

**JOHN
HOLLAND**

INLAND RAIL

ILLABO TO STOCKINBINGAL PROJECT

I2S | Low Impact Works Assessment

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Signature Date	Refer to Aconex workflow dated 08/09/2025

Specialist Inputs

Please note that this table will be updated as the assessments are prepared (more information is provided in Section 3 of this report regarding the report structure and assessments). Each assessment will also include the relevant specialist inputs directly into the reports.

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Inputs provided (i.e. review, specialist advice)	Letter endorsement of non-ground disturbance works within Indigenous Survey Zones.
ECOLOGY SPECIALIST	
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Title	Manager
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Inputs provided (i.e. review, specialist advice)	Biodiversity advice for low impact works
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Revision History

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1 Revisions and Distribution

1.1 Revisions

Draft issues of this document are identified as Revision A, B, C etc. Following acceptance by the document approver, the first finalised revision will be Revision 0. Subsequent revisions will have an increase of “1” in the revision number (1, 2, 3 etc.).

1.2 Distribution

The controlled master version of this document is available for distribution as appropriate and maintained on the document management system being used on the project. All circulated hard copies of this document are deemed to be uncontrolled.

Client’s Representative	Conrad Strachan (IRPL)
Project Director	Rob Pitt (JHG)
Quality & Completions Manager (Project Quality Representative)	Rao Talada (JHG)
Environmental and Sustainability Manager	Andy Robertson (JHG)
Environmental Representative	Ricardo Prieto-Curiel (Wolfpeak)
Environmental Representative	Derek Low (Wolfpeak)
Environmental Representative	Tim Elder (Wolfpeak)

1.3 Certification

This assessment applies to the Low Impact Work definitions checked in Table 4-3.. Further to the details provided above, the proposed works are considered (tick one):

<input checked="" type="checkbox"/>	Consistent with the Minister’s Conditions of Approval (CoA) SSI-9406 and the definition of ‘Low Impact Work’ and are not defined as ‘Construction’.
<input type="checkbox"/>	Not consistent with the Minister’s Conditions of Approval (CoA) SSI-9406 and/or defined as ‘Construction’.

Environmental Representative

Note: The Environmental Representative (ER) has reviewed the Unexpected and Incidental Finds Protocol (Aconex Ref: **5-0019-220-PES-00-PR-0001**) in accordance with CoA A17 and determined it to be compliant with the relevant approvals.

ER Reviewed <input checked="" type="checkbox"/>	ER Endorsed <input checked="" type="checkbox"/>	ER Approved <input type="checkbox"/>
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Signed	
Name	Ricardo Prieto-Curiel
Name	Derek Low
Name	Tim Elder
Position	Environmental Representative
Date	10/09/2025

This endorsement verifies that the ER is satisfied that the works meet the definition of low impact works under the terms of the Approval. This endorsement does not verify that all pre-work requirements have been fulfilled.

Comments	
Name	

2 Definitions and Abbreviations

Definitions and abbreviations to be applied to this assessment are listed below.

2.1 Definitions and Abbreviations

Table 2-1: Definitions and Abbreviations

Term/Abbreviation	Definition
ACT	John Holland's Accountable Culture Tool
ARTC	Australian Rail Track Corporation
AMS	Activity Method Statement
Ancillary Facility	A temporary facility for construction of the CSSI including office and amenities compound, construction compound, material crushing and screening plant, batching plant, materials storage compound, maintenance workshop, testing laboratory, car parking facilities, a site used for assembly of infrastructure and a fixed material stockpile area.
A2P	Albury to Parkes
BC Act	<i>Biodiversity Conservation Act 2016</i>
BCS	Biodiversity, Conservation and Science Division of the Environment and Heritage Group of the NSW Department of Climate Change, Energy, the Environment and Water
BMSP	Biosecurity Management Sub-plan required under CoA Condition C25
CBMP	Construction Biodiversity Management Sub-Plan required under CoA Condition C20
CCS	Community Communication Strategy
CEMP	Construction Environmental Management Plan as defined in Conditions C12 and C13.
CH	Chainage
CMP	Construction monitoring Program
CNVMP	Construction Noise and Vibration Management Sub-plan required under CoA Condition C19
CoA	The Minister's Conditions of Approval for the CSSI
Construction	Includes work required to construct the CSSI as defined in the documents listed in Condition A1, including commissioning trials of equipment and temporary use of any part of the CSSI, but excluding low impact work which is carried out or completed prior to approval of the CEMP
Consultation	To provide information and actively engage with and obtain and consider feedback from stakeholders during development of post approval documents. How the feedback has been considered and whether any changes have been made in response to this feedback is then documented and communicated back to stakeholders. Consultation should not be limited to one-way notification about the project.
CSWMP	Construction Soil and Water Management Sub-plan required under CoA Condition C22
CNVMP	Construction Noise and Vibration Management Sub-Plan required under CoA Condition C19

