HEALTH INFRASTRUCTURE

Review of Environmental Factors

New Shellharbour Hospital - Electricity Infrastructure Works

Prepared by GeoLINK

Version Number 4

NSW GOVERNMENT

Declaration

This Review of Environmental Factors (REF) has been prepared for NSW Health Infrastructure (HI) and assesses the potential environmental impacts which could arise from electricity infrastructure works related to the proposed New Shellharbour Hospital (subject to separate approval).

This REF has been prepared in accordance with the relevant provisions of *the Environmental Planning and Assessment Act 1979* (EP&A Act), *the Environmental Planning and Assessment Regulation 2021* (EP&A Regulation), Department of Planning & Environment's (DPE) *Guidelines for Division 5.1 Assessments* (the Guidelines), and *State Environmental Planning Policy (Transport and Infrastructure) 2021* (TISEPP).

This REF provides a true and fair review of the activity in relation to its likely impact on the environment. It addresses to the fullest extent possible, all the factors listed in the Guidelines, consistent with section 171(2) of the EP&A Regulation and the *Commonwealth Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act).*

The proposed activity will not be carried out in a declared area of outstanding biodiversity value and is not likely to significantly affect threatened species, populations or ecological communities, or their habitats, or impact biodiversity values, meaning a Species Impact Statement (SIS) and/or Biodiversity Development Assessment Report (BDAR) is not required.

Based upon the information presented in this REF, it is concluded that, subject to adopting the recommended mitigation measures, it is unlikely there would be any significant environmental impacts associated with the activity. Consequently, an *Environmental Impact Statement* (EIS) is not required.

Declaration	
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Date:	13 January 2023

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E	Biodiversity Report	EMM	October 2022
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Abbreviations

Abbreviation	Description
AEC	Area of Environmental Concern
AHD	Australian Height Datum
AHIP	Aboriginal Heritage Impact Permit
AHIMs	Aboriginal Heritage Information Management System BC Regulation
BC Act 2016	Biodiversity Conservation Act 2016
BC Regulation	Biodiversity Conservation Regulation 2017
BAM	Biodiversity Assessment Method
CA	Certifying Authority
CE	Chief Executive
CM Act	Coastal Management Act 2016
CMP	Construction Management Plan
CWC	Connecting with Country
CRA	Conservation Risk Assessment
DPE	Department of Planning and Environment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EES	Environment, Energy and Science
EPA	Environment Protection Authority

Abbreviation	Description
EP&A Act	Environmental Planning and Assessment Act 1979
EP&A Regulation	Environmental Planning and Assessment Regulation 2021
EPBC Act (Cwth)	Environment Protection and Biodiversity Conservation Act 1999
EPI	Environmental Planning Instrument
EPL	Environment Protection License
FM Act	Fisheries Management Act 1994
Ha	Hectares
HI	Health Infrastructure
LEP	Local Environmental Plan
LGA	Local Government Area
MPS	Multipurpose Service
MNES	Matters of National Environmental Significance
NPW Act	National Parks and Wildlife Act 1974
NPW Regulation	National Parks and Wildlife Regulation 2009
NPWS	National Parks and Wildlife Service (part of EES)
NT Act (Cth)	Commonwealth Native Title Act 1993
OEH	(Former) Office of Environment and Heritage
PCMP	Preliminary Construction Management Plan
Planning Systems SEPP	State Environmental Planning Policy (Planning Systems) 2021
POEO Act	Protection of the Environment Operations Act 1997
Proponent	NSW Health Infrastructure
REF	Review of Environmental Factors
RF Act	Rural Fires Act 1997
RFS	Rural Fire Service
Resilience and Hazards SEPP	State Environmental Planning Policy (Resilience and Hazards) 2021
SEPP	State Environmental Planning Policy
SIS	Species Impact Statement
TISEPP	State Environmental Planning Policy (Transport and Infrastructure) 2021
WM Act	Water Management Act 2000

Executive Summary

The Proposal

In September 2020, the NSW Government announced a more than $700 million package to build a new state-of-the-art greenfield hospital for the Shellharbour region (New Shellharbour Hospital or NSH). In June 2022, land at 50 and 86 Dunmore Road, Dunmore was formally acquired by Health Administration Corporation (HAC) for the purpose of developing this new health facility (development of the hospital will be subject to a separate scope of work and planning approval pathway as State Significant Development (SSD)). To support the delivery of this significant project and to service/prepare the site for potential future development, separate works packages are proposed, including electrical services infrastructure works. Such proposed works would be undertaken separate to the hospital scope/development, which would be subject to a separate approval.

The proposal associated with this Review of Environmental Factors (REF) involves the installation of electricity infrastructure to service the proposed hospital site at 86 Dunmore Road, Dunmore (Lot 10 DP1281639), including installation of an underground dual high-voltage (HV) feeder cable between the Shellharbour Zone Substation (Lot 1 DP439066) and the site (a distance of about 3.6km), and a temporary substation kiosk on the site to provide power for future construction purposes (subject to relevant approvals being in place).

Need for the Proposal

The NSH will require a reliable HV electricity supply, which is not currently available at the NSH site. The proposed works involve installation of underground HV electricity transmission lines to supply the new hospital site with the necessary electricity load, plus a substation kiosk to supply construction power for potential future development.

Applications to Endeavour Energy have indicated that HV feeders from the Shellharbour Zone Substation are to be provided to serve the electricity requirement for the development. The substation kiosk is to be installed (with connection to nearby electricity lines at a later date) for the builder's construction power.

Undertaking such works separate to and in advance of the hospital's approval and construction is necessary to ensure suitable electrical supply is available to the site for potential future development, including the proposed construction and operation of the NSH (subject to SSD approval). Servicing the site with essential utilities in advance is common practice to enable efficient delivery of potential future development (subject to relevant approvals).

Proposal Objectives

The primary objective of the Proposal is to provide the necessary electricity supply services to the site of the NSH.

Secondary objectives include:

- Contribute to achieving project milestones by delivering a critical site service in advance of the hospital
- Minimising construction impacts on sensitive receivers
- Minimise environmental impacts.

Options Considered

JHA Engineers consulted relevant stakeholders, including Endeavor Energy (the electricity authority), reviewed the electricity requirements of the NSH, and prepared a HV supply options report as part of the project due diligence process.

The JHA supply options report considered:

- HV Feeder Options - Local zone substation capacity, distances and budget estimates for different supply scenarios
- Supply voltage philosophy, budget comparison of HV verse LV (low voltage) tariffs and maintenance cost differences
- High-level spatial implications, easement and restrictions of varying supply options for the site

- High-level site configuration, metering and expansion options for the site as the precinct potentially develops with other future buildings on the campus.
- In discussions with Endeavor Energy, the option to construct a new substation on the NSH site was also considered if there was insufficient capacity to connect into the Shellharbour Zone Substation. Exploration of this option was discontinued following Endeavor Energy's confirmation that the connection to the Shellharbour Zone Substation was viable and accepted.

This review included the two main options of installing HV cables from either the Shellharbour Zone Substation (approximately 3.6km cable distance from the north) or Kiama Zone Substation (approximately 8.5km cable distance from the south) to the hospital site. The preferred option is for the provision of HV electricity infrastructure (HV feeder cables) to be installed and fed by the Shellharbour Zone Substation. This option provides for the shortest supply route and largely traverses existing urban areas/road reserves and allows for some utilisation of existing electrical underground ducts/conduits and easements. The installation will provide the necessary electricity services connection to the NSH for operation, along with the installation of substation kiosk for construction power.

Site Details

Shellharbour is a regional city located in the Illawarra Shoalhaven Region of New South Wales, approximately 85 km south of Sydney, 20 km south of Wollongong and 160 km north-west of Canberra. Based on the last available census data (2016) it has an estimated population of 68,460. Dunmore is a largely rural to semi-rural suburb of Shellharbour on the NSW South Coast, with the NSH hospital site located in a semi-rural context near to existing and expanding urban areas. Dunmore is approximately 6 km south of Shellharbour and has an estimated population of 3,500. It is within the local government area of Shellharbour City Council (SCC). Dunmore is bisected north to south by the South Coast railway line and the Princes Highway.

The acquired NSH site is located at 50 and 86 Dunmore Road, Dunmore and comprises Lot 10 DP1281639 (formerly Lot 1 DP1144885, which was subdivided to facilitate the partial acquisition) and Lot 1 DP302910. The study area of this REF is Lot 10 DP1281639 and the proposed HV electricity cable route, located along the NSH site frontage, several streets and parks/reserves that lead to the Shellharbour Zone Substation at Lot 1 DP439066. The proposed temporary substation location on the NSH site and HV cable route from herein will be referred to as "the Site" and is depicted on Illustration 2.1.

Planning Approval Pathway

Section 4.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) states that if an environmental planning instrument (EPI) provides that development may be carried out without the need for development consent, a person may carry the development out, in accordance with the EPI, on land to which the provision applies. However, the environmental assessment of the development is required under Part 5, Division 5.1 of the EP&A Act.

State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP) aims to facilitate the effective delivery of infrastructure across the State. Chapter 2 Part 2.3 Division 5 of the TISEPP outlines the approval pathways for electricity transmission or distribution networks.

The site is located within the SCC Local Government Area (LGA). Under the provisions of the Shellharbour Local Environmental Plan 2013 (SLEP) the Site is zoned a combination of R2 Low Density Residential, SP2 Infrastructure, and RE1 Public Recreation.

Section 2.44(1) of the TISEPP states that *development for the purpose of an electricity transmission or distribution network may be carried out by or on behalf of an electricity supply authority or public authority without consent on any land.*

The project, however, becomes an 'activity' for the purposes of Part 5 of EP&A Act and is subject to an environmental assessment (Review of Environmental Factors). The development is considered an 'activity' in accordance with Section 5.1 of the EP&A Act because the development involves carrying out of work by HI (a public authority).

Statutory Consultation

Pursuant to Section 2.45 of TISEPP development carried out by a public authority for the purpose of a new or existing electricity substation of any voltage (including any associated yard, control building or building for housing plant) requires the public authority to:

- give written notice of the intention to carry out the development to the council for the area in which the land is located (unless the authority is that council) and to the occupiers of adjoining land, and
- take into consideration any response to the notice that is received within 21 days after the notice is given.

Potential impacts to council-related infrastructure or services also requires notice to be given to the respective council under Section 2.10 of TISEPP. Written notice of the intention to carry out the development is required, and HI must take into consideration any response to the notice that is received within 21 days after the notice is given.

The required notice was given and responses from SCC and members of the public were received. Their responses have been considered in this REF.

Environmental Impacts

This REF provides an assessment of the proposed electrical infrastructure (HV cable and kiosk substation installation). It considers to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the proposed development as is required under the EP&A Act. The REF also sets out the commitments made by HI to manage and minimise potential impacts arising from the development. The REF finds an Environmental Impact Statement (EIS) is not required and this REF is an adequate level of impact assessment.

The proposed electrical infrastructure work will predominantly result in environmental impacts that are minor. The most notable potential environmental impact relates to short-term noise and traffic/access impacts associated with the construction period. Tree impacts are also a potential; however, impacts would be minimised as far as possible with tree removal only undertaken where it cannot be avoided, or when alternative installation methods are not feasible. The identified impacts can however be minimised and managed with suitable safeguards and measures.

The activity would help enable timely delivery of the NSH by ensuring the site is serviced by adequate HV electrical infrastructure and a temporary builder's power supply is also available for connection. Delivery of this project is in the public interest and would contribute to long-term positive socio-economic outcomes in relation to health service delivery.

Justification and Conclusion

Based on the identification of potential issues, and an assessment of the nature and extent of the impacts of the proposed development, it is determined that:

- The extent and nature of potential impacts will not have significant adverse effects on the locality, community and the environment.
- Potential impacts can be appropriately mitigated or managed to ensure that there is minimal effect on the locality and community.
- From an analysis of the environmental impacts associated with the proposed development activity, it has been determined that preparation of an EIS is not required.
- The proposed development will not have any effect on matters of national significance and approval of the activity under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* is not required.
- There are no separate approvals, authorisations or notifications required in relation to the proposed development activity prior to determination under Part 5 of the EP&A Act or under any other Acts.

It is recommended that HI approve the proposed activity in accordance with Part 5 of the EP&A Act and subject to adoption and implementation of matters outlined in Section 6.

1. Introduction

NSW Health Infrastructure (HI) propose to undertake electricity infrastructure works to provide a HV electricity supply to the acquired NSH site as part of their delivery of infrastructure solutions and services to support the healthcare needs of the NSW communities. This includes installing a temporary pad-mount substation as a builder's power supply (the proposal) on Lot 10 DP1281639, and installation of HV cable along a route of approximately 3.6km connecting to the Shellharbour Zone Substation (the site). Refer to Illustration 2.1 for a Site Locality map.

This Review of Environmental Factors (REF) has been prepared by GeoLINK Consulting on behalf of HI to determine the environmental impacts of the proposed electrical infrastructure works at 86 Dunmore Road, Dunmore (Lot 10 DP1281639) and extending along a route of approximately 3.6km to the Shellharbour Zone Substation. For the purposes of these works, HI is the proponent and the determining authority under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The purpose of this REF is to describe the proposal, to document the likely impacts of the proposal on the environment and to detail protective measures to be implemented to mitigate impacts.

The description of the proposed works and associated environmental impacts have been undertaken in the context of section 171(2) of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation) and the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The assessment contained within the REF has been prepared having regard to:

- whether the proposed activity is likely to have a significant impact on the environment and therefore the necessity for an EIS to be prepared and approval to be sought from the Minister for Planning under Part 5.1 of the EP&A Act;
- whether the activity is likely to significantly affect threatened species, populations, ecological communities or their habitats, in which case a SIS and/or BDAR is required; and
- the potential for the proposal to significantly impact *Matters of National Environmental Significance* (MNES) or Commonwealth land and the need to make a referral to the Australian Government Department of Climate Change, Energy, the Environment and Water for a decision by the Commonwealth Minister for the Environment on whether assessment and approval is required under the EPBC Act.

The REF helps to fulfil the requirements of Section 5.5 of the EP&A Act, which requires that HI examine, and take into account to the fullest extent possible, all matters affecting, or likely to affect, the environment by reason of the proposed activity.

1.1 Proposal Need and Alternatives

In order to provide adequate HV electricity supply/connections to the subject site to support future potential development, including the proposed NSH, the delivery of a HV electricity feeder cable from the Shellharbour Zone Substation, and installation of a kiosk substation on the NSH site, is proposed as a discrete works package.

2. Site Analysis and Description

2.1 The Site and Locality

Shellharbour is a regional city located in the Illawarra Shoalhaven Region of New South Wales, approximately 85 km south of Sydney, 20 km south of Wollongong and 160 km north-west of Canberra. Dunmore is a largely rural to semi-rural suburb approximately 6 km south of Shellharbour on the NSW South Coast, with the NSH hospital site located in a semi-rural context on the periphery of existing and expanding urban areas.

The acquired NSH site is located at 50 and 86 Dunmore Road, Dunmore and comprises Lot 10 DP1281639 (formerly Lot 1 DP1144885) and Lot 1 DP302910. This land has been acquired and is owned by HAC. The study area of this REF is Lot 10 DP1281639 (86 Dunmore Road) and the proposed HV cable route, located along the NSH site frontage, local and State roads and SCC parks/reserves that lead to the Shellharbour Zone Substation at Lot 1 DP439066 (owned by Endeavor Energy). The proposed HV route, and area of substation installation on the NSH land is from herein referred to as "the Site" and is depicted on **I**llustration 2.1 and 2.2.

The Site elevation ranges from relatively flat where it occurs near a drainage line, to gentle to moderate undulation, ranging between 10-50 m AHD along the HV cable route, with the highest point where the proposed works joins Shellharbour Road.

The NSH Site is largely characterised as rural land that straddles the semi-rural/urban interface. Most of the HV route occurs in the road reserve of various streets, some of which are lined with planted mature street trees. Outside of this, the NSH site is largely cleared of vegetation/trees, and primarily supports grass cover with some scattered trees. The location of the kiosk substation is grass and does not accommodate any significant vegetation. Plate 2.1 to Plate 2.6 provide an aerial photo of the NSH site and the HV cable route to the north along Dunmore Road and beyond, along with sample images of the road environment experienced along which the HV cable would be installed.

Plate 2.1: Aerial Photo of NSH Site and HV Route Along Dunmore Road to the North

Plate 2.2: Image showing Lakewood Boulevard route alignment along grassed median strip.

Plate 2.3: Image showing the route exiting from Munmorah through to Burrinjuk Avenue

Plate 2.4: Image showing HV cable route along Burrinjuk Avenue road verge.

Plate 2.5: Image showing HV route to be installed within existing conduit along the edge of Finders Field and adjacent to tree lined water course/drainage line.

Plate 2.6: Image showing HV cable route along verge of Wattle Road.

2.1.1 Existing Development

As depicted in Plate 2.1, the NSH is largely vacant land, except for an unoccupied dwelling and various small outbuildings. The HV cable route is largely within a suburban environment comprising road reserves, residential areas and recreational land.

2.1.2 Site Considerations and Constraints

Section 10.7 Planning Certificate No. PL1017/2022 dated 24 May 2022 was obtained for Lot 10 DP 1281639. It identifies that the NSH site and location of the pad-mount substation and termination of the HV cable is located within the R2 Low Density Residential Zone under Shellharbour Local Environmental Plan 2013 (refer to Appendix B). Planning Certificates are not available for the remainder of the HV cable route as this largely occurs in the road reserve.

