encountered during earthworks, work shall cease, the site secured, and a safe work method statement(s) and appropriate practices shall be implemented. Any contaminated material would be classified first and then stored, transported and disposed of in accordance with EPA requirements at an EPA licensed waste facility.
- Cleared vegetation (devoid of weeds) would be spread out on site or alternatively disposed off site in accordance with EPA requirements.
- All equipment should be cleaned of soil and vegetation before being brought to the site to minimise the risk of spreading weeds.
- Any noxious or controlled weeds must be controlled and disposed of at a landfill site in accordance with EPA requirements and not mixed with soil to be reused on site or elsewhere.
- If practicable, surplus excavated materials/fill would be reused onsite as part of rehabilitation and restoration works. Any surplus spoil disposed of in this manner would be seeded to minimise the likelihood of it being transported offsite through wind or water action.

5.12 Hazards and Risks

5.12.1 Impact Assessment

The transfer mains alignments, where they cross roadways, presents a potential safety risk to workers and road users. However, traffic related hazards can be adequately managed through appropriate management controls to be developed as part of the contractors TMP.

Septicity control measures would be provided at the SPS site in the form of a Ferrous Chloride system. This chemical is classed as a Hazardous Substance (Corrosive 8) and Poison S5. Class 8 substances are classified as corrosive substances. These are defined as substances which, by chemical action, would cause severe damage when in contact with living tissue, or, in the case of leakage, would materially damage, or even destroy, other goods or the means of transport.

Provision of a safety shower and loading and unloading concrete pad is required at the SPS, as is appropriate worker protection and training for handling the material at each location where filling is conducted.

The quantity of chemical that would be stored is below the relevant threshold that would trigger additional requirements under *State Environmental Planning Policy (Resilience and Hazards) 2021.*

The risk of chemical spills during operation of the SPS is considered to be low. Council would likely store the chemical in bulk at one of its depots and refill the storage as required. However, chemicals used in the SPS treatment be stored on site in a bunded area / cupboard.

Public safety hazards are unlikely beyond the boundary of the SPS site. Chemicals stored and used at the SPS site are required to be stored in accordance with Australian Standards and SafeWork NSW guidelines and included in the site Operational Environmental Management Plan, adequately sealed within infrastructure and appropriately stored.

Other general risks resulting from the Proposal include the risk of pollution of the environment, particularly during the construction phase of the works. It is considered that implementation of the mitigation measures summarised in Section 6 would minimise this risk.

5.12.2 Mitigation Measures

- The CEMP would incorporate a pollution incident response management plan that defines appropriate procedures for notification of pollution incidents to the required authorities in accordance with s. 147 to 153 of the POEO Act and requires response actions to be implemented in order to address any risks such as incidents posed to the environment, property or surrounding communities.
- The transport and handling of all chemicals used in the operation of the ferrous chloride system would be undertaken in accordance with all relevant SafeWork NSW guidelines including the following:
    - *Code Of Practice: Managing Risks Of Hazardous Chemicals In The Workplace* (SafeWork NSW, July 2020).
    - *Code Of Practice: Labelling Of Workplace Hazardous Chemicals (*SafeWork NSW, July 2020).
- SafeWork NSW would be notified regarding the storage of dangerous goods at the SPS site.
- Safety handling facilities for the ferrous chlorite, which is classed as a Hazardous Substance (Corrosive 8) and Poison S5, should be as per:
    - the Material Safety Data Sheet provide by the chemical supplier
    - All relevant SafeWork NSW guidelines
    - the Australian Dangerous Goods Code Edition 7.7 (October 2020)
- Liquid chemical storage and filling areas would be located in bunded areas designed to accommodate 120% of the total capacity delivered and are to include appropriately designed drainage and safety equipment.
- Storage tanks would be regularly inspected and maintained to ensure their integrity. Council personnel involved in the operation and maintenance of the SPS would be trained for proper and safe operation of these facilities.

- Specific requirements for the management of chemicals associated with the SPS would be detailed in an Operational Management Plan. The Operational Management Plan would be periodically reviewed to assess the efficacy of all management procedures. Identified shortcomings would be remedied to ensure these continue to be effective.
- Safety Data Sheets for chemicals used in the treatment process are to be available on sites at all times.
- All hazardous substances are to be listed in a register together with the relevant Safety Data Sheets. Employees are to have access to this register.
- Fuel and lubricants for machinery maintenance are to be stored and managed appropriately.
- Appropriate signage is to be maintained where chemicals are stored.
- Notification to the EPA in accordance with Part 5.7 of the POEO Act is to be undertaken where a pollution incident occurs in the course of an activity so that material harm to the environment is caused or threatened.
- Standard occupational health and safety practices would be adhered to.
- The community would be notified of any incident with the potential to result in public health impacts.
- Appropriate signage, locked gates and site fencing would be installed around the SPS site, as required.

5.13 Visual Amenity

5.13.1 Impact Assessment

There would be some minor visual impacts during construction of the Proposal due to the presence of construction equipment. However, this would generally only occur for short periods at any one location as construction of the water and sewer transfer installation progresses along the alignment, with slightly longer impacts during construction of the SPS. This impact is not anticipated to be significant due to the temporary nature of the construction works, and the location of the mains predominantly adjacent to an existing highway.

Some vegetation removal will be required for the transfer main and SPS works however visual impacts are unlikely to be significant as the pipelines and SPS would be installed within previously cleared areas. Furthermore, over time the vegetation clearing impacts associated with the Proposal would decrease as vegetation regenerates and any ongoing / maintained clearing would be restricted to that required for operational maintenance purposes. These visual impacts are unlikely to be significant.