Term/Abbreviation	Definition
CSSI	Critical State Significant Infrastructure, as generally described in Schedule 1 (of the Conditions of Approval), the carrying out of which is approved under the terms of the Conditions of Approval.
CTTAMP	Traffic, Transport and Access Management Sub Plan required under Condition CoA C21
D&C	Design and Construct
DEECCW	NSW Department of Climate Change, Energy, the Environment and Water
DPHI	Department of Planning, Housing and Infrastructure
DPI Agriculture	NSW Department of Primary Industry – Agriculture
Environmental Assessment Documentation	<ul style="list-style-type: none"> • Inland Rail – Illabo to Stockinbingal Environmental Impact Statement (ARTC 2022) • Illabo to Stockinbingal Project Response to Submissions (ARTC 2023) • Response to Submissions – Appendix E - Biodiversity Development Assessment Report version 12 (IRDJV, June 2024) • I2S – Mitigation Measures (Inland Rail, April 2024) • Illabo to Stockinbingal (SSI-9406) Additional and Appropriate Measures for Box Gum Woodland Impacts (Inland Rail, June 2024) • Technical and Approvals Consultancy Services: Illabo to Stockinbingal – Box Gum Woodland Gum Flat Rehabilitation Opportunity (IRDJV, June 2024)
EID	Environment in Design
EIS	The Environmental Impact Statement referred to in Condition A1 submitted to the Planning Secretary seeking approval to carry out the CSSI described in it, as revised if required by the Planning Secretary under the EP&A Act, and including any additional information provided by the Proponent in support of the application for approval of the CSSI
EMS	Environmental Management System
EMIS	Environmental Management Information System
Environment	Includes all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings.
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	NSW Environment Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
EPL	<i>Environment Protection Licence under the Protection of the Environment Operations Act 1997 (NSW)</i>
ER	Environmental Representative for the CSSI as approved by the Planning Secretary
ESCPs	Erosion and Sediment Control Plans
ESD	Ecologically Sustainable Development
FEMP	Flood Emergency Management Sub-plan required under CoA Condition C24

Term/Abbreviation	Definition
GMRs	Global Mandatory Requirements
HMP	Heritage Management Sub-plan required under CoA Condition C23
Heritage NSW	Heritage NSW, Department of Climate Change, Energy, the Environment and Water
HSE	Health, Safety and Environment
IBC	Intermediate Bulk Container
Incident	An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance.
IMS	John Holland Integrated Management System
ISCA	Infrastructure Sustainability Council of Australia
ISC	Infrastructure Sustainability Council
IS	Infrastructure Sustainability
IRPL	Inland Rail Pty Ltd
I2S	Illabo to Stockinbingal
JHG	John Holland Group
km	kilometres
LAA	Land Access Agreement
LALC	Local Aboriginal Land Council
LGA	Local Government Area
LIW	Low Impact Work as defined by Table 1 of the CoA (CSSI-9406).
LIWA	Low Impact Work Assessment (i.e. this Risk Assessment document)
LLS	Local Land Services
MAF	Minor Ancillary Facility
Material Harm	<p>is harm that:</p> <p>(a) involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial; or</p> <p>results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).</p>
Non-compliance	An occurrence, set of circumstances or development that is a breach of this approval.
NSW	New South Wales
OEMP	Operational Environmental Management Plan
OSR	Old Sydney Road
OOHW	Out-of-Hours Work
OOHWP	Out-of-Hours Work Protocol
Planning Secretary	Planning Secretary of the Department (or nominee, whether nominated before or after the date on which this approval was granted).