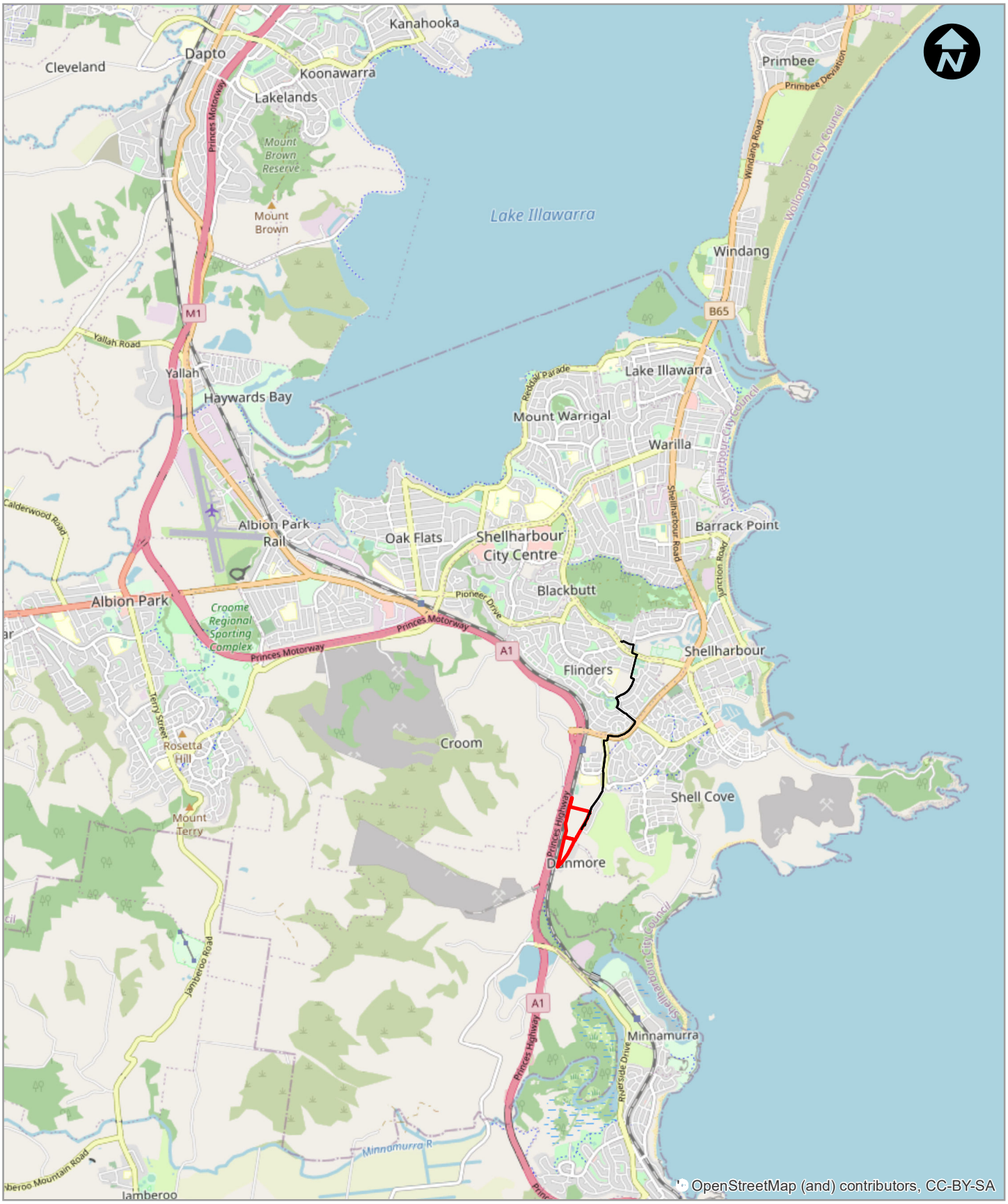
Table 1 Section 10.7 Planning Certificate

Affectation	Yes	No
Critical habitat		✓
Conservation area		✓
Item of environmental heritage		✓
Affected by section 38 or 39 of the Coastal Management Act 2016 (CM Act)		✓
Proclaimed to be in a mine subsidence district		✓
Affected by a road widening or road realignment		✓
Affected by a planning agreement		✓
Affected by a policy that restricts development of land due to the likelihood of landslip		✓
Affected by bushfire, tidal inundation, subsidence, acid sulphate or any other risk	✓	
Affected by any acquisition of land provision		✓
Biodiversity certified land or subject to any bio-banking agreement or property vegetation plan		✓
Significantly contaminated		✓
Subject to flood related development controls		✓ May be subject to flooding –studies have confirmed flooding at the lowest point.

2.2 Surrounding Development

The NSH site is located at 50 and 86 Dunmore Road, Dunmore. The site covers rural and residentially zoned (though largely vacant) land in the Shellharbour LGA in the Parish of Terragong, County of Camden. It is bounded by Shellharbour Anglican College to the north, Dunmore Road to the east and south and Princes Highway and South Coast railway line to the west. The site is set within a semi-rural environment, and comprises predominantly cleared agricultural land and accommodates a vacant farm house and ancillary buildings. The Links Golf Course and residential development is located to the north and east, and a waste management facility to the southeast.

The HV cable route extends to the north along Dunmore Road, Shellharbour Road, Lakewood Boulevard, Munmorah Circuit, Burrinjuck Avenue, a recreational open field (Flinders Field) and Wattle Road. The route traverses a largely suburban residential area, public road reserves, and open space.



LEGEND

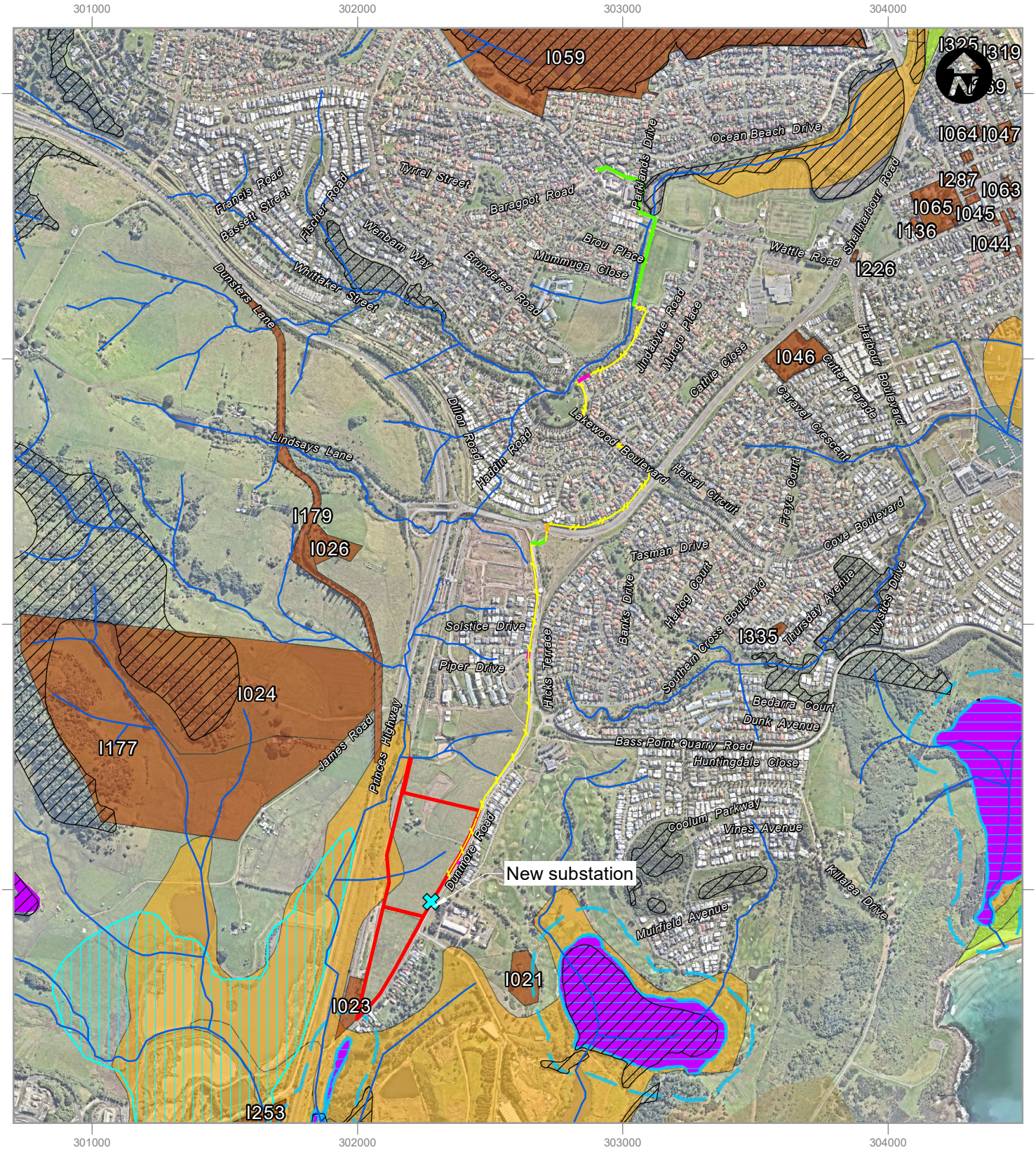
NSH site

High-voltage (HV) route

0 1.5 km

Site Locality - Illustration 2.1

Information shown is for illustrative purposes only
Drawn by: AB Checked by: RE Reviewed by: JTS
Source of base data: OpenStreetMap
Date: 21/09/2022
Revision: A



LEGEND

- NSH site
- Terrestrial biodiversity (Environmentally Sensitive Land
- Heritage
- Proximity area for Coastal Wetland
- Coastal Wetland SEPP
- Land subject to inundation
- Biodiversity Value mapping
- High probability of Acid Sulfate Soil occurrence
- Low probability of Acid Sulfate Soil occurrence
- Watercourse
- Existing ducts to utilise
- Proposed road crossing duct
- Proposed underbore road crossing duct
- Proposed HV trench
- Approx. location of the new substation

0 400 Meters

Site Analysis - Illustration 2.2

Information shown is for illustrative purposes only
Drawn by: AB Checked by: RE Reviewed by: JTS
Source of base data: Nearmap 19/04/2022
Date: 21/09/2022
Revision: A

LEGEND

- NSH site
- C2 Environmental Conservation
- C3 Environmental Management
- B1 Neighbourhood Centre
- B2 Local Centre
- R2 Low Density Residential
- R3 Medium Density Residential
- R5 Large Lot Residential
- RE1 Public Recreation
- RE2 Private Recreation
- RU1 Primary Production
- RU2 Rural Landscape
- RU6 Transition
- SP1 Special Activities
- SP2 Infrastructure
- W2 Recreational Waterways
- DM Deferred Matter
- Existing ducts to utilise
- Proposed road crossing duct
- Proposed underbore road crossing duct
- Proposed HV trench
- Approx. location of the new substation

0 400 Meters

Site Zoning - Illustration 2.3

Information shown is for illustrative purposes only
Drawn by: AB Checked by: RE Reviewed by: JTS
Source of base data: Nearmap 19/04/2022
Date: 21/09/2022
Revision: A

3. Proposed Activity

3.1 Proposal Overview

In September 2020, the NSW Government announced a more than $700 million package to build a new state-of-the-art greenfield hospital for the Shellharbour region (known as the NSH). To support the delivery of this significant project, separate works packages will be undertaken to service and prepare the site for potential future development, including the development of the proposed hospital, which will be subject to a separate scope of work and planning approval pathway as State Significant Development.

In June 2022, the NSH site at 50 and 86 Dunmore Road, Dunmore was formally acquired by Health Administration Corporation (HAC) for the purpose of developing this new health facility.

Health Infrastructure (HI) proposes to undertake works to service the site with HV electricity, separate from the future NSH State Significant Development (SSD) application (SSDA) for the actual hospital. These works are separate from the hospital approval/development.

The proposal associated with this REF involves the installation of electricity infrastructure to service the subject site with reliable HV electricity infrastructure.

3.1.1 Proposed Activity

The Proposal involves the installation of a new underground high-voltage (HV) dual feeder cable from the Shellharbour Zone Substation (Lot 1 DP439066) to the site frontage (approximately 3.6km), as well as the installation of a pad-mount substation kiosk on the site of the proposed New Shellharbour Hospital at 86 Dunmore Rd, Dunmore (Lot 10 DP1281639). These works would service the site with HV electricity which would be required to support the proposed delivery of the New Shellharbour Hospital, however they are separate from the hospital development which requires independent SSD approval..

The electricity infrastructure works are an integral part of providing and maintaining a secure and reliable supply to the proposed development site and network reliability.

The proposed works include:

- Progressive trenching (including select use of hydrovac and underboring methods at discrete locations, as required) along the designed route, within footways, roadways and inside/along the NSH site, between the New Shellharbour Hospital site and the Shellharbour Zone Substation for installation of HV feeder cables. Laying two sets of 11kV 240sqmm Al 3C XLPE cable from Shellharbour Zone substation to the development site at Dunmore Rd via Parklands Dr, Wattle Rd, Lot 8070 DP1019349 within Endeavour Energy cable easement, Burrinjuck Avenue, Munmorah Circuit, Lakewood Boulevard, Shellharbour Road and Dunmore Road. Cable route has been selected to minimise the trenching work and disruption of road traffic, street trees, and nearby residents as far as practical.
- Where there is capacity in existing electrical ducts (as shown in Illustration 2.2 and the plans at Appendix A), these will be utilised. Excavation works, including within the road reserve, are required for installation of new ducts and cable joints along the cable route where no spare existing duct is available. New ducts will be installed within the standard footpath electricity asset allocation and in the nature/median strip.
- Seal end of HV cable at a suitable location at site frontage.
- Construct new flat pad/easement area of 5.5m x 2.75m on the NSH site, including associated minor earthworks, and install the construction power kiosk substation pad-mount substation (refer to Plate 3.1 for an example image of a similar substation). This would be decommissioned and removed after a permanent connection is established at the main works stage. The electrical pad-mount substation will be approximately 3m x 1.3m x 1.6m in size and be similar to many others servicing the local area. As an example, the one in Plate 3.1 is at 17 Gore Avenue, Shell Cove. A flat area of 2m x 2.75m shall be created for a Site Main Switchboard (MSB) to be installed adjacent to the kiosk substation.

Additional description of the construction methodology and particulars is provided in Table 3.

Plate 3.1: Example image of similar pad-mount substation as that proposed.

3.1.1.1 Tree Removal

- At this stage tree removal is to generally be avoided as far as practical and measures have been put forward to help achieve this where the alignment comes close to existing trees. However, the contractor, having regard for arborist recommendations and advice, will confirm the final detailed design and methodology of works, including best methods to avoid significant impacts to trees and confirmation if there are any unavoidable impacts.

3.2 Proposal Need, Options and Alternatives

3.2.1 Strategic Justification

The NSH is planned to be on a greenfield site and is subject to independent SSD approval. The proposed works under this REF scope is for HV electricity infrastructure to supply the site with the necessary electricity load and connection to support its potential future development.

Applications to Endeavour Energy have indicated that HV feeders from the Shellharbour Zone Substation are to be provided to serve the electricity requirement for the potential future development of the site. The substation kiosk is to be installed (with connection to nearby electricity lines at a later date) to provide for construction power requirements for potential future development of the site.

Undertaking discrete infrastructure works to service the site with essential utilities such as electricity is common practice.. The electricity infrastructure works are an integral part of providing and maintaining a secure and reliable supply to the site and network reliability, and would enable more efficient delivery of potential future development should this be approved.

3.2.2 Alternatives and Options

JHA Engineers consulted relevant stakeholders, including Endeavor Energy (the electricity authority), reviewed the electricity requirements of the NSH, and prepared a HV supply options report as part of the due diligence process.

The JHA supply options report considered:

- HV Feeder Options - Local zone substation capacity, distances and budget estimates for different supply scenarios
- Supply voltage philosophy, budget comparison of HV verse LV (low voltage) tariffs and maintenance cost differences
- High-level spatial implications, easement and restrictions of varying supply options for the site
- High-level site configuration, metering and expansion options for the site as the precinct develops with other buildings on the campus.
- In discussions with Endeavor Energy, the option to construct a new substation on the NSH site was also considered if there was insufficient capacity to connect into the Shellharbour Zone Substation. Exploration of this option was discontinued following Endeavor Energy's confirmation that the connection to the Shellharbour Zone Substation was viable and accepted.

This review included the two main options of installing HV cables from either the Shellharbour Zone Substation (approximately 3.6km cable distance from the north) or Kiama Zone Substation (approximately 8.5km cable distance from the south) to the hospital site. The preferred option is for the provision of HV electricity infrastructure (HV feeder

cables) to be installed and fed by the Shellharbour Zone Substation. This option provides for the shortest supply route and largely traverses existing urban areas/road reserves and allows for some utilisation of existing electrical underground ducts and easements. The development will provide the necessary electricity services connection to the NSH for operation, along with the installation of a temporary builders substation kiosk.

An overview of the alternatives, and an identification of the preferred alternative, for the Proposal are provided within **Table 2**.

Table 2 Alternatives considered for the proposal

Alternative description	Advantages and disadvantages	Preferred alternative
HV supply from Shellharbour Zone Substation using preferred alignment	Project team preference, adequate supply is available (supply offer from Endeavor Energy confirmed) and the route largely traverses existing urban areas/road reserve and minimises environmental impacts, including avoidance of mature avenue of street trees in Lakewood Boulevard.	✓
HV supply from Shellharbour Zone Substation using slightly different alignment in narrow road verge and close to street trees in Lakewood Boulevard and Munmorah Circuit	Likely substantial impacts to mature avenue of street trees	
HV supply from Kiama Zone Substation	Additional cost, length, and potential for more environmental impacts	
Construction of new on-site substation to supply HV to the NSH	Cost, timing and delivery risk. Endeavor Energy have confirmed supply from Shellharbour Zone Sub is achievable and supported.	

3.3 Construction Activities

The works are short term and are anticipated to occur over a period of about 6 months. **Table 3** provides an overview of the proposal's construction activities.