As the majority of the infrastructure (i.e. the transfer mains) would be located underground, operational visual impacts would be restricted to the SPS and vegetation clearing. The SPS and vent standpipe would be new elements in the visual landscape. However, the visual impact is considered to be low to moderate as the SPS and standpipe would be located in areas which have been subject to residential development including vegetation clearing. The SPS and standpipe would be consistent with the surrounding environment, and the standpipe would be located adjacent to the existing SPS building and located behind a tree line to minimise visual

impacts. Therefore, these elements of the Proposal are not anticipated to have an adverse impact on the visual amenity of the surrounding area.

5.13.2 Mitigation Measures

- The clearing of vegetation would be kept to the minimum required for the works
- Construction compounds and areas for the parking of vehicles and storing of equipment would be located in cleared areas wherever possible.

5.14 Utilities and Infrastructure

5.14.1 Impact Assessment

Relevant utilities and infrastructure providers (including Essential Energy) have and would be consulted further regarding the design and construction requirements for the water and sewerage scheme infrastructure in the Nelligen, North Batemans Bay area and along the power supply easement, where the new water and sewer infrastructure is located in close proximity to, or has the potential to impact on, existing power supply and telecommunications infrastructure. Those requirements would be incorporated into the design and construction of the proposed new water supply and sewerage scheme infrastructure.

5.14.2 Mitigation Measures

- The final design plans are to be supplied to Essential Energy for comment prior to the commencement of construction works.
- Works within the power supply easement must comply with *ISSC 20 Guideline for the Management of Activities within Electricity Easements and Close to Infrastructure.*
- Where the rising mains are located within the power supply easement, the pipeline should be a minimum of 4 m from Essential Energy's infrastructure and comply with:
  - Essential Energy's Operational Manual, Overhead Design Manual (CEOM7097)
  - Essential Energy's Minimum Clearance Requirements for NSW (CEOM7106.25)
  - AS/NZS 7000:2010 Overhead line design detailed procedures
  - ISSC 20 Guidelines for the Management of Activities within Electricity Easements and Close to Infrastructure.
- SafeWork NSW has publications that provide guidance when working close to power supply infrastructure, including the *Code of Practice – Work near Overhead Power Lines.* The contractor should adhere to the SafeWork NSW guidelines during construction works near overhead power lines.
- Utilities and services which may be impacted by the Proposal would be accurately located prior to commencement of works using Dial Before You Dig (DBYD) and confirmed by physical location and marking prior to construction.
- Utility and telecommunications infrastructure service providers would be consulted prior to the commencement of and during construction works

6 Environmental Management

6.1 Construction Environmental Management Plan

Preparation of a Construction Environmental Management Plan (CEMP) is mandatory for all projects undertaken by or on behalf of government agencies or where funding is being provided by the government.

The CEMP would be developed to ensure that appropriate environmental management practices are followed during a project's construction and/or operation. ESC would review the CEMP for this Proposal, which should include the following elements, as described in the Guideline for the Preparation of Environmental Management Plans (DIPNR, 2004):

Table 6-1 Construction Environmental Management Plan Structure

Background	Introduction to the document Description of the Proposal and project details The context for the CEMP with regard to the overall project The CEMP objectives The contractor's environmental policy
Environmental Management	Environmental management structure of the organisation and specific team responsibilities with respect to the CEMP and its implementation Approval and licensing requirements relevant to the project Reporting requirements Environmental training Emergency contacts and response
Implementation	A project specific risk assessment A detailed list of environmental management safeguards and controls CEMP sub plans for specific environmental controls A detailed schedule assigning responsibility to each environmental management activity and control
Monitor and Review	Environmental monitoring Environmental auditing Corrective action CEMP review and document control procedures

The CEMP would include a risk assessment which ensures that the safeguards identified in this REF, as well as any others that are considered relevant, are effectively translated into

actual construction techniques and environmental management activities, controls and monitoring/verification to prevent or minimise environmental impacts. The CEMP should also identify the requirements for compliance with relevant legislation and any other regulatory requirements to ensure environmental safeguards described throughout this REF are implemented. The environmental management objectives and supporting actions presented in this section are intended to assist in this process.

The following details the environmental objectives during construction and the proposed mitigation to be included in the CEMP. This list is not definitive, and additional measures detailed as part of the determination of the Project and conditions of any other approvals must also be included. Operational safeguards are also included.

6.2 Environmental Management Measures

Implementation of the mitigation measures outlined below would be undertaken during a number of phases of the project. These phases comprise:

- Pre-construction – prior to the contractor arriving on site to carry out the works
- Construction – during construction phase
- Operation – post construction

6.2.1 Land Use

Objective

- Minimise impacts to surrounding land users during construction and operation

Actions

Action/Phase	Responsibility
Pre-construction	
Prior to commencement of construction activities, all necessary approvals, permits, licenses and agreements would be obtained from the relevant landowners/authorities.	ESC / Contractor
A permit (Level 2) would be required from the Forestry Corporation of NSW for tree removal within State Forest. For any construction works or operations on cleared State Forest land, the REF should be provided and approval would be required from the Forestry Corporation of NSW for works within State Forest, prior to the commencement of construction works.	ESC / Contractor
Consultation would be undertaken with affected landowners or the community for the potential impact on land uses during construction and any safeguards or mitigation measures that need to be implemented during the works.	ESC / Contractor
Construction	