Term/Abbreviation	Definition
PIRMP	Pollution Incident Response Management Plan
PDCA	Plan-Do-Check-Act
POEO Act	<i>Protection of the Environment Operations Act 1997 (NSW)</i>
RMAR	rail maintenance access road
RAPs	Registered Aboriginal Parties
Relevant Councils	Cootamundra Gundagai Regional Council; Junee Council
RTS	The Proponent's response to issues raised in submissions received during the public exhibition of the CSSI application.
ROL	Road Occupancy Licence
SEARs	Secretary's Environmental Assessment Requirements
SEMP	Site Establishment Management Plan
SAP	Site Access Point
SEP	Site Environmental Plan
SES	NSW State Emergency Services
SIMP	Social impact Management Plan
SMART	Specific, Measurable, Achievable, Realistic and Timely
SME	Subject Matter Expert
SQE	Safety, Quality and Environment
SuMP	Construction Sustainability Management Plan
TRA	Task Risk Assessment
Total Station	Surveying tool that measures distance and angles, and is made up of a theodolite, an electronic distance metre, and a control panel.
TfNSW	Transport for NSW
The 'Blue Book'	<i>Managing Urban Stormwater – Guidelines published by Landcom, 2004</i> and used for industry best practice erosion and sediment control planning and management
UMMs	Updated Mitigation Measures
Work	Any physical work for the purpose of the CSSI including construction and low impact work but not including operational maintenance work
WRA	Workplace Risk Assessment

3 Introduction

3.1 Background

Inland Rail is an approximate 1,600 kilometres (km) freight rail network that will connect Melbourne and Brisbane via regional Victoria, New South Wales (NSW) and Queensland. Comprising 12 sections, a staged approach is being undertaken to deliver Inland Rail.

The Australian Rail Track Corporation (ARTC), with Inland Rail Pty Ltd (IRPL) as its subsidiary for the Inland Rail project, received infrastructure approval for the Illabo to Stockinbingal (I2S) section of Inland Rail in September 2024. The approval for I2S (the Project) was granted by the Minister for Planning and Public Spaces under section 5.19 of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act).

The Project is located in south-western New South Wales (NSW) in the Riverina region (Figure 1-1). Illabo is a small town of approximately 132 people (Australian Bureau of Statistics, 2021) located at the southern end of the alignment, 16 kilometres (km) north-east of Junee in the Junee Local Government Area (LGA). Stockinbingal is a town of approximately 347 people (Australian Bureau of Statistics, 2021) is situated at the northern end of the project, approximately 20 km north-west of Cootamundra in the Cootamundra–Gundagai Regional LGA. The major towns surrounding the project are Wagga Wagga, about 50 km to the south, Young to the north-east and Cootamundra to the east.

The Project comprises a new rail corridor that would connect Illabo to Stockinbingal. The alignment branches out from the existing rail line north-east of Illabo and travels north to join the Stockinbingal–Parkes Line west of Stockinbingal. The route will travel primarily through undeveloped land predominantly used for agriculture. The project includes modifications to the tie-in points at Illabo and Stockinbingal to allow for trains to safely enter and exit the Illabo to Stockinbingal section of Inland Rail. The alignment also crosses several local and private roads, watercourses and privately owned properties. Additionally, no major towns are located within the project site between Illabo and Stockinbingal.