Table 3 Project Timeframes and Construction Activities

Construction activity	Description
Commencement Date	The work is anticipated to begin within 6 months.
Work Duration/Methodology	The work is estimated to be completed in a 6 month period. The overall general methodology of installation for the electricity infrastructure involves: • Progressive trenching along the designed route, within footway, roadways and inside/along the NSH site, between the New Shellharbour Hospital site and the Shellharbour Zone Substation. Wherever possible, the conduits are to be separated to either side of the electricity alignment to reduce the risk of future excavation striking both cables. • Generally open cut trenching will be used (where there are no existing conduits), to provide a cable pathway from NSH site to Shellharbour Zone Substation. Transport for NSW (TfNSW) have advised that no traverse trenching is allowed in Shellharbour Rd at the intersection with Lakewood Blvd. Horizontal underbore directional drilling is to be used in this area (if no existing conduits can be used) at a minimum of 1.2m below the road surface level. Furthermore, options to avoid open trenching where there may be a risk to proximal trees may include directional drilling or Hydrovac (excavation through high pressure water) based on arborist advice. The most suitable options would be confirmed and utilised by the contractor. • Excavation methodology is expected to be: - Trench 750mm deep and 1200mm wide - Trench a further two individual trenches (within main trench), 430mm deep (1180mm total depth) and 240mm wide - Backfill the 430mm deep individual trenches with clean sand

Construction activity	Description
	- Backfill the remainder of the trench with already excavated fill (assuming is clean and not contaminated etc.) - Underbore existing New Shellharbour Rd as shown on the drawings (subject to utility feedback). • Conduits and bedding sand shall be progressively installed, and trenches backfilled. • Excavation width is nominally 1200mm wide. It is planned to be within the electricity alignment when in footways, within Endeavour Energy easements where applicable, and parallel to footway when crossing roads. • In areas where spare conduits are used, conduit ends shall be excavated/uncovered to allow cable installation. • Generally, up to 500m in length cable drums (depending on availability) shall be set up in footway/verges and cable segments pulled between jointing sand pits. • In ground HV cable jointing shall occur between each segment to complete the circuit. • HV cables shall be installed into the zone substation via underground cable ducts and trenches. Cables are to be terminated onto HV switchgear, nominated by Endeavour Energy, within the zone substation. • Restoration of footpaths and driveways shall occur along the route, once cabling is installed. • A flat easement area of 5.5m x 2.75m shall be created on the NSH site to install the construction power kiosk substation. The easement shall be adjacent to the boundary to allow 24/7 access by Endeavour Energy. • The full substation kiosk easement area shall be excavated and a cable culvert installed. • Cabling to be installed beneath the kiosk substation and terminated onto the switchgear. • A flat area of 2m x 2.75m shall be created for a Site Main Switchboard (MSB) to be installed adjacent to the kiosk substation. • The site MSB area shall be excavated and conduit and LV cables installed between the kiosk substation and MSB. • Further excavation between the Site MSB and the proposed builder's compound area shall occur. LV conduits will be installed to supply the builder's compound area. • The kiosk substation and MSB shall be installed above their respective culvert and plinths. • The entire electrical system shall be commissioned and energised to relevant Australian Standards and Endeavour Energy's requirements.
Work Hours and Duration/Construction	Works will be undertaken during standard hours as per the Interim Construction Noise Guideline: • Monday to Friday: 7:00 am to 6:00 pm • Saturday: 8:00 am to 1:00 pm • Sunday and Public Holidays: No work
Workforce/Employment	Unknown at this stage. Construction contractor will determine appropriate work force to deliver the activity.
Ancillary Facilities	No formal ancillary facilities are required/have been designated. Generally, up to 500m in length cable drums (depending on availability) shall be set up in footway/verges and cable segments pulled between jointing sand pits. The contractor will utilise the footway/verges for minor material laydowns as permitted by road opening/occupation permits. Some minor material lay down/parking may occur on the NSH site if required.
Plant Equipment	The main plant likely to be used for the works would include: • Trucks; • Crane; • Excavator/backhoe; • Underbore and hyrdovac rig; • Handheld and power tools; and • Other small equipment.
Earthworks	Generally open cut trenching will be used (where there are no existing conduits), to install the HV feeder cables. Under-boring and hydrovac may be used as required at select locations to avoid/minimise road and tree impacts. Open trenching would typically be up to 1200mm wide and 1180 deep as described above. A flat easement and pad of 5.5m x 2.75m shall be created on the NSH site to install the construction power kiosk substation.

Construction activity	Description
Source and Quantity of Materials	Any required materials will be sourced locally from licensed quarries and operators. All materials will be certified uncontaminated and environmentally safe.
Traffic Management and Access	Traffic and access would be disrupted during works where the alignment affects the carriageway or road shoulder. Traffic control provided to road opening permit requirements. Generally, the contractor will be responsible for this and obtaining relevant road opening permits for the works. Traffic control and signage for pedestrian access will be provided. The contractor also will organise notices to residents for any disruptions to services or driveways etc. and provide restoration after the works are complete. A traffic control and access plan would be prepared.

3.4 Operational Activities

The proposed activity is for the installation of electricity infrastructure to service the future NSH. There are no notable operational matters.

4. Statutory Framework

4.1 Planning Approval Pathway

Section 4.1 of the EP&A Act states that if an EPI provides that development may be carried out without the need for development consent, a person may carry the development out, in accordance with the EPI, on land to which the provision applies. However, the environmental assessment of the development is required under Part 5 of the Act.

State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP) aims to facilitate the effective delivery of infrastructure across the State. Chapter 2 Part 2.3 Division 5 of the TISEPP outlines the approval pathways for electricity transmission or distribution networks.

The site is zoned a combination of R2 Low Density Residential, SP2 Infrastructure, and RE1 Public Recreation under the *Shellharbour Local Environmental Plan 2013* (SLEP). Section 2.44(1) of the TISEPP states that *development for the purpose of an electricity transmission or distribution network may be carried out by or on behalf of an electricity supply authority or public authority without consent on any land.*

Section 2.43 of the TISEPP outlines that an *electricity transmission or distribution network includes the following components—*

(a) above or below ground electricity transmission or distribution lines (including related bridges, cables, conductors, conduits, poles, towers, trenches, tunnels, access structures, access tracks and ventilation structures) and telecommunication facilities that are related to the functioning of the network,

(b) above or below ground electricity switching stations or electricity substations, feeder pillars or transformer housing, substation yards or substation buildings,

(c) systems for electricity storage associated with a component specified in paragraphs (a) and (b).

Therefore, the proposal is permitted without consent and considered an 'activity' for the purposes of Part 5 of the EP&A Act and is subject to an environmental assessment (REF). The proposal is considered an 'activity' in accordance with section 5.1 of the EP&A Act because the development involves carrying out of works by HI (a public authority).

TISEPP consultation is discussed within Section 6 of this REF.

Table 4 Description of proposed activities

Division and Section within TISEPP	Description of Works
Division 5, Section 2.44(1)	The proposal involves the installation of HV feeder cables and a temporary kiosk substation. This is consistent with the purpose/definition of an electricity transmission or distribution network involving electricity transmission or distribution lines (including cables, conductors, conduits, and trenches amongst other things), and aboveground electricity switching stations or electricity substations.

4.2 Environmental Protection and Biodiversity Conservation Act 1999

The provisions of the EPBC Act do not affect the proposal as it is not development that takes place on or affects Commonwealth land or waters. Further, it is not development carried out by a Commonwealth agency, nor does the proposed development affect any matters of national significance. An assessment against the EPBC Act checklist is provided at **Table 5**.

Table 5 EPBC Checklist

Consideration	Yes/No
The activity will not have any significant impact on a declared World Heritage Property?	No
The activity will not have any significant impact on a National Heritage place?	No
The activity will not have any significant impact on a declared Ramsar wetland?	No
The activity will not have any significant impact on Commonwealth listed threatened species or endangered community?	No
The activity will not have any significant impact on listed migratory species?	No
The activity does not involve nuclear actions?	No
The activity will not have any significant impact on Commonwealth marine areas?	No
The activity will not have any significant impact on Commonwealth land?	No
The activity does not relate to a water resource, a coal seam gas development or large coal mining development?	No

4.3 Environmental Planning and Assessment Act 1979

4.3.1.1 Duty to Consider Environmental Impact

Part 5 of the EP&A Act applies to activities that are permissible without consent and are generally carried out by a public authority. Activities under Part 5 of the EP&A Act are assessed and determined by a public authority, referred to as the determining authority. Health Infrastructure is a public authority and is the proponent and determining authority for the proposed works.

For the purpose of satisfying the objects of the EP&A Act relating to the protection and enhancement of the environment, a determining authority, in its consideration of an activity shall, notwithstanding any other provisions of the Act or the provisions of any other Act or of any instrument made under the EP&A Act or any other Act, examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity (refer to sub-section 1 of section 5.5 of the EP&A Act).

The Guidelines issued under Section 170 of the EP&A Regulation sets out the factors which must be considered when assessing the likely impact of an activity on the environment under Part 5 of the EP&A Act. These are also listed in Section 171(2) of the EP&A Regulation. Section 7.1 specifically responds to the factors for consideration.

Table 6 below demonstrates the effect of the proposed development activity on the matters listed for consideration in sub-section 3 of section 5.5 of the EP&A Act.

Table 6 Matters for consideration under Sub-Section 3, Section 5.5 of the EP&A Act

Matter for Consideration	Impacts of Activity
Sub-section 3: Without limiting subsection 1, a determining authority shall consider the effect of any activity on any wilderness area (within the meaning of the *Wilderness Act 1987*) in the locality in which the activity is intended to be carried on.	The land is not a wilderness area.
Note: If a biobanking statement has been issued in respect of a development under Part 7A of the *Threatened Species Conservation Act 1995*, the determining authority is not required to consider the impact of the activity on biodiversity values.	

4.4 Environmental Planning and Assessment Regulation 2021

The Guidelines, also consistent with Section 171(2) of the EP&A Regulation, provides a list of factors that must be taken into account for an environmental assessment under Part 5 of the EP&A Act. These requirements are considered at section 6.1 of this REF.

4.5 Other NSW Legislation

The following table lists any additional legislation that is required to be considered if it is applicable to the proposed activity.

Table 7 Other Possible Legislative Requirements

Legislation	Comment	Relevant? Yes/No
State Legislation		
Rural Fires Act 1997	*Is the site identified on the Bushfire Prone Land Map* Part of the site subject to the electricity infrastructure works is mapped as bushfire prone, however these works do not trigger specific bushfire requirements (such as a bushfire safety authority). The infrastructure would be installed accordingly to minimise bushfire risk.	No
Biodiversity Conservation Act 2016	*Does the site contain any critical habitat, threatened species or ecological population or community?* Based on the Biodiversity Assessment prepared by EMM (Appendix E), no critical habitat or threatened species occur at the site. The riparian vegetation along Burrinjuck Avenue is likely to conform to an endangered ecological community (EEC) listed under the BC Act, *Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*. Minor impacts would occur to a localised area of this EEC and the Biodiversity Assessment has confirmed via a Test of Significance that the impact would not be significant.	Yes Refer to Section 6.2.9
Water Management Act 2000	*Are the works within 40 metres of a watercourse?* Yes. Parts of the HV feeder alignment and works would occur near (within 40m) a watercourse. Works within water lands or those comprising of extraction or management of water may be subject to approval if they constitute a 'controlled activity'. HI (as a public authority) is, however, exempt under the Water Management Regulations from the need to obtain a Controlled Activity Approval.	Yes
Contaminated Land Management Act 1997	*Is the site listed on the register of contaminated sites?* No, the land is not listed on the register of contaminated sites. Localised contamination has been identified on part of the NSH site, however the proposed works subject to this REF do not occur in such areas and are not expected to disturb contaminated land.	No Refer to Section 6.2.13
Heritage Act 1977	*Any impacts on local or state or national heritage? If any assessment provided, note where.* The NSW *Heritage Act 1977* provides for the conservation of items of environmental heritage in NSW. The Act defines heritage as items or places that are of State and/or local heritage significance and includes: places, buildings, works, relics, moveable objects and precincts. As part of NSW heritage protection and management, the Act establishes a register including an inventory and list to protect the listed items. No part of the subject site/land traversed by the alignment is listed as an item of State significance on the NSW State Heritage Register. Accordingly, approval under the NSW *Heritage Act 1977* is not required. The archaeological provisions of the NSW *Heritage Act 1977* are applicable, however, as all "relics" are protected under the NSW Heritage Act, regardless of whether or not the place is listed as a heritage item at a local, State or national level. Overall, no heritage impacts are expected.	No Refer to Section 6.2.8

Legislation	Comment	Relevant? Yes/No
Roads Act 1993	*Any works to a public road, or pumping of water onto a public road, or involve the connection of a road to a classified road?* Yes. Consent under Section 138 of the *Roads Act 1993* is required for any works or activities in a public road reserve, public roadway or footpath (nature strip or verge). The proposed activity includes excavation and works within the road reserve, as such HI (or the contractor on their behalf) will need to obtain a Section 138 Approval from the relevant roads authority for works within the road reserve.	Yes
Protection of the Environment Operations Act 1997	There are no Protection of the Environment Policies (PEPs) that are relevant to the activity. No licenses will be required pursuant to the *Protection of the Environment Operations Act 1997.* HI and/ or contractors working on behalf of HI are required to notify EPA/DPE when a 'pollution incident' occurs that is likely to impact upon the environment. It is an offence to negligently dispose of waste in a manner that harms the environment. Waste will be managed in accordance with the Waste *Avoidance and Resource Recovery Act 2001.* The activity will aim to reduce the environmental impact of dumping waste and include mechanisms to recover resources and reduce the production of waste where possible. Any hazardous materials will be handled, managed, and disposed in accordance with EPA protocols.	No
National Parks and Wildlife Act 1974	The *National Parks and Wildlife Act 1974* (NPW Act) provides for the legal protection and management of Aboriginal sites within NSW. The key principles of the Act in relation to Aboriginal heritage are the prevention of unnecessary or unwarranted destruction of Aboriginal objects, and the active protection and conservation of objects which are of high cultural significance. It is an offence to knowingly disturb an Aboriginal object, irrespective of its nature or significance, without the prior consent of the relevant Director-General. The activity affects disturbed land that has been subject to clearing, infrastructure work and development. However, there are known Aboriginal heritage values and registered items on the NSH site. The proposed electricity infrastructure works are largely within existing road reserves, recreational fields and along/at the frontage of the NSH site. EMM have provided advice and an Aboriginal Heritage Due Diligence Assessment (refer to Appendix F) with regard to the proposed works and confirmed that the potential risk of the electricity infrastructure works to impact Aboriginal heritage items would be low and further assessment specific to this scope is not required. However, to limit any potential impact on any unknown Aboriginal sites or objects, mitigation and management measures are recommended to provide the necessary safeguards.	Yes Refer Section 6.2.7
Biosecurity Act 2015	Any weeds within the works footprint that are declared under the Act are to be managed accordingly.	Yes
State Environmental Planning Policies		
State Environmental Planning Policy (Biodiversity and Conservation) 2021	• **Chapter 2 Vegetation in non-rural areas** This Chapter of the SEPP applies (as applicable) to clearing vegetation in non-rural areas of the State, including environmental zones, not associated with a Development Application. Section 2.7 outlines clearing that does not require authority under this Policy, including: *(1) A permit or approval to clear vegetation is not required under this Chapter if it is clearing of a kind that is authorised under the Local Land Services Act 2013 (Clearing authorised under other legislation) section 60O or under Part 5B (Private native forestry).* On this basis and Clause 60O of the *Local Land Services Act 2013* (LLS Act), and given the Proposal is a Part 5 Activity, any vegetation clearing is authorised by way of compliance with Part 5 of the EP&A Act and authority under the Vegetation SEPP is not required.	No Yes

Legislation	Comment	Relevant? Yes/No
	• **Chapter 4 - Koala habitat protection 2021** Chapter 4 of the SEPP aims to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline. It applies when Councils assess development applications within all local government areas (LGAs) listed under Schedule 2. The Shellharbour LGA is not listed on this Schedule. Although this SEPP does not technically apply to the Part 5 Approval Pathway under the EP&A Act, Koala habitat and associated protections have been considered in the context of assessing the potential environmental impacts of the proposed Activity to the fullest extent possible, in order to fulfill the requirements of Part 5. There would be no adverse impact to Koala feed trees or Koala habitat as a result of the Activity.	
State Environmental Planning Policy (Resilience and Hazards) 2021	• **Chapter 2 Coastal Management** Chapter 2 of State Environmental Planning Policy (Resilience and Hazards) 2021 (RHSEPP) contains planning provisions for land use planning within the coastal zone, in a manner consistent with the objects of the Coastal Management Act 2016. It defines coastal management areas through detailed mapping and specifies assessment criteria that are tailored for each area. Councils and other consent authorities must apply these criteria when assessing proposals for development that fall within one or more of the mapped areas. The site/HV alignment is not within the Coastal Environment Area or Coastal Use Area. It is not within mapped Coastal Wetlands, Littoral Rainforests, or within related Proximity Areas.	No
	• **Chapter 4 Remediation of land** The objective of Chapter 4 of the RHSEPP is to provide for a State-wide planning approach to the remediation of contaminated land. Chapter 4 applies to rezoning and development applications for development requiring consent. As the proposed Activity does not involve a change of use and does not involve a development application, the provisions of Section 4.6 of the RHSEPP are not technically triggered. However, preparation of a REF under Division 5.1 of the EP&A Act must still consider the potential for the land to be contaminated and make a determination of suitability of the land for its intended use/Activity. The proposed Activity is for the installation of electricity infrastructure and is therefore not a sensitive land use or development. However, ground disturbance could disturb contaminated material if present. The HV cable alignment traverses existing suburban and residential road reserves, existing utility allocations/ducts, and public open space. These areas are unlikely to be contaminated and there is minimal risk in this regard. A contamination assessment of the NSH site (undertaken separate to this REF as part of the broader NSH project) has identified some localised contamination on-site, mainly around the existing buildings and stockpiles in the western portion. The proposed Activity, including pad-mount substation, is not in the vicinity of these finds and given this, and the small scale of work, is not expected to disturb contaminated material. Given the nature of the works, Council's advice, general examination of the route and its associated land uses/zonings, and site context, there is nothing obvious to suggest contamination is present or might be high risk along or near the Activity footprint. The proposal therefore satisfies Section 4.6 (1) of the of the RHSEPP and the remaining clauses 4.6 (2) (3) and (4) are not applicable to the proposed activity. Furthermore, the *Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land (1998)* require the initial evaluation of any site and associated proposal, regarding whether contamination could be an issue, to be made in good faith and planning authorities to exercise their judgement. The assessment approach to contamination has been considered and is of a low risk and the key planning provisions and obligations have been reasonably satisfied. If by some chance	Yes