Action/Phase	Responsibility
Pre-construction	
No construction activities (e.g. tree clearing, stockpiling etc.) would be undertaken on property adjoining the works areas without prior notification to or approval of the landowner.	Contractor
Appropriate security (including temporary fencing), supervision and access controls would be put in place and properly monitored to ensure no access by unauthorised personnel, either to the work area or via the work area to adjoining areas. This should include appropriate measures for the protection of the public where construction works would adjoin areas subject to regular use by the general public (e.g. in the Nelligen village area).	Contractor
The contractor would be required to ensure the necessary care and maintenance of property facilities and operations. However, if any damage does occur to property, it would be restored to a condition equivalent to the original condition.	Contractor
Operation	
As operator of the water and sewage reticulation infrastructure, ESC should provide a 24-hour telephone number so that any issues relating to the operation of the new infrastructure can be clarified and complaints dealt with by those able to respond.	ESC

6.2.2 Water Quality, Erosion and Sediment Control and Flooding

Objective

- To effectively manage sediment and erosion control during the construction stage of the project.
- Prevention/minimisation of impacts to the waterways during the construction works.

Actions

Action/Phase	Responsibility
Pre-construction	
All personnel involved in construction works should be aware of the details of the works plans, legislation and associated pollution controls and the environmental sensitivity of the surrounding receiving waters before any works. All activities must be carried out with due diligence, duty of care and in accordance with best management practices.	Contractor
A detailed Erosion and Sediment Control Plan (ESCP) shall be prepared as part of the CEMP. The ESCP would describe the site specific measures to be implemented for all works areas, in accordance with the guidelines outlined in	Contractor

Action/Phase	Responsibility
the 2004 Landcom publication Managing Urban Stormwater: Soils and Construction, 4th edition ("The Blue Book") and Volume 2a Installation of Services. The ESCP would need to be site specific and would need to address the following issues to prevent erosion, sediment loss and water quality impacts: • Minimisation of disturbance to soil and water adjacent to, and within, all watercourses in the works area. • Identification of site specific sediment and erosion control measures wherever erosion is likely to occur. • Identification of any environmentally sensitive areas on or near construction sites to ensure runoff is diverted away from sensitive areas. • Requirements for vegetation clearing to be kept to a minimum. • Retention of all surface runoff on-site and where possible stormwater from off site would be diverted around the construction site. • Backfilling and stabilising of trenches once pipelines are installed. • Location of construction compounds (at least 50m from any drainage lines). • Location and management of stockpiles, such as locating stockpiles away from any drainage lines near the works areas. • Regular inspection of all erosion and sediment controls, especially when rain is expected and directly after any rain events.	
A Potential Acid Sulfate Soil Management Plan would be required for the North Batemans Bay area identified as containing Potential Acid Sulfate Soils (PASS) and which would be disturbed during construction. This should include screening testing during construction and should be consistent with Acid Sulphate Soils Assessment and Management Guidelines. Appropriate procedures would also be required groundwater dewatering in those areas affected by PASS.	Contractor
The CEMP would incorporate a pollution incident response management plan that defines appropriate procedures for notification of pollution incidents to the required authorities in accordance with s. 147 to 153 of the POEO Act and requires response actions to be implemented in order to address any risks such as incidents posed to the environment, property or surrounding communities.	Contractor
The potable water supply mains will be required to be disinfected with chlorinated water as part of the construction/ commissioning process. The contractor will prepare a management plan for the disposal of the chlorinated water from the water mains to avoid any potential impact on waterways.	Contractor
The CEMP would incorporate a pollution incident response management plan that defines appropriate procedures for the management and notification of pollution incidents in accordance with s. 147 to 153 of the POEO Act. The EPA	Contractor

Action/Phase	Responsibility
is to be notified immediately of any pollution incidents or harm to the environment (as defined under Part 5.7 of the POEO Act).	
Workers are to be made aware of the provisions of Section 120 of the POEO Act with regards to water pollution.	Contractor
A drilling management plan / procedures would be developed as part of the CEMP to detail the appropriate management and disposal of drilling slurry to avoid off site impacts. This would include requirements that: • All sludge and drilling medium extracted is to be removed from the site. • The site where the sludge would be disposed of would require bunding and appropriate treatment until the sludge is considered to be safe for disposal or re-use.	Contractor
Construction	
A site-specific spill management plan would be prepared and include the following requirements: • Emergency spill kits are to be kept at the site (vehicle kits). • Refueling of machinery to be undertaken in a dedicated area within the construction compound appropriately protected as outlined in the spill management plan. • Any chemicals and fuels are to be stored in a bunded area at least 50 metres from any waterway or drainage line. • Any hazardous materials stored on site would be stored in the compounds and within impervious and bunded enclosures capable of storing 120% of the volume of material stored there. Workers would be trained in the spill management plan and the use of the spill kits.	Contractor
The drill operator must be appropriately experienced and licensed.	Contractor
Works should not be scheduled when heavy rainfall is forecast and works involving soil disturbance should not take place during heavy rainfall periods, other than work necessary to stabilise the site.	Contractor
Any excess spoil would be removed off site for disposal in accordance with EPA requirements.	Contractor
All stockpiles of materials would be protected from scour and erosion.	Contractor
Access tracks would be designed so as to provide adequate drainage and stormwater control.	Contractor