The Project will include a total extent of approximately 42.5 km, including 39 km of new, greenfield railway which will incorporate the following key features:

- Connection to other rail lines, including Stockinbingal to Parkes line, Lake Cargelligo line, and Main Southern Railway
- One crossing loop and maintenance siding
- Level crossings and stock crossings
- Bridges over rivers and other watercourses, floodplains, and roads
- Upgrades of around 3.5km of existing track for the tie-in works to the existing Main South Line at Illabo
- New track to maintain Lake Cargelligo line connection either side of the proposal
- Realignment and road-over rail bridge for a section of the Burley Griffin Way at Stockinbingal
- Realignment of Ironbong Road to allow for safe sight lines at the new active level crossing
- Ancillary infrastructure to support the proposal, inclusive of signalling and communications, drainage, drainage control areas, signage and fencing, and services and utilities
- Construction infrastructure, including ancillary facilities, and a temporary workforce accommodation facility

The Project will also include upgrades to approximately 3 km of existing track associated with tie-in works and construction of an additional 1.7 km of new track to maintain the existing rail network connections. Road upgrade works will also be undertaken to re-align approximately 1.4 km of Burley Griffin Way to provide a road-over-rail bridge at Stockinbingal. Re-alignment of Ironbong Road will also be completed to allow for safe sight lines. A temporary workforce accommodation camp will also be constructed to house the workforce for the duration of works.

3.2 Purpose of this Report

The purpose of this Low Impact Work Assessment (LIWA) is to provide an assessment of environmental impacts for the low impact works associated with activities at specific locations along the alignment.

The LIWA provides an overview of the activities and approach that John Holland Group (JHG) will take to undertake Low Impact Works (LIW). It also includes the mitigation measures to be applied throughout the LIW.

This Assessment Report is for select activities deemed to meet the definition of low impact work under the CoA.

This report is applicable to only the activities and the locations listed in Table 4-1 of this report. This assessment includes:

- a list of proposed activities and their locations to be completed including their access routes
- the environmental risk assessments that have assessed each environmental impact associated with each proposed activity at its location, including the access to and from that location
- SEPs (Site Environmental Plans)
- outlines how John Holland (JHG) propose to manage LIW, related to the following aspects, during LIW works associated with the I2S Project:
 - Heritage (both Aboriginal Heritage and non-Aboriginal Heritage)
 - Biodiversity and Biosecurity
 - Noise and Vibration
 - Soils
 - Erosion and Sediment Control
 - Contamination
 - Waste
 - Traffic and Transport
 - Access
 - Specialist mitigation and advice where required (i.e. in areas where specialist advice would be needed to address potential impacts).

The key objective of this LIWA is to provide an assessment of the potential risks associated with LIW, to determine if the proposed activities meet the LIW definition as provided in the Conditions of Approval (CoA) (CSSI-9406) (refer to Table 4-3).

The relevant CoA, Revised Mitigation Measures (REMMs) and ARTC Construction Environmental Framework – A2P (Document Ref No: 0-0000-900-EEC-00-SP-0002_2) will be implemented to minimise potential environmental impacts and to inform JHG staff and subcontractors of the environmental requirements associated with LIW activities. Additionally, the Unexpected and Incidental Finds Protocol has been developed in accordance with CoA Condition A17 and will be implemented during all LIW activities for the Project. A copy of the Unexpected and Incidental Finds Protocol is available via Aconex (reference: **5-0019-220-PES-00-PR-0001**). Table 3-1 provides an overview of the conditions that need to be met prior to the commencement of LIW and how these have been complied with.

Table 3-1: Conditions required to be complied with prior to the commencement of Low Impact Work

Condition (CoA SSI-9406)	How the condition has been satisfied
A17 Prior to the commencement of low impact work, an Unexpected and Incidental Finds Protocol must be developed for:	An Unexpected and Incidental Finds Protocol has been developed for the project in