Legislation	Comment	Relevant? Yes/No
	contaminated land of some kind is discovered during construction, appropriate mitigation measures have been included via an unexpected finds protocol to ensure the responsible undertaking/ management of the works. Refer to Section 6.2.13 for further discussion.	
State Environmental Planning Policy (Transport and Infrastructure) 2021	State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP) aims to facilitate the effective delivery of infrastructure across the State. Chapter 2 Part 2.3 Division 5 of the TISEPP outlines the approval pathways for electricity transmission or distribution networks. Section 2.44(1) of the TISEPP states that *development for the purpose of an electricity transmission or distribution network may be carried out by or on behalf of an electricity supply authority or public authority without consent on any land.* The proposed Activity aligns with this and is permitted without consent.	Yes
Shellharbour Local Environmental Plan (SLEP) 2013		
Zone	The site/alignment of works traverses R2 Low Density Residential, SP2 Infrastructure, and RE1 Public Recreation zones. The proposal is for electricity infrastructure, with the majority installed within existing road reserves and conduits. The proposed Activity would support delivery of a new significant health service for the community and would not impact or hinder the objectives of each of the above zones.	Yes
Heritage	Section 5.10 of the SLEP 2013 relates to heritage conservation. As discussed previously and in Section 6.2.8 of this REF the Activity would not impact any listed heritage items.	No
Flood Planning	Section 5.21 of the SLEP 2013 relates to flood planning. The Activity is for the installation of electricity infrastructure and does not involve a habitable building. The Activity would not adversely impact or be impacted by flooding.	No
Acid Sulfate Soils	Section 6.1 of the SLEP 2013 relates to the management of Acid Sulfate Soils. The proposed works would not occur within mapped Acid Sulfate Soil risk areas.	No
Earthworks	The objective of Section 6.2 of the SLEP 2013 is to ensure that earthworks for which development consent is required will not have a detrimental impact on environmental functions and processes, neighbouring uses, cultural or heritage items or features of the surrounding land. Earthworks would be required for the Activity and will be suitably managed to ensure no adverse impacts to soil, water, or the surrounding environment. Refer to Section 6.2.4.	Yes
Terrestrial biodiversity	Section 6.5 of the SLEP 2013 aims to protect native flora and fauna and associated ecological processes and habitat. Some minor vegetation impacts would occur as a result of the Activity, however no significant impacts are expected and suitable mitigation measures have been provided to avoid and minimise impacts. Refer to Section 6.2.9 for biodiversity assessment.	Yes

5. Consultation

The REF scope of works was notified for 21 calendar days to the stakeholders outlined in Table 8. It is noted that at the time of notification Lot 1 DP1144885 had not yet been subdivided for the purposes of partial acquisition by HAC and therefore the notification letters referred to 86 Dunmore Road as Lot 1 DP1144885. Since then, this land has been subdivided and the resulting acquired land is known as Lot 10 DP1281639. However, the physical land and general location of the proposed works (other than minor design refinements, including confirmed location of the temporary substation kiosk which was previously identified as indicative on the notification plans) has not substantially changed and therefore additional notice was not given/warranted.

Local residents have also been briefed directly about the works through face-to-face meetings and email distribution.

Table 8 Stakeholders required to be notified

Stakeholder	Relevant Section
Shellharbour City Council	Sections 2.10 (impacts to Council infrastructure) and 2.45 (certain substation development) of the TISEPP.
Occupiers of adjoining and adjacent land	Sections 2.45 (certain substation development) of the TISEPP.
Transport for NSW (TfNSW)	N/A – no statutory consultation was required with TfNSW under the TISEPP, however this was undertaken given some works affect State roads and would require a *Roads Act 1993*, Section 138 Approval.

The notification commenced on 14 April 2022 and concluded on 5 May 2022. Responses to the issued notification were received from Shellharbour City Council, TfNSW, and two local residents (one of which represents a resident's group). Copies of the notification letters, as well as responses received/provided, are included at Appendix C.

An overview of the comments received are outlined and responded to in the table below. In addition, Health Infrastructure provided email responses to the submissions received from local residents on 12 May 2022 (these responses are also captured in Table 9 below). The project team has continued to liaise with Shellharbour City Council as part of the NSH working group and also provided a specific response via email on 28 October 2022 to provide copies of the prepared REF biodiversity and arborist assessments as per the request in their letter dated 2 May 2022. Council confirmed that they were generally satisfied with these assessments, subject to an update of the arborist report during detailed design. No further response to TfNSW was deemed necessary given the content of their letter (as addressed below).

Table 9 Issues raised and responses

Issue raised	Date received	Response	Reference
Shellharbour City Council			
Flooding: Availability of general flooding mapping/information mentioned. As the installation of electric lines will be underground, there will be insignificant flood impacts to other properties due to the proposed electric lines. For the insulation of electric lines, flood compatible materials should be used. As Flinders Reserve is in a high hazard zone and floodway both in the 1% AEP flood event and PMF event, it is advised to install "flood risk signage" during the construction works in Flinders Reserve to warn people that the site may be subject to flooding and to follow the designated evacuation routes from the reserve.	2 May 2022	Agreed. The proposal is not expected to present a flood impact or be adversely affected by flooding. Appropriate materials will be used, and construction personal would be informed of flood risk and responses where relevant.	Flooding is addressed in Section 6.2.5.
Council Assets: Works may conflict with council assets. Should the works conflict with any Council Stormwater Infrastructure, it would be	2 May 2022	HI and its contractors would liaise with Council regarding any potential asset conflict, as required. Any damage would be rectified at HI's cost.	Refer to Section 6.2.11

Issue raised	Date received	Response	Reference
expected that Council be contacted and any damage be rectified at NSW Health's cost.			
Property: Works are proposed in the existing road reserve area adjoining Lot 148 DP 1230190 which may be disused and closed / disposed of in future, which would require establishment of an easement as part of road closure process.	2 May 2022	Noted.	N/A
Easements: where works pass through land outside the road reserve, existing easements would need to be used or new ones created.	2 May 2022	Noted.	N/A
Fish Habitat/Riparian Land: include controls to protect such habitat/land from adverse impacts, such as sediment runoff.	2 May 2022	Noted. Sediment and erosion control measures would be implemented for the works.	Refer to Section 6.2.4.
Aboriginal Heritage: Part of the area of proposed works is within an area which may contain Aboriginal archaeological deposits. Whilst the majority of the works area is highly disturbed, it is recommended that controls be put in place during the works for unexpected finds.	2 May 2022	Noted. Aboriginal Heritage has been assessed and appropriate controls recommended for implementation during works.	Refer to Section 6.2.7.
Street trees: The impact to street trees and other trees within Councils reserve areas. All efforts should be made to protect any affected trees during the proposed works. Recommended conditions are provided.	2 May 2022	Arborist and ecological advice/assessments have been provided. The route has been adjusted to avoid/minimise impacts to key avenues of mature street trees and measures recommended to avoid and minimise tree impacts as far as practical during works.	Refer to Section 6.2.9.
Bushfire: part of the site is mapped as bushfire prone and any works within this area should comply with Section 7 of 'Planning for Bush Fire Protection 2019'. A condition has been recommended accordingly.	2 May 2022	Noted. The proposed works are not for residential development and are not directly part of, but do relate to, a Special Fire Protection Purpose (hospital). The electrical works would be undertaken to minimise bush fire risk and the transmission lines are underground which accords with Table 6.8c of 'Planning for Bush Fire Protection 2019'.	Refer to Section 6.2.10.
General information and advice were provided by Council in relation to an information request included in HI's notification of the Activity.	2 May 2022	Noted.	N/A
Council does not raise any objection to the works being carried out as 'works permitted without consent' pursuant to the SEPP (Transport and Infrastructure) 2021.	2 May 2022	Noted. The proposal is permitted without consent pursuant to TISEPP.	Refer to Section 4.1
Consideration should be given to potential impacts on services for the subdivision area to the north of the NSH Site.	2 May 2022	Noted. The proposed works are not expected to affect this matter.	N/A
The watercourse which travels from the Village Green to Flinders Reserve is mapped as a riparian corridor. Conditions are recommended in this regard.	2 May 2022	Noted. Suitable mitigation measures, including adoption of suitable recommended conditions have been included in this REF.	Section 6.2
Threatened fauna species (Myotis macropus / Southern Myotis) is mapped as having been recorded on Lot 10 DP 1281639.	2 May 2022	An ecological assessment has been prepared to support this REF and no significant impacts are expected.	Section 6.2.9
None of the subject land is identified in Council's records as being affected by contamination, however works are indicated in close proximity to Lot 20 DP 1035074 which is	2 May 2022	Noted. Unexpected finds protocols have been recommended in this REF.	Section 6.2.13

Issue raised	Date received	Response	Reference
identified as being potentially contaminated. A condition is recommended with regard to unexpected finds.			
Traffic and parking: Where possible, all site access should be off road reserve areas. Parking restrictions are as per the existing road signage.	2 May 2022	Noted.	Section 6.2.1
Notification of works to adjacent properties should be given prior to commencement.	2 May 2022	Noted. Appropriate notification would be provided to affected parties prior to works commencing.	Section 6.2.14
Should the works progress, Council recommends a range of conditions be complied with.	2 May 2022	This REF has provided a set of mitigation measures for the works. Most of the conditions as recommended by Council have been adopted where relevant. However, some of these are generic and where specialist assessments that support this REF recommend similar or modified versions of these types of conditions/measures that are specific to the Activity, these have been adopted instead. However, the overall intent of Council's recommended conditions is considered to be satisfied.	Section 6.2
Occupiers of adjoining and adjacent land			
Where will access to the site be?	12 May 2022	The electrical pad-mount substation and cabling work will not require driveway access as it will be undertaken along the eastern (Dunmore Road) boundary of the site. As it is early in the planning phase, HI do not yet know where the main hospital build construction site access will be located. However, HI will keep occupiers of adjoining and adjacent land informed as the project's planning phase progresses.	Traffic matters are also addressed in Section 6.2.1
Truck movements and management	12 May 2022	To install the electrical pad-mount substation and cabling works there will be no trucks/lorries required to use the driveway mentioned. HI anticipate there will be 2 or 3 small excavators for a short period of time working along the eastern (Dunmore Road) boundary of the site, to dig the trench for the inground electrical cables and substation footings.	Traffic matters are also addressed in Section 6.2.1
How many kilowatts is the substation?	12 May 2022	The electrical padmount substation will be 11kV/1000kVA	N/A
What is the size of the substation?	12 May 2022	The electrical padmount substation will be approximately 3m long by 1.3m wide and 1.6m high (a sample image was also provided in the response).	N/A
Where will the entry and egress point for the construction and operation of the substation be?	12 May 2022	Once constructed and in operation, electrical padmount substations typically require only minimal maintenance. HI expect light passenger vehicles would be used to undertake periodic maintenance checks (every 6-12 months) and would temporarily park nearby.	Traffic matters are also addressed in Section 6.2.1
Where will the distribution feed in and out from?	12 May 2022	The electrical cabling will be underground running along the western side of Dunmore Road from the north. The substation will be	N/A

Issue raised	Date received	Response	Reference
		connected to nearby transmission lines at a future date. Refer to the plans at Appendix A.	
Dust monitoring and management	12 May 2022	The electrical padmount substation and cabling works advised will be undertaken in accordance with Endeavour Energy's strict environmental procedures and guidelines. Installing the substation won't produce a significant amount of dust. All relevant potential environmental impacts will be considered, and mitigation measures implemented to avoid or minimise potential construction impacts such as dust.	Dust matters are also addressed in Section 6.2.3
Will there be any high voltage towers built and if so, where?	12 May 2022	No new high voltage towers will be erected as part of the electrical padmount substation and cabling works.	N/A
Please provide an EMF safety plan	12 May 2022	All works will be monitored and completed in accordance with Endeavour Energy's strict safety polices and plans, inclusive of EMF. As there are no HV towers or significantly sized substations, EMF from these works will be minimal and within Endeavour Energy's requirements and International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines provided by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA).	N/A
What will this substation look like (size and height)? Visual amenity. Will easements or digging be required on private property?	26 April 2022	The electrical padmount substation will be approximately 3m x 1.3m x 1.6m in size and be very similar to many others servicing the local area. As an example, refer to Plate 3.1. Regarding the electrical easement no project related works are expected there/on private property.	Visual amenity is addressed further at Section 6.2.6.
Transport for NSW			
Transport for NSW (TfNSW) concurs to your proposal detailed above provided that all work within the road reserve complies with the attached Annexure A plus "Additional TfNSW requirements" listed above. The additional requirement relates to: No Traverse trenching allowed in Shellharbour Rd at the intersection with Lakewood Blvd. Horizontal Underbore direction drilling to be minimum of 1.2m below the road surface level.	19/04/2022	N/A	Section 3 and Appendix A (proposed plans) of this REF details the proposal and confirms that the recommended underbore methodology of installation at Shellharbour Rd at the intersection with Lakewood Blvd would be followed.
Consent for the works must also be sought from the Council(s) listed above, who are the Road Authority for the road reserve at this location. Transport gives its concurrence to these works provided the Road Authority grants consent.	19/04/2022	N/A	Noted. Refer to Section 6.2.1.
Works that impact traffic flow or are within 100m of Traffic Lights, will require a Road Occupancy Licence (ROL).	19/04/2022	N/A	Traffic is addressed in Section 6.2.1. The relevant ROL would be obtained before works commence.

6. Environmental Impact Assessment

6.1 Environmental Planning and Assessment Regulation 2021 – Assessment Considerations

The relevant assessment considerations under Department of Planning & Environment's (DPE) *Guidelines for Division 5.1 Assessments* (the Guidelines) and Section 171(2) of the EP&A Regulation are provided below.

Table 10 Summary of Environmental Factors Reviewed in Relation to the Activity

Relevant Consideration	Response/Assessment		
a) Any environmental impact on a community	Short term temporary negative impacts to the community will occur as a result of amenity (e.g. noise) impacts associated with the construction phase. Short term construction impacts may result in a minor negative impact to air quality. Safeguards identified in this REF address these potential impacts. Over the long term the community will benefit as a result of this infrastructure supporting delivery of the NSH.	-ve	✓
		Nil	
		+ve	
(b) Any transformation of a locality	The proposed Activity would result in a temporary minor visual impact to the locality during works. Following completion of the works, most of the infrastructure will be underground and not visible. The aboveground padmount substation is modest in size and not intrusive, hence it would not present a substantial visual impact. Overall, there would be no significant transformation of the locality.	-ve	
		Nil	✓
		+ve	
(c) Any environmental impact on the ecosystem of the locality	Minor impact. A biodiversity assessment has been prepared (Appendix E) and no significant ecological impacts are expected. Measures have been recommended to avoid and minimise any potential risk or impact.	-ve	✓
		Nil	
		+ve	
d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality.	No. Given the nature of the Activity these aspects are not expected to be adversely affected/reduced.	-ve	
		Nil	✓
		+ve	
e) Any effect on locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific, or social significance or other special value for present or future generations.	Negligible short-term impact on public open space/recreational areas (Flinders Field) during construction/installation. However, impacts removed post works. The Activity would not adversely impact heritage items (refer Section 6.2.8). Based on the Aboriginal Due Diligence Assessment (Appendix F) there is a low risk to Aboriginal heritage and safeguards are recommended (refer Section 6.2.7).	-ve	✓
		Nil	
		+ve	
(f) Any impact on the habitat of protected fauna (within the meaning of the *Biodiversity Conservation Act 2016*)	As assessed at Section 6.2.9, the Biodiversity Assessment (Appendix E) has identified there would be some minor and localised impacts to biodiversity, including an Endangered Ecological Community. However, this is not significant and suitable mitigation measures have been recommended to minimise impacts.	-ve	✓
		Nil	
		+ve	
(g) Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air	No such impacts are expected.	-ve	
		Nil	✓
		+ve	
(h) Any long term impacts on the environment	Impacts associated with the Activity would be temporary and managed through the implementation of mitigation measures (e.g. noise, visual, air quality). No long term impacts are expected.	-ve	
		Nil	✓
		+ve	
(i) Any degradation of the quality of the environment	No such impacts are expected. Measures are recommended to avoid this.	-ve	
		Nil	✓

Relevant Consideration	Response/Assessment		
		+ve	
j) Any risk of safety of the environment	No such impacts are expected. Measures are recommended to avoid this.	-ve	
		Nil	✓
		+ve	
(k) Any reduction in the range of beneficial uses of the environment	No such impacts are expected. Measures are recommended to avoid this.	-ve	
		Nil	✓
		+ve	
(l) Any pollution of the environment	No such impacts are expected. Measures are recommended to avoid this.	-ve	
		Nil	✓
		+ve	
(m) Any environmental problems associated with the disposal of waste	No such impacts are expected. Measures are recommended to avoid this.	-ve	
		Nil	✓
		+ve	
n) Any increased demanded on resources (natural or otherwise) that are, or are likely to become, in short supply	No such impacts are expected.	-ve	
		Nil	✓
		+ve	
(o) Any cumulative environmental effects with other existing or likely future activities.	Low. It is expected that the activity could add to a number of common cumulative impacts, including construction noise, dust, traffic, resource consumption (e.g. construction material) and generation of greenhouse gas emissions (e.g. through operation of vehicles and equipment and use of electricity). However effective construction management can minimise this and no significant cumulative impacts are expected.	-ve	✓
		Nil	
		+ve	
(p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions.	No. The site is not in the coastal management zones as identified in the *Coastal Management Act 2016*.	-ve	
		Nil	✓
		+ve	
q) Applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1	The Activity is not inconsistent with any strategic planning document applicable to the site.	-ve	
		Nil	✓
		+ve	
r) Any other relevant environmental factors	N/A	-ve	
		Nil	✓
		+ve	

6.2 Identification of Issues

6.2.1 Traffic, Access and Parking

Questions to consider	Yes	No
Will the works affect traffic or access on any local or regional roads?	✓	
Will the works disrupt access to private properties?	✓	
Are there likely to be any difficulties associated with site access?		✓

Questions to consider	Yes	No
Are the works located in an area that may be highly sensitive to movement of vehicles or machinery to and from the work site (i.e. schools, quiet streets)?		✓
Will full or partial road closures be required?		✓
Will the proposal result in a loss of onsite car parking?		✓
Is there onsite parking for construction workers?		✓

Existing Environment

The proposed Activity largely occurs within existing road reserves of local roads, plus a State road. These roads, except for Shellharbour Road, are largely typical suburban low density residential streets with regular local use and varied on-street parking.