Action/Phase	Responsibility
Any water discharged to the environment should comply with the water quality benchmarks for estuaries of the catchments within the Batemans Marine Park (Clyde River, Sheep Station Creek and Batemans Bay) as expressed in the NSW Water Quality Objectives (WQOs) developed in accordance with the ANZECC 2000 Guidelines on Water Quality.	Contractor
Works are considered likely to encounter groundwater in low laying areas of North Batemans Bay and therefore mitigation measures to manage groundwater would be incorporated into the CEMP, including: • Dewatering techniques during excavation; • Measures to ensure groundwater quality is not impacted during construction; • Techniques to settle, treat or filter groundwater encountered during excavation works i.e. diverting groundwater through baffle tanks or filter membranes; and Appropriate treatment and monitoring regimes in the event that groundwater flows come to the surface, including disposal of groundwater in such a way as to prevent adverse impacts (such as erosion and water pollution). Groundwater should not be discharged to a waterway during construction.	Contractor
Where less than 3 ML of groundwater is extracted during the works. The volume of water extracted during should be recorded daily and an aquifer interference activity exemption should be lodged through DPE - Water (NRAR) by the construction contractor on behalf of the proponent on the completion of works (Further information is available at https://www.dpie.nsw.gov.au/nrar/how-to-apply/water-licences/Groundwater). If more than 3 ML of groundwater is anticipated to extracted during the works, an aquifer interference approval would be required from DPE- Water prior to the commencement of works.	Contractor
All areas where ground disturbance has occurred would be stabilised following completion of works to ensure there is no erosion hazard and restored to their pre-construction condition. This would involve, where required, reshaping the ground surface, covering it with topsoil excavated from the site and re-establishing an appropriate vegetation cover (this may include respreading dead accumulated or cleared vegetation where possible).	Contractor
Operation	
During operation of the pipelines, any water containing silt and sediment generated as a result of scouring pipelines would be treated (if required) and disposed of as appropriate. Depending on the resultant water quality, this may involve discharge to a waterway or land application. Any water discharged to a waterway or recycled must be consistent with the requirements of the *Protection of the Environment Operations Act 1997*.	ESC

6.2.3 Biodiversity

Objective

- Avoidance/minimisation of impacts to flora and fauna
- Minimise clearing of vegetation
- Avoid weed invasion
- Prevention/minimisation of impacts to the drainage line

Actions

Action/Phase	Responsibility
Construction	
Vegetation clearing should be limited to the minimum required to successfully complete the Proposal.	Contractor
Hollow-bearing trees present on site should be retained where possible, giving preference to those trees that contain the larger hollows, and should be identified and clearly marked by a qualified independent ecologist prior to the undertaking of any clearing work.	Contractor
Locations of the hollow-bearing trees to be retained should be included on any plans provided to the contractor. These plants will require protection during the construction activities, including barriers to avoid root damage within the drip line of any retained tree.	Contractor
Where possible, any felled trees should not be mulched but should be relocated locally within the subject site to provide habitat for native species and their prey.	Contractor
Sewer main installation and standpipe vent work at the southern limits of the Proposal site, near the existing SPS (BB08) site at North Batemans Bay, should avoid the disturbance of the mature trees that constitute the State listed Swamp Oak Floodplain Forest EEC.	Contractor
Underboring sites should be located within areas previously disturbed and cleared of middle and over storey plants and provide adequate riparian buffers of at least 10m from the bank.	Contractor
Preference should be given to traversing and driving over ground cover and understorey vegetation, as opposed to clearing it. Traversing this vegetation will permit it to regenerate post-disturbance.	Contractor
The works should be planned and staged to ensure that long sections of trench are not left open. If left open overnight:	Contractor

Action/Phase	Responsibility
• the pipeline trench should be inspected for entrapped animals (such as ground traversing native species – reptiles, frogs, mammals). • options to permit entrapped animals to escape (e.g. hessian bags, long branches, 'ladders') should be placed within the trench.	
Vehicles and machinery should be stored and parked in cleared areas away from trees.	Contractor
The storage of materials and stockpiling of equipment should also occur within sites/areas that have been previously disturbed and cleared.	Contractor
Any animals injured during the clearing work should be collected and taken to a local veterinarian or wildlife carer.	Contractor
In accordance with the *Biosecurity Act 2015*, listed weeds identified on site must be controlled to result in their suppression.	Contractor
Operation	
Post-development, the pipeline alignments should be regularly monitored to manage any occurrences of weeds and other non-native species.	Contractor

6.2.4 Bushfire

Objective

- Minimise potential bushfire risk impacts to due to the works.

Actions

Action/Phase	Responsibility
Pre-construction	
Design of the above ground infrastructure at the SPS should take into consideration the potential bushfire risk at the site, in accordance with the relevant principles of the RFS publication *Planning for Bushfire Protection 2019*.	ESC
Construction	
Construction staff to be made aware of the location of the proposed works in bushfire prone land and the potential for bushfire risk.	Contractor
During catastrophic to high bush fire danger rating days no construction activities would be undertaken that pose a risk of starting a bushfire (e.g. welding).	Contractor

Action/Phase	Responsibility
Operation	
No maintenance activities should be undertaken at the SPS site which pose a risk of starting a bushfire during high risk bush fire danger rating days.	ESC

6.2.5 Aboriginal Heritage

Objective

- Minimise potential impacts to items and places of Aboriginal cultural heritage due to the works

Actions

Action/Phase	Responsibility
Pre-construction	
A s90 AHIP is required for impacts to four Aboriginal sites in the vicinity of the works. No works should occur within the vicinity of the AHIMS sites until an AHIP is issued.	ESC/Contractor
Construction	
Monitoring of excavations in the Survey Unit 6 area of the ACHA report (i.e. South of the Princes Highway in North Batemans Bay) is required for the purposes of managing the potential for human skeletal material to be present. Monitoring should be undertaken by a qualified archaeologist with a representative of the Aboriginal community.	Contractor
An Aboriginal Cultural Heritage Management Plan should be developed that would provide guidance in regard to managing and mitigating impacts during construction.	Contractor
In the event that potential Aboriginal objects are encountered (including skeletal material), the following Unanticipated Finds Protocol should be followed: <u>Unanticipated Finds Protocol:</u> All ground surface disturbance in the area of the finds should cease immediately once the finds are uncovered. The discoverer of the find(s) would notify machinery operators in the immediate vicinity of the find(s) so that work can be halted; and the Principal's Authorised Person would be informed of the find(s). If there is substantial doubt regarding an Aboriginal origin for the finds, then gain a qualified opinion from an archaeologist as soon as possible. This can circumvent proceeding further along the protocol for items which turn out not	Contractor