Condition (CoA SSI-9406)	How the condition has been satisfied
<p>a) threatened species and threatened ecological communities;</p> <p>b) contamination, hazards and contaminated land;</p> <p>c) Aboriginal Cultural Heritage; and</p> <p>d) non-Aboriginal Heritage.</p> <p>The Unexpected and Incidental Finds Protocol must include procedures for:</p> <p>i) all Work in the associated location to stop to prevent further impact; and</p> <p>ii) notifying the Planning Secretary and relevant state agencies in writing.</p> <p>Work must not recommence until the relevant state agencies have been consulted and any required approvals have been obtained. The Unexpected and Incidental Finds Protocol must be made publicly available prior to low impact work commencing and must be implemented during low impact work.</p>	<p>accordance with CoA A17. The Protocol has been made publicly available.</p> <p>Aconex reference: 5-0019-220-PES-00-PR-0001</p>
<p>E143 An Unexpected Heritage Finds and Human Remains Procedure must be prepared to manage unexpected heritage finds in accordance with any guidelines and standards prepared by Heritage NSW and submitted to the Planning Secretary for information before the commencement of Work.</p>	<p>An Unexpected and Incidental Finds Protocol has been developed for the project in accordance with CoA E143. The Protocol has been made publicly available.</p> <p>Aconex reference: 5-0019-220-PES-00-PR-0001</p>
<p>E144 The Unexpected Heritage Finds and Human Remains Procedure, as submitted to the Planning Secretary, must be implemented for the duration of Work.</p> <p>Note: <i>Human remains that are found unexpectedly during the carrying out of Work may be under the jurisdiction of the NSW State Coroner and must be reported to the NSW Police immediately</i></p>	<p>An Unexpected and Incidental Finds Protocol has been developed for the project in accordance with CoA E144. The Protocol has been made publicly available.</p> <p>Aconex reference: 5-0019-220-PES-00-PR-0001</p>
<p>E117 The Proponent must prepare and implement a Workforce Code of Conduct for employees and contractors involved in the construction of the CSSI. The Code of Conduct must be prepared by a suitably qualified and experienced person(s) in the human resources sector and made publicly available prior to work commencing. The Code of Conduct sets out the ethical standards that employees are expected to adhere to in the construction site and interaction with the local community.</p>	<p>The Workforce Code of Conduct has been made publicly available.</p> <p>The approved Workforce Code of Conduct is available via Aconex reference: 5-0019-220-PHR-00-SM-0001</p>

Condition (CoA SSI-9406)	How the condition has been satisfied
<p>B3 The Community Communication Strategy must be submitted to the Planning Secretary for approval no later than one (1) month before the commencement of any Work.</p>	<p>The Community Communication Strategy was approved by the Planning Secretary on the 13/11/24.</p> <p>Aconex reference: 6-0001-220-EEC-00-LT-0003</p>
<p>B12 A Community Complaints Mediator that is:</p> <ul style="list-style-type: none"> a) independent of the design and construction personnel; and b) accredited under the National Mediator Accreditation System, administered by the Mediator Standards Board <p>must be nominated by the Proponent, approved by the Planning Secretary and engaged while the Complaints Management System required by Condition B6 is in operation. The nomination of the Community Complaints Mediator must be submitted to the Planning Secretary for approval within one month before the commencement of Work.</p>	<p>A Community Complaints Mediator (Jack Ellis) was appointed to the project by the DPHI on 1/10/2024.</p> <p>Aconex reference: IR2200-DCACT-000879</p>
<p>A7 The Department must be notified in writing of the dates of commencement of Work (in relation to low impact works), construction and operation at least one (1) month before those dates.</p>	<p>Notification of commencement of LIW was issued to the Department on 4/10/24.</p> <p>Aconex reference: 6-0000-220-EEC-00-LT-0007</p>
<p>B18 A website or webpage providing information in relation to the CSSI must be established before commencement of Work and maintained for the duration of construction, and for a minimum of 24 months following the completion of construction, or unless otherwise agreed with the Planning Secretary. Up-to-date information (excluding confidential commercial information) must be published before the relevant work commencing and maintained on the website or dedicated pages including:</p> <ul style="list-style-type: none"> information on the current implementation status of the CSSI; a copy of the documents listed in Condition A1 of this approval, and any documentation relating to any modifications made to the CSSI or the terms of this approval; a copy of this approval in its original form, a current consolidated copy of this approval (that is, including any approved modifications to its terms), and copies of any approval granted by the Minister to a modification of the terms of this approval; 	<p>A website has been established for the project, available at:</p> <p>https://inlandrail.com.au</p>