Impact Assessment

The proposed Activity largely occurs within existing road reserves and would affect the verge and pedestrian pathways, as well as some works within median strips or the carriageway (e.g. to facilitate installation across a road/intersection).

Traffic and access would be disrupted during works where the alignment affects the carriageway or road shoulder. The works would be undertaken progressively along the liner alignment and therefore traffic impacts are expected to be localised around the section of work being undertaken at that point in time (i.e. the entire HV cable route would not be subject to works and associated impacts all at once). Traffic control would be provided to road opening permit requirements. Generally, the contractor will be responsible for this and obtaining relevant road opening permits for the works. Traffic control and signage for pedestrian access will be provided.

Vehicle crossovers/driveways would also be affected and temporarily disrupted where trenching/installation needs to traverse such infrastructure. The contractor would organise notices to residents for any disruptions to services or driveways, and provide restoration after the works are complete.

A traffic control and access plan would be prepared to manage and minimise potential impacts, and maintain safety.

Construction contractors would park on the NSH site for nearby works, otherwise they would park in suitable locations within the road reserve/existing on-street parking areas along the works alignment. The works would be progressive in nature along a linear route that has available space/on-street spaces for parking. The use of on-street parking along the works route would be temporary and on an as needs basis. Additionally, the nature of the works is not expected to require a large number of construction personnel and is therefore unlikely to generate a high demand for construction parking. No one area/street is expected to be occupied for long-term durations as parking locations would change as works progress, ensuring parking turnover and the avoidance of concentrated contractor on-street parking in one location. The majority of affected roads/streets are residential in nature and do not comprise key commercial areas. Therefore use of on-street parking is not expected to affect business activity. If contractors use on-street parking, they would be mindful of local restrictions and availability.

TfNSW raised an additional requirement in their concurrence letter regarding the works and impacts to State roads. The additional requirement states that *no traverse trenching is allowed in Shellharbour Rd at the intersection with Lakewood Blvd. Horizontal Underbore direction drilling to be minimum of 1.2m below the road surface level.* The contractor would utilise an appropriate methodology consistent with TfNSW concurrence.

Mitigation Measures

The following mitigation measures would be implemented to manage impacts relating to traffic, access and parking:

- A Traffic Control Plan (TCP) shall be prepared by a suitable qualified person and implemented for the works in accordance with the requirements of the Traffic Control at Worksites Manual (RTA 2010 V4) and AS1742.3.

- An Access Management Plan shall be prepared to manage internal site traffic and pedestrian movements to ensure the safety of workers and public within the site.
- Where possible, current traffic movements and access will be maintained during the works.
- Regard to public safety will be maintained at all times.
- Appropriate signage will be erected and details will be confirmed by appropriate Project personnel responsible for site safety during the works.
- Traffic delay notifications will be issued to Council at least two weeks prior to commencement of works requiring full or partial road closure.
- Neighbouring residents and property owners are to be informed in writing at least two weeks prior with respect to any changes to pedestrian movements, access, and parking restrictions associated with the works.
- For works within the road reserve, the requirements of the Section 138 of the Roads Act 1993 apply. In this regard:
  - If a driveway is proposed, a Driveway Application should be made, or
  - If any other works are proposed and/or occupation of the road reserve proposed, a Road Opening Application should be made.
  - This application should be made prior to any works commencing within the road reserve and an application fee in accordance with Council's Fees and Charges will apply (Council recommended condition).
- The Proposed Activity is to be in accordance with the concurrence of TfNSW (dated 19/04/2022), including that all work within the road reserve complies with Annexure A plus “Additional TfNSW requirements” provided in the concurrence letter. The additional requirement relates to *no traverse trenching allowed in Shellharbour Rd at the intersection with Lakewood Blvd. Horizontal Underbore direction drilling to be minimum of 1.2m below the road surface level.* The contractor would utilise an appropriate methodology consistent with TfNSW concurrence.
- If contractors use on-street parking, they would be mindful of local restrictions and availability.

6.2.2 Noise and Vibration

Questions to consider	Yes	No
Are there residential properties or other sensitive land uses or areas that may be affected by noise from the proposal during construction? (i.e. schools, nursing homes, residential areas or native fauna populations)?	✓	
Will any receivers be affected by noise for greater than three weeks?	✓	
Are there sensitive land uses or areas that may be affected by noise from the proposal during operation?		✓
Will the works be undertaken outside of standard working hours? Monday – Friday: 7am to 6pm Saturday: 8am to 1pm Sunday and public holidays: no work		✓
Will the works result in vibration being experienced by any surrounding properties or infrastructure?		✓
Are there residential properties or other sensitive land uses or areas that may be affected by noise from the proposal during construction? (i.e. schools, nursing homes, residential areas or native fauna populations)?	✓	

Existing Environment

The proposed route and footprint extends from the Shellharbour Zone Substation to the NSH site. The works predominately occur in the road reserve and traverse residential areas, open space and semi-rural areas.

An Acoustics Assessment has been prepared by Stantec (refer to Appendix G) to assess the potential noise and vibration impacts of the proposed electrical infrastructure works.

The proposed NSH development site is located at 86 Dunmore Road, Dunmore. The site is bounded by the South Coast Rail Line and Princes Highway to the west, Dunmore Rd to the east, Shellharbour Anglican College to the north, and Agricultural Land to the south. Beyond Dunmore Rd to the east are residential properties and the Links Golf Course.

The nearest noise and vibration sensitive receivers are residential properties found along Dunmore Rd (referred to as R1 & R2) to the east of the site and the Shellharbour Anglican College located to the north (referred to as E1).

The REF scope of works entails trenching for installation of the proposed HV feeder cable route from the northern substation to the hospital site. It is expected that the REF works would be completed in a 6 month period, noting that trenching/cable installation works would occurring progressively along a linear alignment. The Acoustic Assessment considers the sensitive receivers along all proposed trenched sections of the proposed HV feeder cable route.

Impact Assessment

Construction Noise

Although a detailed construction program is not yet fully defined, construction noise and vibration have the potential to cause amenity impact for proximal sensitive receivers. A quantitative assessment, including noise monitoring and surveys to establish background levels, has been undertaken in the Acoustic Assessment (Appendix G).

Much of the works would occur within/along the existing road reserve with an interface with sensitive receivers (mainly residential areas), which can be sensitive to noise and therefore minimisation and management of impacts would be required.

In undertaking the assessment of potential noise intrusion associated with the proposed construction activities, the assessment procedures and criteria in Chapter 4 of the NSW *Interim Construction Noise Guideline* (ICNG) have been considered. Consequently, the Noise Management Levels (NMLs) for the construction have been established in the Acoustic Assessment. Suitable guidelines and criteria have also been referenced for vibration.

In order to assess the noise impact from the site during the various stages, acoustic predictions of the propagation of noise from construction noise sources were taken into account to estimate the resulting noise effects on the surrounding noise sensitive receivers. The noise model represents the ‘reasonable’ worst case periods of construction activities, based on certain reasonable assumptions.

Noise Management Levels have not been provided for receivers outside of the immediate surrounding area of the proposed NSH site as long-term noise monitoring has not been conducted at the multiple locations along the proposed HV feeder cable route. As an alternative, comparison to the Highly Noise Affected Level will dictate the criteria. Stantec Acoustic Consultants has confirmed this is an acceptable approach given residents closest to and around the hospital site would have a longer noise exposure to construction activities. It is noted that the receivers along the full length of the HV cable route would have a much shorter-term exposure to noise as works progress along the linear route and was deemed as low risk. Due the length of the route, it was deemed impractical to monitor at each individual location/receiver. Regardless of the Noise Management level criteria, the highly noise affected criteria is demonstrated to be exceeded at all residents during the associated works in the area, as discussed below. Therefore, it can be concluded that any criteria established for the Noise Management Level would also be exceeded.

Results of the assessment show that exceedance of the Highly Noise Effected Level (75 dB(A)) for majority of the residential receivers is expected directly adjacent to the works. The trenching works are proposed in some instances very close to noise sensitive receivers, and as such will be difficult to manage noise by introducing physical mitigation measures (i.e. noise barriers). The construction works will be dominated by the use of excavators in all instances. During these times, the predicted noise level will be greater than 75dB(A) at residential receivers.

Some options for managing the impacts include negotiating breaks or respite periods during these works. Temporary flexible noise barriers should be erected around works and moved as work progresses down the proposed cable route. Additionally, it is not expected that each receiver will have long-term exposure to these worst-case construction noise as the trenching progresses along the proposed route.

Ultimately it is the responsibility of the contractor to prepare a detailed Construction Noise and Vibration Management Plan (CNVMP) to address the impact of these proposed works and provide mitigation measures to minimise the impact to the surrounding sensitive receivers.

Vibration is not expected to be significant nor likely result in damage to surrounding buildings.

Overall noise and vibration have the potential to affect nearby sensitive receivers, however based on the scale and linear nature of work, and subject to implementation of suitable mitigation measures, no significant or long-term impact is expected. However, sensitive receivers would experience short-term exceedance of the noise management levels, including the highly affected noise level for periods of time when works occur in proximity to the receiver. Appropriate measures as part of a CNVMP would help minimise and manage potential impacts.

No work will be permitted outside the normal recommended NSW EPA working hours unless appropriate written approval has been obtained.

Operational Noise

No operational noise impacts would occur.

Mitigation Measures

To minimise construction noise and vibration impacts on nearby sensitive receivers, the following would be implemented:

- The mitigation measures outlined in the Acoustic Assessment (relevant to the electricity infrastructure works assessed), prepared by Stantec (September 2022) are to be implemented for the Activity.
- Prior to commencement of the Activity, the contractor is to prepare a detailed Construction Noise and Vibration Management Plan (CNVMP). This would identify all feasible and reasonable management measures to minimise noise and vibration impacts on nearby sensitive receivers.
- Works be limited to the following EPA recommended construction hours:
  - Monday to Friday: 7am to 6pm.
  - Saturday: 8am to 1pm.
  - Sundays and Public Holidays: No works.

6.2.3 Air Quality and Energy

Questions to consider	Yes	No
Could the works result in dust generation?	✓	
Could the works generate odours (during construction or operation)		✓
Will the works involve the use of fuel-driven heavy machinery or equipment?	✓	
Are the works located in an area or adjacent to land uses (e.g. schools, nursing homes) that may be highly sensitive to dust, odours, or emissions?	✓	

Existing Environment

The proposed electricity infrastructure works would occur in suburban residential and semi-rural areas. Air quality in the area is generally good, with typical vehicle emissions experienced in the vicinity of roads to varying degrees.

Impact Assessment

During construction period, the Activity has potential to generate dust and may cumulatively contribute to generating exhaust emissions locally through:

- Ground disturbance, excavations and ‘cutting’ of hardstand areas resulting in dust generation;
- Exhaust emissions from machinery and associated transportation; and
- Material blown from the site during high winds.

Given the nature of the works and the progressive works methodology along a linear route, the potential for emissions and dust generated by the works to adversely affect the air quality of sensitive receivers is considered to be of low to moderate risk, however these impacts can be minimised and are manageable. Overall, given the short-term duration of the works and nature of the Activity, the level of potential impact is not considered significant with the effective implementation of common safeguards and management measures.

Mitigation Measures

The following mitigation measures would be implemented to manage impacts relating to air quality:

- No materials will be burnt on site.
- Vehicles transporting waste or other materials that may produce dust will be covered during transportation.
- Vehicles, machinery and equipment will be maintained in accordance with manufacturer's specifications in order to meet the requirements of the *Protection of the Environment Operations Act 1997* and associated regulations.
- Debris and waste will be immediately collected into appropriate storage facilities and removed from the site as soon as practical to ensure light-weight material is not dispersed by wind gusts.
- Construction works will not be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely.
- Machinery and vehicles not in use during construction will be turned off and not left to unnecessarily run idle.
- Dust suppression techniques would be utilised to minimise the potential for dust generation/ dispersal during works, as required.
- Disturbed soils would be progressively stabilised.

6.2.4 Soils and Geology

Questions to consider	Yes	No
Will the works require land disturbance?	✓	
Are the works within a landslip area?		✓
Are the works within an area of high erosion potential?		✓
Could the works disturb any natural cliff features, rock outcrops or rock shelves?		✓
Will the works result in permanent changes to surface slope or topography?		✓
Are there acid sulphate soils within or immediately adjacent to the boundaries of the work area? And could the works result in the disturbance of acid sulphate soils?		✓
Are the works within an area affected by salinity?		✓
Is there potential for the works to encounter any contaminated material?		✓

Existing Environment

The alignments of works occur across various soil landscapes, generally within semi-rural and urbanised areas. Topography varies from low lying and flat, including land adjacent to waterways/drainage lines, to gently sloping and undulating.

The work area does not traverse any mapped acid sulfate soil risk areas.

A search of the NSW EPA Contaminated Land Register was undertaken in September 2022 to determine if any areas of registered/known contaminated land occur in proximity to the site. There are no records of contamination near/along the proposed routes/work areas. Refer to Appendix J for results of this database search.

Council has advised that none of the subject land is identified in Council's records as being affected by contamination, however works are indicated in close proximity to Lot 20 DP 1035074 which is identified as being potentially contaminated. Contamination is further addressed in Section 6.2.13.

Impact Assessment

The proposed construction works pose a risk of erosion and sedimentation as a result of excavation, vegetation and ground disturbance. The local topography is low and relatively flat in many areas, to gently undulating. There are also watercourses/drainage lines and stormwater drains in the vicinity of the works. The proposed works, presents a low to medium, yet manageable, risk in relation to erosion and sedimentation. Standard construction management measures, including sedimentation and erosion control in accordance with the "Bluebook" would be implemented during works. A progressive and site-specific sedimentation and erosion control plan would be prepared prior to commencement and implemented during works.

There is no apparent risk associated with acid sulfate soils or contaminated land. Safeguards will be in place should unexpected contamination be encountered during the works.

Mitigation Measures

The following mitigation measures would be implemented to manage impacts relating to soil, erosion and sedimentation:

- An Erosion and Sediment Control Plan is required to be prepared prior to works commencing and will form part of the Construction Environmental Management Plan for the Activity. It shall be prepared in accordance with the Landcom/ Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book).
- Before work starts, erosion and runoff controls should be installed to prevent soil erosion, water pollution or the discharge of loose sediment on surrounding land, stormwater systems or watercourses. These controls should be in accordance with the Erosion and Sediment Control Plan and may include the following (where applicable):
  - erect a silt fence
  - limit the removal or disturbance of vegetation and topsoil
  - divert uncontaminated run-off around cleared or disturbed areas
  - install sediment traps/socks around any stormwater inlets and drainage lines
  - stockpile topsoil, excavated material, construction and landscaping materials and debris within the site. These should be covered or seeded to prevent loss of these materials
  - provide a single vehicle access to the site including measures to prevent the tracking of sediment off the site
  - provide adequate control measures to suppress dust (consistent with recommended Council condition).
- Works would only commence once all erosion and sediment controls have been established. The controls would be maintained in place until the works are complete, and all exposed erodible materials are stable (consistent with recommended Council condition).
- The soil and water management controls should be maintained at all times and checked for adequacy daily. The controls must not be removed until the development is completed and the disturbed areas have been stabilised. Maintenance should include but is not limited to ensuring:
  - all sediment fences, sediment traps and socks are properly placed and are working effectively
  - drains, gutters and roads must be maintained clear of sediment at all times.

  It is an offence under the *Protection of the Environment Operations Act 1997* to allow soil or other pollutants to fall or be washed into any waters or be placed where it is likely to fall or be washed into any waters. Substantial penalties may be issued for any offence (consistent with recommended Council condition).

- Disturbance of natural sediments and vegetation would be minimised.

6.2.5 Hydrology, Flooding and Water Quality

Questions to consider	Yes	No
Are the works located near a natural watercourse?	✓	
Are the works located within a floodplain?	✓	
Will the works intercept groundwater?		✓
Will a licence under the *Water Act 1912* or the *Water Management Act 2000* be required?		✓

Existing Environment

The works following a linear alignment through largely urbanised areas, with some sections occurring near watercourse/drainage lines and flood prone land.

Impact Assessment

The proposed Activity could present risks to nearby stormwater drainage networks, waterways and any downstream environments if not managed effectively. Construction activities that could present a risk to waterways or sensitive environments in the broader landscape include:

- Erosion and sediment disturbance that could disperse from the works site and impact local drainage lines and nearby waterways.
- Turbidity and sedimentation of local aquatic habitats and waterways.
- Pollution of local water quality (both ground and surface water) from pollutants from machinery and construction materials and spills.
- A variety of dispersible liquid materials would be used which pose a potential pollutant threat to local water quality. These liquids include, but are not limited to, diesel, unleaded petrol, machinery oils and lubricants. The nature of these liquids and their ability to disperse away from the work site means that they could have a negative impact on ground or surface water on or adjacent to the site, especially during rain.
- Periods of high rainfall or flood could exacerbate potential water quality impacts if works are in progress during such an event.

Whilst the works could pose these risks, such risks can be suitably avoided, minimised and managed by implementing appropriate safeguards and mitigation measures. With appropriate mitigation measures in place during construction, the Activity is considered unlikely to present significant risk to water quality in the surrounding area. The Activity would not adversely affect the biophysical, hydrological or ecological integrity of the surrounding area, nor would it impact or alter the quantity and quality of surface and ground water flows.

Post construction the Activity would not negatively impact water quantity or quality, nor riparian environments.