Action/Phase	Responsibility
to be archaeological. If a quick opinion cannot be gained, or the identification is positive, then proceed to the next step. Immediately notify the following authorities or personnel of the discovery: • Heritage NSW; and • Relevant Aboriginal Community Representatives. Facilitate, in co-operation with the appropriate authorities and relevant Aboriginal community representatives: • The recording and assessment of the finds; • Fulfilling any legal constraints arising from the find(s). This would include complying with Heritage NSW directions; and • The development and conduct of appropriate management strategies. Strategies would depend on consultation with stakeholders and the assessment of the significance of the find(s). Where the find(s) are determined to be Aboriginal Objects, any re-commencement of construction related ground surface disturbance may only resume in the area of the find(s) following compliance with any consequential legal requirements and gaining written approval from Heritage NSW (as required).	

6.2.6 Historic Heritage

Objective

- Minimise potential impacts to items and places of historic heritage due to the works

Actions

Action/Phase	Responsibility
Pre-construction	
Construction	
Construction staff would be made aware that archaeological relics are protected under the *Heritage Act 1977*. In the event that any relics are discovered during the course of the works, work would cease in the affected area and Heritage NSW would be contacted.	Contractor

6.2.7 Noise and Vibration

Objective

- Compliance with relevant recommendations specified in the Interim Construction Noise Guideline (DECC, 2009).
- Avoidance/minimisation of noise impacts on nearby sensitive noise receivers.

Actions

Action/Phase	Responsibility
Pre-construction	
The new SPS would be designed to ensure it complies with the *Noise Policy for Industry (EPA, 2017)*.	ESC
Community notification would be undertaken where appropriate and where work is likely to cause vibration or offensive noise and impact the public and nearby residents.	ESC /Contractor
Construction	
Works would be undertaken during normal work hours i.e. 7am to 6pm Monday to Friday; 8am to 1pm Saturdays; and no work would be undertaken on Sundays, Public Holidays or outside these work hours without notification to affected community and EPA. Notification would provide the following details: • The locations and types of surrounding receivers likely to be affected; • The nature of the proposed works; • The noise characteristics of any powered equipment likely to be used; • Measures to be taken to reduce noise emissions; and • Any other information EPA may request. • All reasonable practical steps shall be undertaken to reduce noise and vibration from the site.	Contractor
Control measures to minimise noise and vibration impacts on adjoining land would be implemented during construction as part of the contractor's CEMP, which would require review by ESC prior to commencement of works. The CEMP would address site specific issues, including limited work hours and noise and vibration reduction practices, taking into consideration EPA's *Interim Construction Noise Guideline* (in particular Tables 4 – 10) and *Assessing Vibration: A Technical Guideline* (in particular mitigation measures in Section 3). Mitigation measures to minimise noise and vibration impacts would include: • Optimum siting of work areas, vehicle and plant parking areas, materials stockpiles and equipment storage areas in locations where potential acoustic and vibration impacts would be minimised; • Regular maintenance of all plant and machinery used for the project; • Identify locations where construction noise and vibration is most intrusive and develop strategies to reduce impacts for these areas.	Contractor

Action/Phase	Responsibility
All construction machinery is to be turned off when not in use.	Contractor
Work generating high noise levels should be scheduled during less sensitive time periods if practicable.	Contractor
Noise generating activities with impulsive, tonal or low frequency characteristics (such as rock breaking, etc) should only be carried out: • in continuous blocks, up to but not exceeding 3 hours each; and • with a minimum respite period of one hour between each block.	Contractor
Use quieter and less noise emitting construction methods where feasible and reasonable.	Contractor
All plant and equipment to be appropriately maintained to ensure optimum running conditions, with periodic monitoring.	Contractor
Simultaneous operation of noisy plant within discernible range of a sensitive receiver is to be limited/ avoided where possible.	Contractor
The offset distance between noisy plant and adjacent sensitive receivers is to be maximised where practicable.	Contractor
Plant used intermittently to be throttled down or shut down when not in use where practicable.	Contractor
Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site.	Contractor
Non-tonal reversing beepers (or an equivalent mechanism) should be fitted and used on all construction vehicles and mobile plant regularly used on site for periods of over two months where practicable.	Contractor
Where reasonable and feasible, use structures to shield residential receivers from noise such as: • site shed placement; • earth bunds; • temporary or mobile noise screens (where practicable) • enclosures to shield fixed noise sources such as pumps, compressors, fans etc (where practicable); and • consideration of site topography when situating plant.	Contractor
High noise generating plant and equipment, such as rock hammers, should be used only when required (if hard rock is encountered).	Contractor

Action/Phase	Responsibility
The contractor would undertake noise measurements to verify that the operation of the new sewage pump station complies with the *Industrial Noise Policy* (EPA, 1999).	Contractor

6.2.8 Air Quality

Objective

- Avoidance/minimisation of off-site dust nuisance to neighbouring residences and the community.
- Minimisation of air quality impacts resulting from machinery and vehicle emissions.