Condition (CoA SSI-9406)	How the condition has been satisfied
<p>a copy of each statutory approval, licence or permit required and obtained in relation to the CSSI;</p> <p>a current copy of each document required under the terms of this approval must be published before the commencement of any work to which they relate or before their implementation, as the case may be; and</p> <p>a copy of the compliance and audit reports required under this approval.</p> <p>A copy of each document required to be made publicly available under this approval must be published within 14 days of the finalisation or approval of the relevant document unless an alternate timeframe is prescribed by another condition of this approval.</p> <p>Where the information / document relates to a particular work or is required to be implemented, it must be published before the commencement of the relevant work to which they / it relates or before its implementation.</p> <p>All information required in this condition is to be provided on the Proponent's website, ordered in a logical sequence and be easy to navigate.</p> <p>Notes:</p> <ol style="list-style-type: none"> <i>The intention of this condition is to increase transparency and for information/documents required as part of the approval to be provided proactively and publicly in an easily accessible manner. Where information is exempted by this condition, it is intended that these documents are provided in their redacted form.</i> <i>The Planning Secretary may instruct the Proponent to finalise and upload any report or documents to the Project's website in accordance with Condition A4.</i> <i>The publishing of documents should occur a minimum of a week before the relevant Work / activity is going to commence.</i> <i>In determining what information should be published under this condition, the proponent should have regard to the principles in Division 2 of Part 2 of the Government Information (Public Access) Act, 2009.</i> <i>Documents should be named to be consistent with the conditions of approval where possible. The name should also give an overall impression of what the document is about. The names should be simple and concise (no more than 50 characters) without any unnecessary punctuation or under scoring in the title.</i> 	
<p>B7 The Complaints Management System must make the following information publicly available to facilitate community enquiries and manage complaints, from one (1) month before the commencement of Work and for 12 months following the completion of construction of the CSSI:</p> <p>a 24- hour telephone number for the registration of complaints and enquiries about the CSSI;</p> <p>a postal address to which written complaints and enquires may be sent;</p>	<p>Complaints Management System prepared and information under the Complaints Management System made public available in the following website: https://inlandrail.com.au/</p>

Condition (CoA SSI-9406)	How the condition has been satisfied
<p>an email address to which electronic complaints and enquiries may be transmitted; and</p> <p>a mediation system for complaints unable to be resolved.</p> <p>This information must be accessible to all in the community regardless of age, ethnicity, disability or literacy level.</p>	
<p>E5 An Out-of-Hours Work Protocol must be prepared to identify a process for the consideration, management and approval of work which is outside the hours defined in Conditions E1 and E2, and that is not subject to an EPL. The Protocol must be approved by the Planning Secretary before commencement of any out-of-hours work. The Protocol must be prepared in consultation with the EPA. The Protocol must:</p> <ul style="list-style-type: none"> provide a process for the consideration of out-of-hours work against the relevant noise provide a process for the identification and implementation of mitigation measures for residual impacts, including respite periods in consultation with the community at each affected location; identify procedures to facilitate the coordination of out-of-hours work approved by an EPL to ensure appropriate respite is provided; identify an approval process that considers the risk of activities, proposed mitigation, management, and coordination, including where: <ul style="list-style-type: none"> i) the ER review all proposed out of hours activities and confirm their risk levels; ii) low risk activities can be approved by the ER, and iii) high risk activities that are approved by the Planning Secretary; and iv) identify Department, EPA and community notification arrangements for approved out-of-hours work, which maybe detailed in the Communication Strategy. 	<p>LIW must comply with the parameters set in CoA E3 (b) where Out of Hours Works are proposed to be undertaken outside the rail corridor.</p> <p>OOHW within the rail corridor will be subject to, and must be compliant with, ARTC EPL #3142 (or other EPL).</p>
<p>The following conditions must be met prior to Works, however, are not applicable to this assessment:</p>	
<p>E135 Prior to the commencement of any ground disturbance work within areas identified as requiring archaeological investigation or salvage identified in documents listed in Condition A1, the Proponent must prepare and implement an Additional Aboriginal</p>	<p>No ground disturbing LIW included in this assessment is proposed within the Indigenous Survey Zones, including those identified as requiring archaeological investigations or salvage. Only walking and</p>