Whilst some of the works occur in areas that are potentially flood prone, the proposal is for underground electricity transmission infrastructure that would be designed accordingly. The construction work force would be informed of risks working in floodway areas. The proposed aboveground padmount substation is not located on flood prone land.

Mitigation Measures

The following mitigation measures would avoid and minimise impacts to hydrology, flooding and water quality.

- Where possible, avoid works during forecast high rainfall events.
- A spill containment kit will be available at all times. All personnel will be made aware of the location of the kit and trained in its effective deployment.
- Any required fuels and other liquids will be stored in self-safe chemical storage containers.

- All refuelling of plant and equipment will be in appropriately designated areas away from drainage lines or watercourses (at least 40 metres) and managed in order to prevent any potential spills leaving the refuelling area (e.g. use of bunded areas).
- Cleaning or washing is not to occur near waterways or drainage lines.
- All equipment will be maintained in good working order and operated according to manufacturer's specification.
- No waste and/or wastewater will be discharged directly or indirectly in drains or waterways.
- Visual monitoring of local water quality (i.e. turbidity, hydrocarbon spills/slicks) within and adjacent to the site is to be undertaken on a regular basis to identify any potential spills or deficient erosion and sediment controls during construction.
- The Council and EPA will be notified immediately in response to incidents causing or threatening actual or potential harm to the environment in accordance with section 148 of the POEO Act (via EPA Environment Line on 131 555).
- For the insulation of electric lines, flood compatible materials should be used (consistent with Council recommended condition).
- As Flinders Reserve is in a high hazard zone and floodway both in the 1% AEP flood event and PMF event, it is advised to install "flood risk signage" during the construction works in Flinders Reserve to warn people that the site may be subject to flooding and to follow the designated evacuation routes from the reserve (consistent with Council recommended condition).

6.2.6 Visual Amenity

Questions to consider	Yes	No
Are the works visible from residential properties, or other land uses that may be sensitive to visual impacts?	✓	
Will the works be visible from the public domain?	✓	
Are the works located in areas of high scenic value?		✓
Will the works involve night work requiring lighting?		✓

Existing Environment

The Activity is located predominately within existing road reserves (including residential areas), public open space, and within the NSH site. Visual amenity in the area is good and typical of suburban and semi-rural settings.

Impact Assessment

The construction phase of the Activity will require the presence of works crew, plant and equipment, ground disturbance, minor vegetation removal, and trenching, representing a short-term, localised variation in the visual environment along the works footprint.

Upon completion of development, the visual setting of the site would be restored and relatively unchanged along the HV cable route.

The new pad-mount substation kiosk would require a flat pad/easement area of about 5.5m x 2.75m near the eastern boundary of NSH site, including associated minor earthworks. The electrical pad-mount substation will be approximately 3m x 1.3m x 1.6m in size and be like many others servicing the local area. As an example, the one shown in Plate 3.1 earlier in this REF is at 17 Gore Avenue, Shell Cove. A flat area of 2m x 2.75m shall be created for a Site Main Switchboard (MSB) to be installed adjacent to the kiosk substation. Overall, the size is modest and not visually intrusive, plus it is reasonably separated/setback from dwellings by Dunmore Road and is not expected to obstruct views or be detrimental to visual amenity. Furthermore, this substation kiosk is expected to be decommissioned and removed from the site after a permanent connection is established for the future hospital (subject

to separate approval and works). No specific visual amenity mitigation is proposed or required given the minimal visual impact expected.

Overall, the Activity would not result in a significant or long-term variation to the visual environment, with negligible to minor effect on the external visual environment or surrounding viewpoints.

The proposal would not result in any long-term environmental amenity impacts to adjoining properties, such as overshadowing, sunlight access reduction, privacy issues or visual bulk.

Mitigation Measures

The following mitigation measures would be implemented to manage impacts relating to Visual Amenity:

- Vegetation would only be trimmed/removed to the minimum extent necessary to undertake the proposed works.
- Upon completion of construction, any work areas would be restored to an acceptable visual state.
- The construction worksite would be maintained, kept free of rubbish and cleaned up at the end of each workday.

6.2.7 Aboriginal Heritage

Questions to consider	Yes	No
Will the activity disturb the ground surface or any culturally modified trees?	✓	
Are there any known items of Aboriginal heritage located in the works area or in the vicinity of the works area (e.g. previous studies or reports from related projects)?	✓	
Are there any other sources of information that indicate Aboriginal objects are likely to be present in the area (e.g. previous studies or reports from related projects)?	✓	
Will the works occur in the location of one or more of these landscape features and is on land not previously disturbed? • Within 200m of waters. • Located within a sand dune system. • Located on a ridge top, ridge line or headland. • Located within 200m below, or above a cliff face. • Within 20m of, or in a cave, rock shelter or a cave mouth	✓	
If Aboriginal objects or landscape features are present, can impacts be avoided?	✓	
If the above steps indicate that there remains a risk of harm or disturbance, has a desktop assessment and visual inspection been undertaken?	✓	
Is the activity likely to affect wild resources or access to these resources, which are used or valued by the Aboriginal community?		✓
Is the activity likely to affect the cultural value or significance of the site?		✓

Existing Environment

Situated between the mountains and the sea, the area is characterised by grassy coastal plains that merge with eucalypt forests and woodlands toward the periphery of the Illawarra escarpment. Soil profiles consist of shallow texture contrast residual units situated above the sandstone and/or shale geologies, with increasing alluvium adjacent creek lines and waterways. The study area sits between two suburban regions, the city of Shellharbour and Dunmore. With built up areas following the coastline, Shellharbour has a population of roughly 70,000 people. While Dunmore remains semi-rural, with an increase in urbanisation throughout the past decade. The Illawarra region is largely characterised by its farming, mining and steel manufacturing.

The site and electricity infrastructure works footprint/alignment has been subject to various disturbance activities over a long period. Despite disturbance from historic and current land use practices, Aboriginal heritage may remain in the study area. This may include artefact scatters (that would usually be subsurface and visible when disturbed/eroded) and isolated scarred trees.

Impact Assessment

EMM Consulting have been engaged by HI to provide advice on and assess matters of Aboriginal heritage. EMM have prepared an Aboriginal Heritage Due Diligence Assessment in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (OEH 2010) for the proposed Activity (refer to Appendix F).

The due diligence guidelines provide a generic code of practice used to determine whether activities will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm where possible. This involves:

- a search of the Aboriginal Heritage Information Management System (AHIMS) database;
- consideration of the environmental context for the presence of Aboriginal objects or places;
- consideration of existing Aboriginal cultural heritage studies in the area and region for the presence of Aboriginal objects or places;
- a site inspection of the project area by an EMM archaeologist to identify any Aboriginal objects or areas of potential archaeological deposit (PAD); and
- determination of whether further heritage investigation and impact assessment is required.

The due diligence assessment is an initial investigation of constraints and opportunities pertaining to identified existing and potential Aboriginal heritage sites and places on and/or in the immediate vicinity of the study area. As such, the due diligence assessment aims to identify whether the program will impact a known Aboriginal object or place, or areas that have potential for Aboriginal sites to occur (typically as subsurface archaeological material), and to identify whether an Aboriginal Cultural Heritage Assessment (ACHA) is required to potentially support an Aboriginal Heritage Impact Permit (AHIP) application.

There has been a considerable level of archaeological investigation of the region, primarily from the 1980s onwards. These investigations focus on a range of mining lease exploration and development, residential development and infrastructure activities. These have been summarised in the Due Diligence Assessment at Appendix F.

In particular, Kelleher Nightingale Consulting Pty Ltd [KNC] (KNC 2020) completed an ACHA that covers the northern part of the NSH site in early 2020 (formerly Lot 1/DP1144885). This investigation was targeted at the northern portion of the acquired NSH site and did not include the southern portion (Lot 1/DP302910). Overall, the assessment found that the site was largely still intact and contained a shallow loamy topsoil (A1 horizon) overlying a culturally-sterile clay (B2 horizon). Test excavations carried out by KNC found 11 artefacts across 21 test pits, with an average test pit depth of 20 cm. The artefacts were constrained to two discrete locales registered as AHIMS #52-5-0921 and #52-5-0922. Both sites were low-density stone artefact scatters of flake and flake fragments of “chert, silicified tuff/mudstone and other siliceous materials”, which were contained in a shallow soil profile exhibiting low levels of disturbance. KNC determined the sites were reflective of temporary “in-between” camps used by Aboriginal people travelling to and from the coast, as well as south to the Minnamurra River. Although the artefacts were contained in a shallow soil profile, KNC determined the site was largely still intact, and assessed both sites as having moderate archaeological significance. Artefact scatters are common across NSW, and the identification of moderate significance in this case comes largely from the stratigraphic integrity of the site (rather than the age, contents, depth or density of the deposit), meaning it provides an opportunity to understand the chronology and timing of past activities, which is less common in the region.

An AHIP (#4660) was issued to KNC on 17 December 2020 for the salvage excavation of each site. The AHIP covers former Lot 1/DP1144885 (which comprises the northern lot of the acquired NSH Site (now known as Lot 10 DP1281639) and remains in force for 5 years. It permits the complete destruction of AHIMS #52-5-0921 and #52-5-0922 as long as the mitigation measures and a range of other standard conditions are followed. There is no evidence that the mitigation measures have occurred to date.

EMM undertook an AHIMS search on 2 March 2022 encompassing a 10 km^2 centred on the study area. The search identified 82 Aboriginal heritage registered sites, objects and/or places. Of these, four sites have been investigated and determined to not be an Aboriginal site. As mentioned above, there are two recorded Aboriginal sites within the study area (artefact sites), AHIMS #52-5-0921 and AHIMS #52-5-0922 recorded by KNC in 2019 (refer to Figure 3.1 in the Due Diligence Assessment, and the excerpt provided below at Figure 1 below).

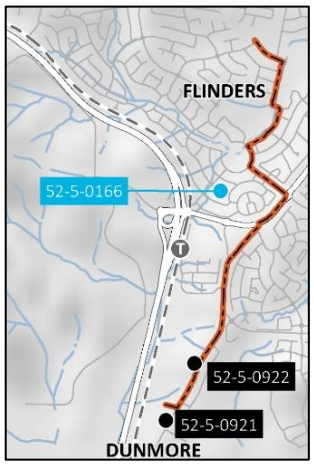


Figure 1: Approximate electricity works/cable route and nearby AHIMS sites (Source EMM).

A site inspection was undertaken on 15 June 2022 by EMM Heritage Specialist Joel Mason, along with Mr Roy Stewart of the Illawarra Local Aboriginal Land Council (ILALC). The project area and the HV feeder line from the proposed NSH site to the Shellharbour Zone Substation was inspected.

A low density artefact scatter (SH-FL01) was observed on the road verge at the southern portion of Lot 1 DP302910 adjacent to Dunmore Road (refer to Figure 2). The artefact scatter consisted of eight artefacts with one quartzite flaked piece, and seven chert flaked pieces found over an area of 10m x 10m. These artefacts were found mixed in with the imported road gravel that forms the road verge. There is moderate potential for there to be additional artefacts in the area and low potential for there to be subsurface archaeological deposits. This scatter is well separated from the proposed Activity.

An area of potential archaeological deposit (SH-FL02-PAD) was identified in the north eastern portion of Lot 1 DP302910 located on the spur crest area adjacent to Dunmore Road (refer to Figure 2). This area is a continuation of the landform associated with the PAD area of AHIMS # 52-5-0921 that KNC (2020) confirmed to have subsurface deposit and artefacts. There is moderate surface disturbance in this area with the construction of the driveway to Dunmore Train Station and the road verge for Dunmore Road. Whilst localised areas of moderate disturbance were observed, much of the PAD area is relatively undisturbed and due to the results of the test excavation conducted by KNC (2020) confirms that artefacts are in the associated landform.

Figure 2: Boundaries of SH-FL02-PAD and SH-FL01 on Lot 1 DP302910 (Source EMM).

In addition to the NSH site, the site inspection also included the area of the proposed installation of the underground HV feeder cables from the Shellharbour Zone substation to the padmount substation to be installed on the NSH site

(project area). The proposed electrical cabling generally follows the road reserves between the project area and the Shellharbour Zone substation. Modern disturbance in the form of services (water, comms, etc) have had impacts within the area of the proposed HV electrical cabling as well as the construction of pedestrian sidewalks and landscaped areas. Overall, the visibility and exposure of this area was 0% due to the construction and highly disturbed sections of the road reserve and urban streetscape. No Aboriginal objects, culturally modified trees or areas of potential archaeological deposit were identified during this site inspection.

The Due Diligence Assessment investigated the NSH Site (including findings of the previous ACHA), the proposed electricity cabling and pad-mount substation, and the potential for Aboriginal objects to occur. Based on the environmental and archaeological background of the region, the main evidence of past Aboriginal occupation would be present in the form of artefacts (scatters or isolated finds) and potential archaeological deposits found upon and/or within a shallow duplex soil profile. Overall, there is low potential for impact to Aboriginal heritage from the electricity trenching/cabling and pad-mount substation installation/works.

On this basis the works may proceed subject to implementation of the Due Diligence recommendations.

Mitigation Measures

Based on the investigation's findings, the Due Diligence Assessment recommends the following to avoid impacts to Aboriginal heritage:

- SH-FL01 and SH-FL02-PAD to be registered on AHIMS; and
- Any subsequent ground disturbance works in the vicinity of SH-FL01 and SH-FL02-PAD area will require further investigation and an application of an AHIP to be prepared; and
- The nature of disturbance does not preclude the potential for isolated finds, which is a common site type across the region, even in disturbed contexts. In the event of unexpected Aboriginal objects, sites or places (or it is recommended that: potential Aboriginal objects, site or places) are discovered during construction, all works in the vicinity should cease and the proponent should determine the subsequent course of action in consultation with a heritage professional and/or the relevant State government agency as appropriate; and
- This documentation may be summarised within and/or appended to a Development Application (DA), and a Review of Environment Factors (REF). If any Aboriginal objects are later identified within the proposed activity area, this report cannot be used alone to support an application for an Aboriginal Heritage Impact Permit (AHIP). Such an application would require more detailed investigation involving a formal process of Aboriginal community consultation and the preparation of an Aboriginal Cultural Heritage Assessment (ACHA); and
- If human skeletal material are discovered, the *Coroners Act 2009* requires that all works should cease, and the NSW Police and the NSW Coroner's Office should be contacted. Traditional Aboriginal burials (older than 100 years) are protected under the *National Parks and Wildlife Act 1974* and should not be disturbed. Interpreting the age and nature of skeletal remains is a specialist field and an appropriately skilled archaeologist or physical anthropologist should therefore be contacted to inspect the find and recommend an appropriate course of action. Should the skeletal material prove to be archaeological or Aboriginal remains, notification of DPC and the Local Aboriginal Land Council will be required. Notification should also be made to the Commonwealth Minister for the Environment, under the provisions of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*.

6.2.8 Non-Aboriginal Heritage

Questions to consider	Yes	No
Are there any heritage items listed on the following registers within or in the vicinity of the work area? NSW heritage database (includes section 170 and local items) Commonwealth EPBC heritage list?		✓
Will works occur in areas that may have archaeological remains?		✓
Is the demolition of any heritage occurring?		✓

Existing Environment

The proposed route and footprint would not be located in the vicinity of any listed heritage items. The closest heritage item, Blackbutt Reserve (I059), under the Shellharbour LEP 2013, is located 240 m north-west of the Shellharbour Zone Substation.

Impact Assessment

The proposed works are electricity infrastructure installation, predominantly in the road reserve/public open space, and on the periphery of the acquired NSH site. A search of the NSW Heritage's State Heritage Inventory did not identify any non-Aboriginal heritage items in the vicinity of the proposed Activity (as of September 2022). A search of the Australian Heritage Database was undertaken. No Heritage items occur in the vicinity of the project area (as of September 2022). Refer to Appendix J for a copy of these searches.

Overall, the proposed works would not impact heritage items or related significance. Standard unexpected finds and stop-works procedures would be followed as required.

Mitigation Measures

The following mitigation measures will be implemented in order to prevent adverse impacts to any items of non-Aboriginal heritage:

- Standard unexpected finds and stop-works procedures are to be in place and implemented if unexpected finds occur during the works. If unexpected archaeological remains or relics are uncovered during the works, all works must cease in the vicinity of the material/find. Council's heritage adviser, and if necessary, Heritage NSW and any other relevant authority, will be contacted. Work would not proceed in the vicinity of the find until appropriate clearance is given.

6.2.9 Ecology and Trees

Questions to consider	Yes	No
Could the works affect any *Environmental Protection and Biodiversity Conservation Act 1999 (Cth)* listed threatened species, ecological community or migratory species?	✓	
Is it likely that the activity will have a significant impact in accordance with the Biodiversity *Conservation Act (2016)?* In order to determine if there is a significant impact, the REF report must address the relevant requirements of Section 7.2 of the BC Act: • Section 7.2 (a) – Test for significant impact in accordance with section 7.3 of the BC Act. • Section7.2 (c) – it is carried out in a declared area of outstanding biodiversity value.		✓
Could the works affect a National Park or reserve administered by EES?		✓
Is there any important vegetation or habitat (i.e. Biodiversity and Conservation SEPP) within or adjacent to the work area?	✓	
Could the works impact on any aquatic flora or habitat (i.e. seagrasses, mangroves)?		✓
Are there any noxious or environmental weeds present within the work area?	✓	
Will clearing of native vegetation be required?	✓	

Existing environment

The works occur in disturbed and largely developed areas. However, there is vegetation located along and near to the proposed works footprint, including street trees and riparian areas.

Biodiversity Impact Assessment

EMM have prepared a Flora and Fauna Impact Assessment to support this REF (refer to Appendix E).

The Flora and Fauna Assessment has been completed to assess potential impacts of the proposed works on species and communities listed under the BC Act, FM Act and EPBC Act.

The Activity would not be carried out in a declared area of outstanding biodiversity value.