Actions

Action/Phase	Responsibility
Pre-construction	
Construction vehicles and equipment would be suitably serviced within the six-month period prior to commencement of construction activities and all necessary maintenance undertaken during the construction period to meet EPA air quality requirements.	Contractor
Construction	
The excessive use of vehicles and powered construction equipment would be avoided.	Contractor
All construction machinery would be turned off when not in use to minimise emissions.	Contractor
Construction contractors would monitor dust generation potential.	Contractor
Dust suppression methods including the use of water carts would be applied where required (i.e. on windy days when earthworks and vehicle movements are generating dust).	Contractor
Any stockpiled spoil/fill would be protected to minimise dust generation to avoid sediment moving offsite.	Contractor
Vehicles transporting spoil from the sites would be covered.	Contractor

6.2.9 Traffic and Access

Objective

- Ensure that construction vehicles do not cause excessive inconvenience to road and pedestrian users.

- Ensure the safety of road users and construction personnel for the duration of the works.
- Minimise the pollution impacts resulting from the use of vehicles during construction.

Actions

Action/Phase	Responsibility
Pre-construction	
Obtain all necessary approvals under the *Roads* Act *1993* for works proposed within TfNSW road reserves.	ESC/Contractor
The contractor would prepare a Traffic Management Plan (TMP) as part of the CEMP, to be reviewed by ESC prior to commencement of works. The TMP would include measures to minimise traffic impacts ensure public safety and would be prepared in accordance with: • *TfNSW's' Traffic Control at Work Sites Manual, (February 2022), and* • *Australian Standard 1742.3 - 2009 Traffic Control for Works on Roads.*	Contractor
Prior to the commencement of works, existing access tracks and roads that would be used by heavy vehicles would be assessed for adequacy and upgraded where necessary. Any upgrades would be subject to further impact assessment if the upgrades extend outside the existing road alignment. Appropriate drainage would be provided for any unsealed tracks utilised during the works to ensure that vehicle movements do not cause erosion and sedimentation of nearby waterways.	ESC /Contractor
Construction	
Any disturbance to landowners as a result of vehicle movements and noise would be minimised by adhering to the working hours outlined in Section 5.8.2 of the REF. The contractor would avoid any inconvenience to residences/landowners, and all access gates would be in their original condition following completion of the works.	Contractor
Any temporary access tracks required for the works would be located so as to minimise disturbance to the existing environment, with preference given to traversing and driving over ground cover and understorey vegetation, as opposed to clearing it, to facilitate vegetation regeneration post-works. Following completion of the works the temporary tracks would be removed, topsoil provided and re-grassed. Damage to existing tracks would be restored after completion of the works.	Contractor
Trucks would not access the sites in weather conditions that would cause damage to ground surface or properties.	Contractor
All traffic would comply with all applicable traffic laws and regulations including speed limits. All construction vehicles would comply with the speed limits set for the roads accessing the site.	Contractor

6.2.10 Waste Management

Objective

- Compliance the provisions of the *Protection of the Environment Operations (Waste) Regulation 2014*.
- Maximise reuse/recycling of waste material and minimise waste disposed of to landfill.

Actions

Action/Phase	Responsibility
Construction	
The contractor undertaking the works would detail waste management procedures in a Waste Management Plan to be incorporated into the CEMP. The contractor is to assume responsibility for the appropriate disposal of any waste generated. Adequate procedures should be established and detailed in the CEMP, including notification requirements to EPA, for incidents that cause material harm to the environment. The WMP would also follow the resource management hierarchy principles embodied in the *Waste Avoidance and Resource Recovery Act 2001.* Namely, to: • avoid unnecessary resource consumption; • recover resources (including reuse, reprocessing, recycling and energy recovery); and • dispose (as a last resort).	Contractor
Any required concrete would be mixed off-site and transported to the construction areas. Excess concrete would be removed off-site for recycling.	Contractor
All waste removed from the site, including waste from drilling operations, would be classified and disposed of appropriately, and all non-recyclable waste would be disposed of at an appropriate licensed waste disposal facility.	Contractor
If any contaminated material is encountered during earthworks, work shall cease, the site secured, and a safe work method statement(s) and appropriate practices shall be implemented. Any contaminated material would be classified first and then stored, transported and disposed of in accordance with EPA requirements at an EPA licensed waste facility.	Contractor
Cleared vegetation (devoid of weeds) would be spread out on site or alternatively disposed off site in accordance with EPA requirements.	Contractor
All equipment should be cleaned of soil and vegetation before being brought to the site to minimise the risk of spreading weeds.	Contractor

Action/Phase	Responsibility
Any noxious or controlled weeds must be controlled and disposed of at a landfill site in accordance with EPA requirements and not mixed with soil to be reused on site or elsewhere.	Contractor
If practicable, surplus excavated materials/fill would be reused onsite as part of rehabilitation and restoration works. Any surplus spoil disposed of in this manner would be seeded to minimise the likelihood of it being transported offsite through wind or water action.	Contractor

6.2.11 Hazards and Risks

Objective

- Prevention/minimisation of hazards and risks during the operation of the Proposal.