Condition (CoA SSI-9406)	How the condition has been satisfied
<p>Archaeological Survey Methodology and an Aboriginal Archaeological Test Excavation Methodology. The methodology must include procedures for additional archaeological survey of Zones 5, 6, 9 and 10, and management protocols including consultation with the Registered Aboriginal Parties, for any Aboriginal objects and sites identified during the survey.</p>	<p>driving on existing roads or tracks will be permitted in these areas as advised in Appendix C. More information relating to Aboriginal Heritage is provided in Section 8.</p>
<p>E145 Before commencement of any work, a structural engineer must undertake condition surveys of all buildings, structures, utilities and the like identified in the documents listed in Condition A1 as being at risk of damage. The results of the surveys must be documented in a Condition Survey Report for each item surveyed. Copies of Condition Survey Reports must be provided to the owners of the items surveyed, and no later than one month before the commencement of construction.</p>	<p>No buildings or structures identified in the Environmental Assessment Documentation as being at risk of damage are affected by the LIW included in this assessment.</p> <p>For DPHI correspondence on the interpretation of this condition, please see Aconex reference: IR2200-CA-000017</p>

4 Description of the Proposed LIW Activities

This Assessment is for LIW activities as part of the Illabo to Stockinbingal project “the Project” (CSSI 9406). The following work activities, their locations and access proposed are included in the table below:

Table 4-1 Details of proposed works

Details of Proposed Works	
Purpose of the proposed low-impact works	<ul style="list-style-type: none"> • Ground truthing (visual inspection) and site walk at proposed geotechnical and utility locations • Visual inspection of creeks and general landform (on-foot) • Low-level dilapidation of existing access routes • Delineation of the CIZ • Set out of geotechnical test locations • Geotechnical works to inform detailed design • Service investigation of utilities • Survey work within the existing rail corridor at both Illabo and Stockinbingal
Description of the proposed low-impact works	<p><u>Scope:</u></p> <p>The scope of works covered in this assessment are:</p> <ul style="list-style-type: none"> • Survey works • Geotechnical works including investigations with boreholes and test pits • Service investigations • Pavement coring • Geophysics <p>More information is provided below.</p> <p>It's noted that Revision 6 of this LIWA has been updated to include potholing/service investigations required for the CSR works which will be undertaken during the September possession. The CSR works (trenching, conduit install, backfilling etc.) will not be constructed under this LIWA but rather the Staging Report.</p> <p><u>Survey:</u></p> <p>Survey set out shall require star pickets being driven into the ground using a hammer or mallet. These pegs will serve as a temporary mark to delineate the Construction Impact Zone (site boundary).</p> <p>Methodology:</p> <p>Star pickets will be securely driven into the ground using a sledgehammer, reaching a depth of approximately 750mm. To ensure accurate surveying and delineation, three pegs will be placed around the star picket, driven 200mm into the ground, and flagging tape will be wrapped around the pegs to clearly demarcate and indicate the survey control mark.</p> <p>These ground penetrative works will only be conducted within survey locations included in this assessment. Survey marks may be concreted at their base to stabilise the mark. More information regarding the use of concrete for these works is included in Section 8.</p> <p><u>Boreholes:</u></p>

Details of Proposed Works

Three drilling crews will work concurrently at different borehole locations for the purposes of investigation.

Methodology:

- The drill rig will be delivered to site using a flatbed truck.
- Erosion and sediment (ERSED) controls will be implemented in areas where there are potential erosion and sediment risks (more information is included in Section 8 and 9).
- Boreholes will be drilled using a flight auger through soil, and then diamond coring (HQ3) through rock will be undertaken.
- Boreholes will be drilled to a depth of approximately 13 metres.
- Immediate backfilling of boreholes will occur with spoil, sand/bentonite mix, or grouting if required once a borehole investigation is completed at the location. Borehole pits are only expected to remain open for a limited number of hours.
- Non-destructive digging using a vac truck may be required at the test locations prior to commencement to confirm the existence of utilities within 7.5m of the test location. The use of the vac truck will be limited to the CIZ unless otherwise approved under a Consistency Assessment.