In summary, the disturbance footprint is generally located in areas of low biodiversity value that avoids impact on threatened communities, threatened species and their habitats. Residual impacts arising from the proposed works, following all measures to avoid, minimise and mitigate impacts, include:

- trenching across a small section of riparian vegetation near Burrinjuck Avenue representing disturbance on approximately 24 m^2 of Swamp Sclerophyll Forest EEC listed under both the BC Act and EPBC Act. A test for significant impact in accordance with section 7.3 of the BC Act has been completed and concluded that there is unlikely to be a significant impact.
- potential impacts on street trees from encroachment during trenching;
- clearing of a small number of planted native shrubs; and
- clearing of exotic grassland.

The impacts resulting from the proposed works are not considered to be significant to threatened communities, threatened species or their habitats. Therefore, the preparation of a Species Impact Statement or a Biodiversity Development Assessment Report (BDAR) is not required under the BC Act. No matter of national environmental significance is likely to be significantly impacted by the proposed works and as such no referral to the Commonwealth is required.

Mitigation measures during construction are recommended to manage construction impacts.

Biodiversity Mitigation Measures

The following measures are recommended to avoid and minimise biodiversity impacts during construction:

- Preparation of a construction environmental management plan. The plan should incorporate the design, construction and post-construction environmental management measures proposed. This should include (but not be limited to) issues relating to vegetation management, weed control, and erosion and sediment control and should include plans clearly showing areas to be cleared, trees to be retained and any other ‘no go zones’. This Site Plan is to be placed in an accessible location to be viewed by all site personnel (site office for example)
- Clearing is to be to the minimum extent necessary. If parts of the development footprint areas are identified during construction as not needing use for construction activities, clearing will be avoided.
- Define clearing limits using clearly visible barrier, such as flagging tape. This should be maintained and checked daily through construction.
- Existing trees are legally protected by Council’s Tree Preservation Order. Electrical Installer shall ensure that the works will not directly impact the existing trees. Any works identified that requires the removal of protected trees shall not commence unless approved by the Superintendent.
- For bulk and harmful materials, do not store, stockpile, dump or otherwise place under or near trees materials such as oil, waste concrete, clearings and boulders. Prevent windblown materials from harming trees and plants.
- When working near trees:
  - prevent damage to tree bark. Do not attach stays and guys to trees.
  - do not remove topsoil within the dripline of the trees.
  - if required, use hand or trenchless methods so that root systems remain intact and undamaged.
  - where excavations under tree canopies will be open for some time, ensure that the CTPO is notified of the intent.

- Where root cutting is required for roots more than 50 mm diameter, obtain approval from the CTPO before proceeding. Cut using methods that do not unduly disturb the remaining root system. Immediately after cutting, water the tree and apply a liquid rooting hormone to stimulate the growth of new roots.
- Do not compact the ground or use skid-steel vehicles under the tree driplines.
- Sediment controls, including fencing and sediments traps, should be installed in any areas where works will occur in proximity to low lying vegetation or streams.
- All weeds should be appropriately removed offsite and where possible, without stockpiling.
- If stockpiling of weeds is required before removal from site, weeds are to be stockpiled and appropriately covered and located in areas away from vegetation to be retained to minimise the spread of seed and other propagules.
- Where feasible it is recommended weeds are cut and roots are kept minimising erosion.
- Hygiene protocols should be implemented including hygiene procedures for equipment, footwear and clothing. Ensure works vehicles are washed down prior to entering the works area.
- Hygiene measures should be implemented as part of the CEMP to minimise the risk of pathogen spread on site and should include procedures for equipment, footwear and clothing. Ensure works vehicles are washed down prior to entering the works area.
- Complete post construction weed control activities in accordance with the weed control protocol.
- Should any tree removals or works which would provide potential habitat for the Southern Myotis be proposed in the vicinity of Lot 10 DP1281639, the applicant should engage an ecologist to provide advice as to the proposed works. A report should be prepared which outlines the ecologist's advice and provides information as to how the project will progress in taking into consideration that advice. This report should be provided to Council (recommended Council condition).

Arboricultural Impact Assessment

The electricity feeder cable alignment traverses various road reserves, including tree lined verges and public open space areas. Moree Trees Arboricultural Services has prepared an Arboricultural Impact Assessment Report for the Activity (refer to Appendix D).

The assessment has been conducted to assess the health and condition of eighty five (85) individual and groups of trees along the proposed HV cable route, and an impact assessment was conducted on the trees. Advice was also provided to avoid areas of high constraint where otherwise significant impacts to mature street trees may occur. Accordingly, the alignment of the cable installation was altered in Lakewood Boulevard and Munmorah Circuit and additional alternative trenching methods recommended to minimise impacts and avoid structural tree damage. Plate 6.1 shows the mature avenue of street trees either side of Lakewood Boulevard. Based on Arborist advice the cable alignment was relocated from the southern side verge to the centre grassed median to avoid impacts to these trees. Similarly, the alignment was shifted from the east to the west side of Munmorah Circuit as this side is less constrained in terms of space for installation. Other sections of the alignment are not as constrained by street trees and limited space, though measures would still be required where necessary to avoid and minimise impacts as trees are present along much of the route.

Plate 6.1: Image showing Lakewood Boulevard route alignment along grassed median strip.

It will be important to limit root damage and severing of roots for the proposed works. Root loss (for single roots) for this project is possible however it should be limited to roots <50mm in diameter. Any roots larger than fifty (50) millimetres in diameter are becoming structural woody roots. Damaging woody roots will expose heartwood that can often lead to the establishment of decay fungi over time. Strip trenching through a Tree Protection Zone (TPZ) will cause detrimental impacts to any tree, even destabilising them.

Options to avoid open trenching in the root zone may include directional drilling (underboring) or Hydrovac (Excavation through high pressure water), or even hand digging. When undertaking hydro-vacuum excavation the water pressure shall be calibrated so as to not damage, remove bark, or sever roots over 30mm in diameter. Canopy clearance will require assessment based on the size of the truck that will be used however with most trenching being next to the road access should not be an issue.

The Arborist report has advised that horizontal boring with Grundomat pneumatic piercing tools have been providing accurate horizontal bores beneath roads, railways, and landscaping. Water, gas, sewer and electrical industries have used this technology in order to reduce open trenching. Minimal operating space is required and the horizontal boring tool serves as a complement, and in many situations an economical alternative to, larger, more expensive directional drilling equipment. Should directional drilling be used entry and exit holes for the boring machine will need to be located outside of any TPZ distance.

The contractor would need to determine the most suitable method of excavation/installation based on the arborist's assessment/advice, and also accounting for potential conflict with other services along the alignment which could limit the use of horizontal boring.

TPZ and Structural Root Zone (SRZ) incursions would need to be used to determine if a tree would remain viable or not. Given this, Council has recommended an updated Arborist report be prepared at detailed design stage (including the chosen construction methods to reduce impact) and to assess the encroachments within the TPZ's and SRZ's to ensure the viability of retention. Based on early discussions/preliminary plans, the greatest impacts to the study area HV route trees would have be along Lakewood Boulevard and Munmorah Circuit. Potentially these two (2) streets could be heavily impacted by the proposed works and the loss of trees planted as avenue plantings is likely to raise environmental concerns locally. Burrinjuck Avenue would also potentially be impacted, however many of the trees and shrubs in this section could be replaced with compensatory planting or directional drilling utilised under some of the larger tree groups like Trees 55-60 and Tree group 74. The Trees along Wattle Road (Trees 80-85) should be possible to negotiate around with the use of hydro excavation across the TPZ areas.

Updated designs (as per those subject to this REF) following the arborist's initial assessment show that the route can now be installed through the centre of Lakewood Boulevard thus negating the impacts to the street trees along this section of the study area.

The impacts to Trees 42 to 48 have also been negated along Munmorah Circuit however the route has now been moved to the other/west side of this street and now could impact park trees that are growing on the road verge (Plate 6.2).

Plate 6.2: Image showing the trees to the left of the image now impacted by the new route, however more space is available compared to the other side of the street.

Trees 80-85 will now not be impacted as the route has been altered along Parklands Drive and into an easement between a building where it enters the end of the route at the substation.

As part of Council's feedback following notification of the proposal they recommended a standard tree protection condition, as follows:

- *Tree protection fencing should be installed prior to the commencement of any works within close proximity to trees. The protective fence should:*
  - *be located a minimum of 3000mm out from the dripline of the tree/vegetation*
  - *have a minimum height of 1500mm*
  - *be clearly marked at all times with the use of high visibility plastic hazard tape.*

  The fencing should be maintained intact at all times throughout the period of the work in the vicinity of the site. Machinery, structures, storage/disposal of any building materials and the like, should not be located within the fenced area at any time.

However, this condition appears to be a generic standard condition and is unlikely to be workable for the subject Activity given the works alignment is constrained in terms of space (along footpaths and narrow road verges) and occurs in proximity to numerous trees, with some works required near or even within the dripline of trees. Therefore, this condition has not been adopted. The project arborist has provided recommendations and can advise the contractor on suitable tree protection measures as required. Council has requested a copy of the arborist report and this should be provided.

Based on the findings of the arboricultural assessment a number of recommendations are provided to avoid and minimise impacts to trees. Tree removal would generally be avoided as far as practical and measures have been put forward to help achieve this where the alignment comes close to existing trees. However, the contractor will confirm the final detailed design and methodology of works, including best methods to avoid significant impacts to trees and confirmation if there are any unavoidable impacts. Subject to the arborist's recommendations, significant impacts can be avoided.

Arboricultural Mitigation Measures

The Arboricultural Impact Assessment prepared by Moree Trees should be provided to Council as requested, and the recommendations of the assessment are to be implemented to avoid and minimise impacts to trees during construction, including:

- The site trees numbered in the Arboricultural Impact Assessment are recommended to be added to the survey to enable a more accurate assessment to be undertaken for tree impacts.
- Fill can occur over a TPZ area provided it does not increase levels around the trunk of the tree or shrub. If fill increases above any basal area, then the tree or shrub should be removed.
- Following the site trees being added to the survey, the excavation of trenches within the Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) areas may be possible to undertake through open trenching. This shall be undertaken with a flat bucket excavator so as not to tear roots. A spotter shall be used and excavations shall be undertaken in small increments so as to limit root damage. No roots greater than fifty (50) millimetres in diameter shall be severed. Should large structural woody roots be uncovered, that are greater than fifty (50) millimetres in diameter, these should be retained with infrastructure to be threaded under the roots.
- The Tree Protection Zone (TPZ) and Structural Root Zone (SRZ): The TPZ is implemented to ensure the protection of the trunk and branches of the subject tree. The TPZ is a radial measurement based on the Diameter at Breast Height (DBH) of the tree. The SRZ is also a radial measurement from the trunk used to protect and restrict damage to the roots of the tree. In a disturbed situation, such as these trees are growing in, root growth is difficult to predict and is often opportunistic.
- The Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) have been measured from the centre of the trunk. The following activities shall be avoided within the TPZ and SRZ of the trees to be retained:
  - Storage of building materials.
  - Disposal of waste materials, solid or liquid.
- Options to avoid open trenching that could adversely impact tree roots should be considered, including directional drilling (underboring), Hydrovac (excavation through high pressure water), or localised hand digging.
- Every effort should be made to retain and protect any trees in the vicinity of the proposed works. The Arboricultural Impact Assessment report by Moore Trees is to be updated at the detailed design phase (including the chosen construction methods to reduce impact) and to assess the encroachments within the TPZ's and SRZ's to ensure the viability of retention. The report is to be completed by an AQF Level 5 Consulting Arborist and be written in accordance with Australian Standard AS4970-2009 *Protection of trees on development sites*. The updated report be provided to Council for consideration. Any direction from Council as to the replacement of any trees required to be removed should be followed and new tree/s should be protected and maintained during the works (Council recommended condition).

6.2.10 Bushfire

Questions to consider	Yes	No
Are the works located on bushfire prone land?	✓	
Do the works include bushfire hazard reduction work?		✓
Is the work consistent with a bush fire risk management plan within the meaning of the *Rural Fires Act 1997* (RF Act) that applies to the area or locality in which the activity is proposed to be carried out?		N/A

Existing environment

The acquired NSH is identified as bushfire prone land, the reminder of the electricity feeder cable alignment is not.

Impact Assessment

The proposal is for the installation of electricity infrastructure and is not associated with residential works, nor is it a Special Fire Protection Purpose in its own right. Generally, the works are not considered likely to be susceptible to bush fire risks and would be designed and undertaken according. Consistent with *Planning for Bush Fire Protection 2019*, the electricity services works are appropriate as location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings, and the proposed transmission lines are underground.

Mitigation Measures

- Any works within an area mapped as being potentially affected by bush fire hazard should be undertaken in accordance with relevant parts of '*Planning for Bush Fire Protection 2019'* (consistent with Council recommended condition).

6.2.11 Land Uses and Services

Questions to consider	Yes	No
Will the works result in a loss of, or permanent disruption of an existing land use?		✓
Will the works involve the installation of structures or services that may be perceived as objectionable or nuisance?	✓	
Will the works impact on, or be in the vicinity of other services?	✓	

Existing Environment

The general area is serviced by a range of services including water, sewer, electrical, stormwater, and telecommunications.

Impact Assessment

The Activity is for the installation of a new underground high-voltage (HV) feeder from the Shellharbour Zone Substation (Lot 1 DP439066) to the NSH site frontage, as well as a padmount substation on the NSH site.

Much of the proposal occurs within existing road reserves, and the works would cause some disruption to traffic and pedestrian access, including private driveways. Such effects would be temporary yet could be viewed as causing nuisance to surrounding/other land uses and local residents. However, given the linear nature of the works, the works will be progressive, therefore any land use impacts at any given point would be of a temporary nature and would be restored upon completion of works.

The works however are not expected to cause disruptions to services. Any potential services interruptions would be minimal and first need to be communicated to the relevant services authorities to enable flow on notifications to any affected services customers.

Given the proposed padmount substation has been notified to adjoining and adjacent occupiers, and is relatively small in size and temporary (would be removed post completion of the NSH), it is not likely be viewed as objectionable or causing nuisance to surrounding/other land uses.

HI and its contractors would liaise with Shellharbour City Council and relevant service providers regarding any potential asset conflict, as required.

Any damage to public infrastructure or services would be rectified and reinstated to the satisfaction of the relevant authority.

Some of the works affect public open space and a Council reserve (Flinders Field). Works would be undertaken in a manner to minimise disruptions to such land, as outlined in Section 6.2.14.

Overall, the Activity would not result in any significant or long-term impacts to existing land uses or services.

Mitigation Measures

The following mitigation measures would be implemented to manage impacts relating to Land Uses and Services:

- Any potential services/utility interruptions shall be minimised as far as practical and communicated to the relevant services authorities to enable flow on notifications to any affected services customers.
- HI and its contractors would liaise with Shellharbour City Council regarding any potential asset conflict, as required.
- Any damage to public infrastructure, other than that previously noted in the Dilapidation Report, is the responsibility of the applicant/proponent. All damage should be repaired and reinstated prior to the completion of the works. This work should be carried out by Council, or Council approved contractor, at the proponent's/applicant's expense (consistent with recommended Council condition).

6.2.12 Waste Generation

Questions to consider	Yes	No
Will the works result in the generation of non-hazardous waste?	✓	
Will the works result in the generation of hazardous waste?		✓
Will the works result in the generation of wastewater requiring off-site disposal?		✓

Existing Environment

The works occur in suburban, semi-rural and open space environments. The are no obvious waste issues present within/along the works footprint.

Impact Assessment

The Activity will be undertaken to ensure minimal impacts are generated from waste material produced on-site by ensuring that all waste is collected and disposed of or recycled in accordance with legislative waste disposal protocols and EPA guidelines. No materials will be used in a manner that poses a risk to public safety.

The proposed Activity will generate waste in the form of spoil, hardstand, and vegetative matter removed to enable construction. Packaging, plastic and building waste would be generated during construction and would be disposed of in accordance with legislative waste disposal protocols and EPA guidelines. Waste bins/skips will be established to separate waste streams to foster waste avoidance and resource recovery. A Construction Waste Management Plan would be prepared by the appointed contractor and will provide a framework to reduce waste directed to landfill. Overall, construction waste can be managed and disposed of effectively and responsibly, with opportunities for recycling also promoted where suitable.

Mitigation Measures

The following safeguards will be implemented in order to manage potential waste impacts:

- A Construction Waste Management Plan is to be prepared prior to commencement of works and form part of the CEMP. It is to detail the framework to reduce waste and manage, recycle or dispose of it responsibly.
- Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each construction day.
- Waste material is not to be left on site once the works have been completed.
- The working areas will accommodate separate bins and other waste storage structures to cater for waste streams required to foster waste avoidance, resource recovery and acceptable disposal to a licensed waste management facility.
- The resource hierarchy detailed by the *Waste Avoidance Resource Recovery Act 2001* would be adopted.
- Any contaminated waste generated would be disposed of in accordance with the EPA approved methods of waste disposal.
- Waste will be disposed of at a licensed waste or recycling facility as appropriate.

6.2.13 Hazardous Materials and Contamination

Questions to consider	Yes	No
Is there potential for the works to encounter any contaminated material?	✓	
Will the works involve the disturbance or removal of asbestos?		✓
Is the work site located on land that is known to be or is potentially contaminated?	✓	
Will the works require a Hazardous Materials Assessment?		✓
Is a Remediation Action Plan required?		✓
Is the work category 2 works under Resilience and Hazards SEPP?		✓

Existing Environment

The acquired NSH site comprises rural land that has been used for low intensity agricultural purposes (e.g. grazing). There are old buildings on site and stockpiles of soils and rubble. The route of the HV electricity feeder cable occurs predominately within the road reserve of local and suburban streets, including some public open space areas.

JK Environments have undertaken a Preliminary Site Investigation (PSI) (desktop), a hazardous building materials survey (HAZMAT), a Detailed (Stage 2) Site Investigation, Verification of Importation of Virgin Excavated Natural Material (VENM), and an Additional Groundwater Assessment for the NSH site, as a separate scope to this REF. These investigations identified asbestos containing material (ACM) on the site surface, and lead above the human health site assessment criteria (SAC) in fill in “Zone C” around the existing buildings and structures located within the western side of the NSH site. ACM was encountered in five fill stockpiles, and copper and zinc were also reported above the ecological SAC in several fill stockpiles. Based on these findings, preparation of a Remediation Action Plan (RAP), separate to this REF process/scope, was recommended for this localised contamination (refer to Figure 3 for remediation extent of contaminated land).