Actions

Action/Phase	Responsibility
Pre-construction	
The CEMP would incorporate a pollution incident response management plan that defines appropriate procedures for notification of pollution incidents to the required authorities in accordance with s. 147 to 153 of the POEO Act and requires response actions to be implemented in order to address any risks such as incidents posed to the environment, property or surrounding communities.	Contractor
Operation	
The transport and handling of all chemicals used in the operation of the ferrous chloride system would be undertaken in accordance with all relevant SafeWork NSW guidelines including the following: • *Code Of Practice: Managing Risks Of Hazardous Chemicals In The Workplace* (SafeWork NSW, July 2020). • *Code Of Practice: Labelling Of Workplace Hazardous Chemicals* (SafeWork NSW, July 2020).	ESC
SafeWork NSW would be notified regarding the storage of dangerous goods at the SPS site.	ESC
Safety handling facilities for the ferrous chlorite, which is classed as a Hazardous Substance (Corrosive 8) and Poison S5, should be as per: • the Material Safety Data Sheet provide by the chemical supplier • All relevant SafeWork NSW guidelines	ESC

Action/Phase	Responsibility
• the Australian Dangerous Goods Code Edition 7.7 (October 2020)	
Liquid chemical storage and filling areas would be located in bunded areas designed to accommodate 120% of the total capacity delivered and are to include appropriately designed drainage and safety equipment.	ESC
Storage tanks would be regularly inspected and maintained to ensure their integrity. Council personnel involved in the operation and maintenance of the SPS would be trained for proper and safe operation of these facilities.	ESC
Specific requirements for the management of chemicals associated with the SPS would be detailed in an Operational Management Plan. The Operational Management Plan would be periodically reviewed to assess the efficacy of all management procedures. Identified shortcomings would be remedied to ensure these continue to be effective.	ESC
Safety Data Sheets for chemicals used in the treatment process are to be available on sites at all times.	ESC
All hazardous substances are to be listed in a register together with the relevant Safety Data Sheets. Employees are to have access to this register.	ESC
Fuel and lubricants for machinery maintenance are to be stored and managed appropriately.	ESC
Appropriate signage is to be maintained where chemicals are stored.	ESC
Notification to the EPA in accordance with Part 5.7 of the POEO Act is to be undertaken where a pollution incident occurs in the course of an activity so that material harm to the environment is caused or threatened.	ESC
Standard occupational health and safety practices would be adhered to.	ESC
The community would be notified of any incident with the potential to result in public health impacts.	ESC
Appropriate signage, locked gates and site fencing would be installed around the SPS site, as required.	ESC

6.2.12 Visual Amenity

Objective

- Protect the visual amenity of the locality for neighbouring land users and the local community.

Actions

Action/Phase	Responsibility
Construction	
The clearing of vegetation would be kept to the minimum required for the works	Contractor
Construction compounds and areas for the parking of vehicles and storing of equipment would be located in cleared areas wherever possible.	Contractor

6.2.13 Utilities and Infrastructure

Objective

- Prevention/minimisation of impacts to utilities and services infrastructure during the construction works.

Actions

Action/Phase	Responsibility
Pre-construction	
The final design plans are to be supplied to Essential Energy for comment prior to the commencement of construction works.	ESC
Construction	
Works within the power supply easement must comply with *ISSC 20 Guideline for the Management of Activities within Electricity Easements and Close to Infrastructure.*	Contractor
Where the rising mains are located within the power supply easement, the pipeline should be a minimum of 4 m from Essential Energy's infrastructure and comply with: • Essential Energy's Operational Manual, Overhead Design Manual (CEOM7097) • Essential Energy's Minimum Clearance Requirements for NSW (CEOM7106.25) • AS/NZS 7000:2010 Overhead line design detailed procedures ISSC 20 Guidelines for the Management of Activities within Electricity Easements and Close to Infrastructure.	Contractor
SafeWork NSW has publications that provide guidance when working close to electricity infrastructure, including the *Code of Practice – Work near*	Contractor

Action/Phase	Responsibility
Overhead Power Lines. The contractor should adhere to the SafeWork NSW guidelines during construction works near overhead power lines.	
Utilities and services which may be impacted by the Proposal would be accurately located prior to commencement of works using Dial Before You Dig (DBYD) and confirmed by physical location and marking prior to construction.	Contractor
Utility and telecommunications infrastructure service providers would be consulted prior to the commencement of and during construction works.	Contractor

7 Conclusion

Nelligen currently has no municipal water supply or sewerage system and households rely on septic tanks to dispose of sewage waste and rainwater tanks for household water supply. Therefore, ESC plans to install reticulated water and sewerage schemes for the village for integration into the existing Batemans Bay water supply and wastewater management networks. Stage 2 of the Proposal comprises the construction of water and sewer transfer mains and a new Sewage Pump Station at Nelligen to provide potable water and sewer services to the Nelligen township.

The Proposal would result in short term impacts such as increased noise, dust and traffic and a reduction in community amenity for the residents and users of local roads during the construction phase. However, the works are temporary and are able to be managed to minimise impacts. It is anticipated that the Proposal would benefit the local community by removing their reliance on rainwater tanks and issues associated with the current on-site septic systems and will improve the quality and reliability of their drinking water.

Investigations into the Aboriginal cultural heritage impacts of the Proposal have been undertaken, including an Aboriginal Cultural Heritage Assessment (ACHA) (see Appendix C). The ACHA determined that an AHIP would be required for impacts to four Aboriginal sites which occur in the Proposal works area.

A biodiversity assessment prepared for the works found that the Proposal would be unlikely to impact any listed threatened species, fauna populations or ecological communities, provided appropriate mitigation measures are implemented.

Given that the works predominantly comprise underground sewerage and water supply pipelines and associated infrastructure in previously disturbed areas, adverse environmental impacts potentially associated with the operation phase of the Proposal are expected to be minimal. Potential operational impacts of the SPS, such as odour or noise impacts, have been or would be mitigated as part of the concept and detailed design.

This REF has been prepared in accordance with Sections 5.5 and 5.7 of the *Environmental Planning and Assessment Act 1979* and Section 171 of the *Environmental Planning and Assessment Regulation 2021.* It provides a true and fair assessment of the proposed activity in relation to its likely effects on the environment.

Based on the information in this REF, it is concluded that:

(1) the proposed activity is not likely to have a significant impact on the environment and therefore an Environmental Impact Statement is not required.

(2) the proposed activity is not likely to significantly affect threatened species, populations, ecological communities, or critical habitat. Therefore, a Species Impact Statement (SIS) / Biodiversity Development Assessment Report (BDAR) is not required

(3) the proposed activity is not likely to affect any Commonwealth land, is not being carried out on Commonwealth land, or significantly affect any Matters of National Environmental Significance.

The proposed activity is recommended to proceed subject to implementation of the measures to avoid, minimise or manage environmental impacts listed in this REF.

8 References

Australian Standard *AS2436-2010 Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites.*

DEC, 2006, *Assessing Vibration: A Technical Guide.*

DECCW, 2009, *Interim Construction Noise Guideline.*

DPINR, 2004, *Guideline for the Preparation of Environmental Management Plans.*

Eurobodalla Shire Council, 2012, *Nelligen Village Development Control Plan.*

Lesryk Australia, 2022, *Flora and Fauna Survey and Assessment, Water Supply and Sewerage Scheme project, Nelligen, NSW.*

New South Wales Archaeology, 2018, *Nelligen Water Supply and Sewerage Scheme Due Diligence Assessment.*

New South Wales Archaeology, 2022, *Nelligen Water Supply and Sewerage Scheme Aboriginal Cultural Heritage Assessment Report.*

Pressure Sewer Solutions, 2018, *Nelligen Pressure Sewerage System Design Report*

Public Works Advisory, 2016, *Nelligen Water Supply and Sewerage Strategic Options Report*

Appendix A – Consideration of Section 171

Section 171 of the EP&A Regulation 2021 indicates, for purposes of Part 5 of the Act, the factors that must be taken into account when consideration is being given to the likely impact of an activity on the environment.

A determining authority is only required to consider the following matters where an EIS has been prepared for a Part 5 activity under the EP&A Act. However, the following information is provided to assist determining authorities in making determinations consistent with those made for an activity requiring preparation of an EIS.

The various factors and findings following environmental assessment are presented below.

(a) the environmental impact on the community,

There is the potential for some minor and temporary noise, dust and traffic and access impacts during construction works of water supply and sewerage schemes.

(b) the transformation of the locality,

The proposed construction of the SPS would result in a minor transformation of existing undeveloped areas. However, the SPS would be consistent with the surrounding built environment and the sewer vent will be screened through the retention of existing vegetation on and around the site. Therefore, the new structures would not result in a significant transformation of the locality.

(c) the environmental impact on the ecosystems of the locality,

Mitigation measures have been proposed to minimise impacts on the sensitive ecosystems of the locality, including underboring of creek lines. No significant impact to threatened species or ecosystems is anticipated.

(d) reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality,

None identified.

(e) the effects on any locality, place or building that has -

(i) aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance, or

(ii) other special value for present or future generations,

Water and sewerage scheme works would impact four identified Aboriginal sites. The required AHIP would be obtained for the impacts to the sites prior to the commencement of construction works in the area of Aboriginal sites.

(f) the impact on the habitat of protected animals within the meaning of the Biodiversity Conservation Act 2016,

Mitigation measures have been proposed to minimise impacts on the sensitive ecosystems of the locality, including underboring of water course areas. No significant impact to threatened species is anticipated.

(g) the endangering of a species of animal, plant or other form of life, whether living on land, in water or in the air,

Mitigation measures have been proposed to minimise impacts on the sensitive ecosystems of the locality, including underboring of creek crossings. No significant impact to threatened species is anticipated.

(h) long-term effects on the environment,

None identified

(i) degradation of the quality of the environment,

Temporary and minor degradation of the quality of the environment during the construction phase which would involve shrubs, immature trees and groundcover vegetation clearing and excavation works. The works would result in some short-term impacts including construction noise and dust during the construction period. Control measures to minimise these impacts would be implemented during construction as part of the contractor's Construction Environmental Management Plan (CEMP).

(j) risk to the safety of the environment,

There are minor potential traffic safety risks to construction staff, residents and visitors in the vicinity of road reserves and village areas during construction of the Proposal. However, control measures to minimise this safety risk would be implemented during construction as part of the contractor's TMP.

(k) reduction in the range of beneficial uses of the environment,

None identified.

(l) pollution of the environment,

There is the potential for some minor and temporary noise and air pollution during the construction works. With the implementation of appropriate mitigation measures during construction there would be no long term or significant pollution of the environment.

(m) environmental problems associated with the disposal of waste,

None identified as minimal waste is predicted. All construction waste would be taken off site for disposal at a licensed landfill. The Contractor would prepare a Waste Management Plan to ensure waste is managed appropriately during construction works, so as not to cause off-site impacts

(n) increased demands on natural or other resources that are, or are likely to become, in short supply,

None identified.

(o) the cumulative environmental effect with other existing or likely future activities,

None identified.

(p) the impact on coastal processes and coastal hazards, including those under projected climate change conditions.

No impacts anticipated. Mitigation measures have been proposed to minimise potential impacts to surrounding waterways.

(q) applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1.

The Proposal is compatible with Strategy 1 and 4 of *the One Community - Eurobodalla Community Strategic Plan 2017 and Planning Priority 8 of the Eurobodalla Local Strategic Planning Statement 2020 – 2040.*

(r) other relevant environmental factors.

None identified.