Remediation is not part of the scope of this REF and would be undertaken separately as Category 2 (not needing consent) remediation works in accordance with Chapter 4 (Remediation of Land) of State Environmental Planning Policy (Resilience and Hazards) 2021. Figure 3, taken from the RAP prepared by JK Environments (which also summaries all previous investigations), has been included in this REF (along with a copy of the RAP at Appendix H for information only) solely to demonstrate that the works assessed under the REF are not within or near known contaminated land and can proceed without the need for prior remediation. That is, only the pad-mount substation which is subject to this REF occurs within the NSH site, and its proposed location is well separated from the isolated identified contamination found on the proposed NSH site as shown on Figure 3. Council’s notification response letter dated 2 May 2022 also stated that none of the subject land (subject to the REF works scope) is identified in Council’s records as being affected by contamination.

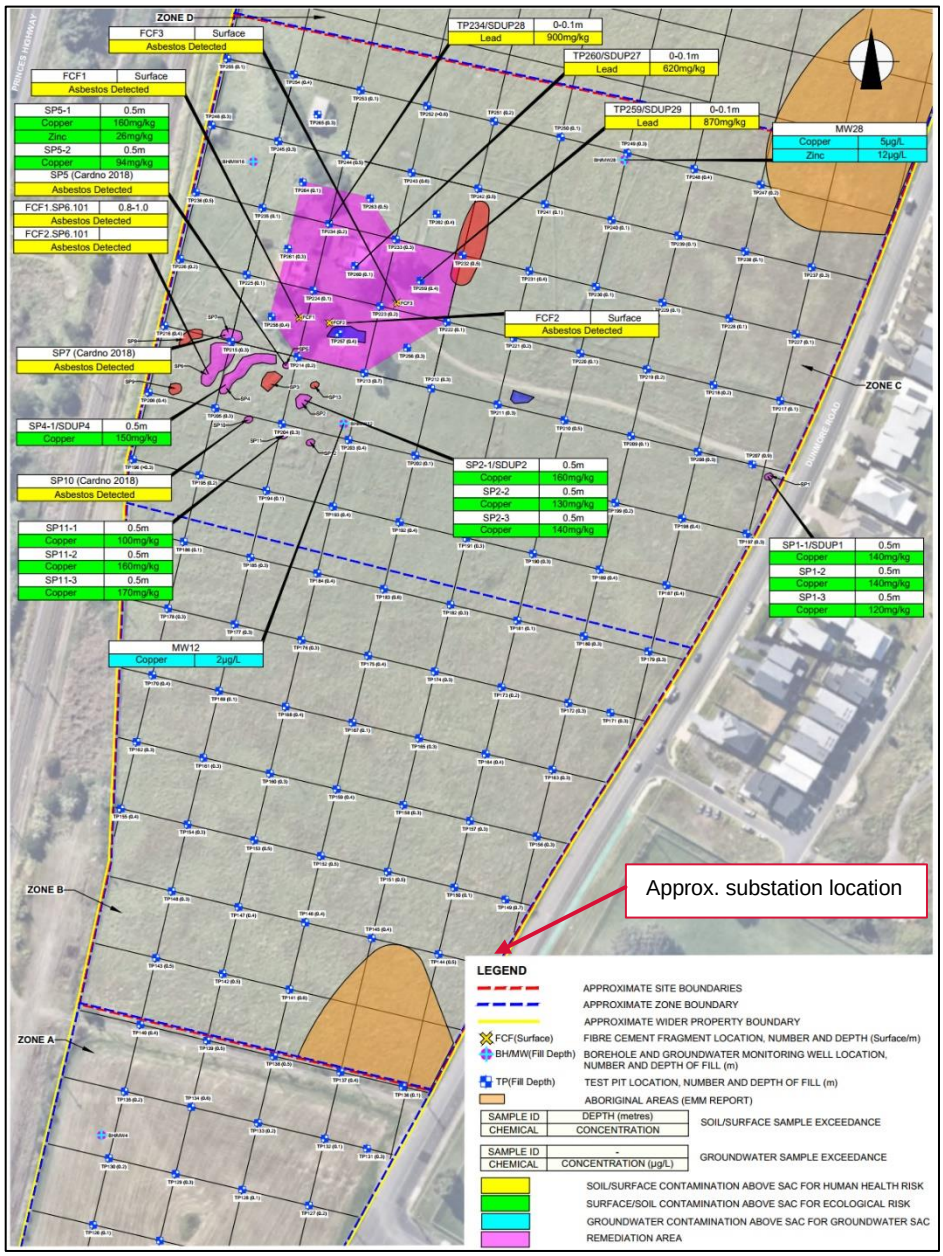


Figure 3: Remediation Extent (Contaminated Areas) identified in RAP (source: JK Environments)

Impact Assessment

The proposed works associated with the Activity that occur on the NSH site (installation of the padmount substation) and along the site frontage (HV cable installation) do not occur within, nor in the immediate vicinity of, areas identified in the contamination investigations or RAP as contaminated and requiring remediation. The proposed electricity works can therefore progress without the need for prior remediation, as these works would avoid the identified contamination/remediation areas and the land is considered suitable for this purpose. Localised remediation of the NSH site in accordance with the RAP is not part of the scope of this REF and would be undertaken separately (and qualifies as Category 2 remediation works: not needing consent) as part of the broader NSH project (i.e. prior to bulk earthworks on the site which are subject to a separate planning approval pathway).

The HV trenching and cable alignment occurs within existing road reserves/verges and public open space, predominantly within existing disturbed areas and established utility allocations/easements, including largely within residential contexts, which are unlikely to present contamination risks. A search of the NSW EPA Contaminated Land Register (Refer to Appendix J for results of this database search) has not identified any records of contamination near/along the proposed work areas, and this is supported by Council's advice that the REF works do not affect any

land identified as contaminated in their records. Furthermore, much of the works occur within suburban residential areas and existing utility allocations, and are not expected to be contaminated or present associated risk of contamination.

Council has advised that none of the subject land is identified in Council's records as being affected by contamination, however some works are indicated near Lot 20 DP 1035074 which is identified as being potentially contaminated. None of the works would affect this land (which is located on the opposite side of Dunmore Road, Dunmore) and standard unexpected finds protocols are recommended and would be implemented, as per standard practice and recommended by Council.

Informal consultation with JK Environments (contamination consultant) and JHA (electrical engineers) suggests that it is not typical practice to undertake a formal contamination investigation (PSI/DSI) for common services works in the road verge in such a context.

As addressed here, this REF has considered whether the land is or is likely to be contaminated as per Section 4.6(1)(a) of Chapter 4 of State Environmental Planning Policy (Resilience and Hazards) 2021. There is nothing obvious to indicate that the REF works areas would likely be contaminated or at risk of contamination and therefore need further investigation. Council's consultation response letter also identified that the works do not affect any known contaminated land according to their records and that an unexpected finds protocol is recommended, and this is a commonly accepted practice.

The only parts of Section 4.6 in the Resilience and Hazards SEPP that refer to land being satisfied as "suitable" is if the land is contaminated and requires remediation. The assessment in this REF (which is common practice for such services infrastructure works carried out without development consent) outlines that it is unlikely that contamination is present or a high risk within the REF works footprint. Additionally, the HV cable alignment does not affect land identified as a potential contamination risk in Table 1 of the *Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land (1998).*

Furthermore, Section 4.6 (2) to (4) of the Resilience and Hazards SEPP only requires a consent authority to consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines where the land concerned is—

(a) land that is within an investigation area,
(b) land on which development for a purpose referred to in Table 1 to the contaminated land planning guidelines is being, or is known to have been, carried out,
(c) to the extent to which it is proposed to carry out development on it for residential, educational, recreational or child care purposes, or for the purposes of a hospital—land—
(i) in relation to which there is no knowledge (or incomplete knowledge) as to whether development for a purpose referred to in Table 1 to the contaminated land planning guidelines has been carried out, and
(ii) on which it would have been lawful to carry out such development during any period in respect of which there is no knowledge (or incomplete knowledge).

None of the above criteria apply to the electricity cable route. The acquired NSH site has been associated with past agricultural activity and as part of the broader NSH project a PSI, DSI and RAP have been prepared separate to this REF, though none of the REF works occur on or near identified site contamination (as depicted in Figure 3).

Additionally, the factors for consideration in the Division 5.1 Guidelines (and the Regulation 2021) that mention contamination relate to:

j) Any risk to the safety of the environment
l) Any pollution of the environment
m) Any environmental problems associated with the disposal of waste.

This REF has considered these matters and identified that no such impacts are expected/likely given the context, nature of works, and with implementation of relevant construction safeguards/mitigation measures.

On this basis, it is reasonable to concluded that it is unlikely that contamination is present or a high risk within the REF works footprint, and the land is considered suitable for the purpose of electricity infrastructure installation within existing road reserves, utility allocations, public open space, and on the subject portion of the NSH site that is free of contamination. An unexpected finds protocol is to be employed during works.

Mitigation Measures

- Should any contamination or suspect material be encountered during site preparation, earth works, construction or any other stage of the development, works should cease immediately and a suitably qualified consultant engaged to conduct a thorough contamination assessment.

  In the event that contamination remediation is required, all works should cease and the Council should be notified immediately.

  All recommendations provided in the contamination assessment (if required) should be followed as stipulated (consistent with Council recommended condition).

6.2.14 Community Impact/ Social Impact

Questions to consider	Yes	No
Is the activity likely to affect community services or infrastructure?	✓	
Does the activity affect sites of importance to local or the broader community for their recreational or other values or access to these sites?	✓	
Is the activity likely to affect economic factors, including employment numbers or industry value?		✓
Is the activity likely to have an impact on the safety of the community?		✓
Will the activity affect the visual or scenic landscape? This should include consideration of any permanent or temporary signage.	✓	
Is the activity likely to cause noise, pollution, visual impact, loss of privacy, glare or overshadowing to members of the community, particularly adjoining landowners?	✓	

Impact Assessment

Overall, the proposed works are to service the subject site with essential electricity services and to provide the related electricity load/supply to the proposed future NSH (subject to separate SSD approval). This will ultimately be associated with the delivery of improved health services for the community.

Some of the works affect public open space, pedestrian pathways, and recreational reserves. However, the works would be managed to minimise impacts, including disruptions to use and safety. The works at Flinders Field occur near the western edge of this recreational area and would utilise existing conduits for the electricity cable installation. This would limit impacts. Post installation, all public access and use would be restored.

Some temporary amenity impacts resulting from the Activity including noise, visual change and air quality may be experienced by adjoining residents/sensitive receivers. However, this is not expected to be significant nor long-term and following construction, such amenity impacts would no longer affect in the community.

Environmental issues associated with potential contamination, erosion control, traffic, and waste management have been addressed throughout Section 6 and found to be satisfactory. Where necessary, the implementation of appropriate mitigation measures, including the requirement for a Construction Environmental Management Plan, have been proposed.

Mitigation Measures

- Contractors/workers will be mindful of the needs of the local community.
- A minimum of 10 working days notification should be provided to landowners adjacent to the proposed works. Notification should be in writing and provide general details of the works and dates and times where disruption could

be expected. Evidence of the notification having been carried out should be provided to Council, prior to the commencement of the works (consistent with Council recommended condition).

- Any changes to public or private roads (including private driveways) as a result of the works would be reinstated to an acceptable standard upon completion of the works.
- All works should be undertaken with minimal disruption to the public. In this regard, appropriate signage should be put in place should any footpath obstructions be required, and works within Council reserve areas should be carried out so as to not disrupt, or have minimal disruption on organised sports. Council's Property team can be contacted for further information regarding park bookings (consistent with Council recommended condition).

6.2.15 Ecologically Sustainable Development

Questions to consider	Yes	No
Have ESD principles (as defined in clause 7(4) of Schedule 2 of the EP&A Regulation) been incorporated in the design and ongoing operation of the activity?	✓	
Does the activity minimise greenhouse gas emissions (reflecting the Government's goal of net zero emissions by 2050) and consumption of energy, water (including water sensitive urban design) and material resources?	✓	

The proposal is for the installation of electricity infrastructure, it does not comprise a new building or operation. The proposal is considered to be aligned with the ESD principles as defined in clause 7(4) of Schedule 2 of the EP&A Regulation. The works would be undertaken in an effective and responsible manner to minimise construction related emissions and material resources. Providing the NSH site with a reliable HV electricity connection supports the ESD goal of complete electrification of new health facilities to better leverage the benefits of, and transition to, renewable energy sources via complete electrification.

6.2.16 Cumulative Impact

Questions to consider	Yes	No
Has there been any other development approved within 500m of the site?	✓	
Will there be significant impacts (for example, including but not limited to, construction traffic impacts) from other development approved or currently under construction within 500m of the site?		✓

Impact Assessment

The scale of the Activity is not considered significant and typical presents minor environmental impacts that can be adequately addressed via mitigation measures and safeguards outlined within this REF.

It is expected that the Activity could add to a number of common cumulative impacts, including generation of greenhouse gas emissions (e.g. through operation of vehicles and equipment), vegetation impacts, noise, and resource consumption. However, given the nature of the Activity, any impact would be generally minor. Noise impacts have the potential to be more substantial, however these can be managed and would be temporary to ensure no significant impacts arise. Furthermore, the environmental management measures identified within this REF and the choice of methodology for completion of the project aim to minimise the extent to which the Activity contributes to cumulative adverse environmental impacts.

A review of Department of Planning and Environment (DPE) major projects register, and Shellharbour City Council's website found no recently lodged or approved significant developments within proximity to the site/works that would result in significant implications in regard to traffic, infrastructure services, amenity and/or environmental impacts when considered in-light of the proposed Activity.

It is therefore unlikely that the Activity would cause or increase significant cumulative impacts that may be compounded by the interaction/influence of other proximal development projects. The cumulative impacts of undertaking the Activity in the context of the local region is therefore considered relatively low and can be managed.

Mitigation Measures

The following safeguards will be implemented in order to manage potential cumulative impacts:

- Health Infrastructure and project staff shall monitor the Department of Planning and Environment's major projects register and Shellharbour City Council's Development Application tracker for any significant developments that may occur locally and that have potential to coincide with the Activity period and ultimately generate additional adverse cumulative impacts.
- Where required, project staff will undertake pre-works review and liaison with other development sites to co-ordinate works and minimise impacts (e.g. delivery times, parking).

7. Summary of Mitigation Measures

Mitigation measures are to be implemented for the proposal to reduce impacts on the environment.

The following additional measures/conditions (additional to those outlined in Section 6.2) have also been recommended by Council and should be implemented for the works.

Building Plan Approval - Sydney Water

- The plans should be submitted to a Sydney Water Tap in™ to determine whether the development will affect Sydney Water wastewater and water mains, stormwater drains and/or easements, and if any requirements need to be met. Sydney Water's Tap in™ online service is available at:

  <https://www.sydneywater.com.au/SW/plumbing-building-developing/building/sydney-watertap-in/index.htm>

  The applicant should ensure that Sydney Water Tap in™ has issued the appropriate electronic approval prior to the commencement of any works.

Dilapidation Report

- The applicant should notify Council of any existing damage to public areas in the vicinity of the development site through the submission of a Dilapidation Report. The report should be supported with suitable photographic records. This information should be submitted to Council prior to the commencement of work.

Survey Certification

- A report from a registered surveyor should be prepared. The report should certify all of the following:
  - a. the distance of the works to adjoining property boundaries and/or existing easements; and
  - b. the depth of works.

The mitigation measures outlined in this REF, including those in Section 6.2 and above, are collated at Appendix K.

The identified measures would be incorporated by the Contractor into a detailed Construction Environmental Management Plan (CEMP) prior to commencement of works, which also outlines how risks would be minimised and the construction processes would be managed. The objective of the CEMP is to outline parameters for site management practices during construction. All construction staff and site personnel would be inducted and made aware of their obligations working on the project, their environmental responsibilities, and the measures to avoid and minimise potential impacts. Induction and toolbox talks would commence early in the program and continue as new personnel/contractors are engaged.

7.1 Summary of Impacts

Based on the identification of potential issues, and an assessment of the nature and extent of the impacts of the proposed development, it is determined that:

- The extent and nature of potential impacts are generally of a low to moderate level, and would not have significant adverse effects on the locality, community and the environment;
- The proposed activity will not be carried out in a declared area of outstanding biodiversity value and is not likely to significantly affect threatened species, populations or ecological communities, or their habitats or impact biodiversity values, meaning a SIS and/or BDAR is not required;
- Potential impacts can be appropriately mitigated or managed to ensure that there is minimal effect on the locality and community; and
- Given the above, it is determined that an EIS is not required for the proposed development activity.

8. Justification and Conclusion

The proposed electricity infrastructure works/installation at the acquired NSH site and extending to the Shellharbour Zone Substation to the north, is subject to assessment under Part 5 of the EP&A Act. The REF has examined and taken into account to the fullest extent possible all matters affecting, or likely to affect, the environment by reason of the proposed activity.

As discussed in detail in this report, the proposal would not result in any significant or long-term impact. The potential impacts identified can be reasonably mitigated and where necessary managed through the adoption of suitable site practices and adherence to accepted industry standards.

As outlined in this REF, the proposed activity can be justified on the following grounds:

- It responds to an existing need within the community;
- It generally complies with, or is consistent with all relevant legislation, plans and policies;
- It has minimal environmental impacts; and
- Adequate mitigation measures have been proposed to address these impacts.

The proposed activity will not be carried out in a declared area of outstanding biodiversity value and is not likely to significantly affect threatened species, populations or ecological communities, or their habitats or impact biodiversity values, meaning a SIS and/or BDAR is not required. The environmental impacts of the proposal are not likely to be significant and therefore it is not necessary for an EIS to be prepared and approval to be sought for the proposal from the Minister for Planning under Part 5.1 of the EP&A Act. On this basis, it is recommended that HI determine the proposed activity in accordance with Part 5 of the EP&A Act and subject to the adoption and implementation of mitigation measures identified within this report.