NOTE: Waste spoil is to be managed onsite with offsite disposal if required, as per Section 8.

Geotechnical test pits:

Across the alignment, the target test pit depth varies at each location, ranging from two to five metres deep and up to eight metres wide to accommodate slope stability / benching (as required by safe excavation practices).

Methodology:

- The test pits will be excavated using either a backhoe or excavator up to 20 tonnes in size.
- The machine will be brought to the test pit location via a flatbed truck or driven (for the backhoe)
- The pit will be dug to the required depth with material from the hole stockpiled next to the excavation temporarily
- Soil samples and photographs will be taken by the team
- Once all samples are obtained, the hole will be backfilled.

Test pits are planned to be completed across each shift (i.e. each test pit is expected to be dug out and in-filled each day). In the unlikely event that a test pit cannot be completed during the allotted work hours, erosion prevention measures will be implemented on overnight stockpiles. Fencing will be erected around test pits if they are to remain unattended (i.e. following a shift) in collaboration with the Safety Team. Covers will be placed on top of holes if they are to remain open overnight to prevent fauna entrapment.

More information regarding mitigation of potential impacts associated with temporary stockpiling and open excavation is discussed in Section 8. During excavation material will be stockpiled with small samples collected for testing by the suitably qualified Geotechnical Subcontractor. The remainder will be backfilled into the hole. Any excess spoil will either be spread on or around the test pits. Non-destructive digging using a vac truck may be required at the test

Details of Proposed Works

locations prior to commencement to confirm the existence of utilities within 7.5m of the test location. The use of the vac truck will be limited to the CIZ unless otherwise approved under a Consistency Assessment.

Subsoil and topsoil test pits

Test samples will need to be collected to enable subsoil and topsoil testing including physical and chemical properties required to inform the suitability for topsoil re-use, amelioration requirements and other information required by the landscape design.

Sampling will be collected opportunistically in parallel to geotechnical testing where geotechnical investigation test pit locations align with the sampling requirements using the same methodology as described above.

Topsoil will be collected at 200-300mm into the topsoil and subsoil will be collected 200-300mm into the subsoil (400-600mm from the surface level). Excavation will likely be undertaken by a backhoe or excavator up to 21 tonnes. Any leftover material not collected for sampling will be placed back into the hole as backfill. Any excess material following backfill will be disposed of at a licensed waste facility. Non-destructive digging using a vac truck may be required at the test locations prior to commencement to confirm the existence of utilities within 7.5m of the test location. The use of the vac truck will be limited to the CIZ unless otherwise approved under a Consistency Assessment.

Service investigations

Service investigation is to be undertaken via slot trenches and potholes. This will be completed by non-destructive digging (NDD) with a vacuum truck to locate services.

Methodology:

- An accredited surveyor will be on site to identify the services and complete trench / pothole cards, complete with photos.
- Set up of ERSED controls will be implemented in areas where there are potential ERSED risks (more information is included in Section 8 and 9).
- Vacuum truck to be used to undertake NDD to remove soil and expose services
- Once completed, all locations would be backfilled with sand or similar material approved prior to moving to the next location.
- All material will be captured in the vac truck and taken off-site and disposed of at an approved disposal facilities.
- Service locating using ground penetrating radar (GPR) will be conducted between slot trenches and potholes. Service locating using a GPR will be undertaken as required during the service investigation works.

	<p><u>Pavement cores</u></p> <p>Pavement cores will be collected to determine the composition and nature of the existing pavement and subgrade.</p> <p>Methodology:</p> <ul style="list-style-type: none"> • Traffic control and ERSED controls will be set up on the road alignment around the core location • The core will be taken using a coring drill (truck mounted or placed on the roadway) • Using the drill, pavement cores will be extracted by drilling a minimum of 300mm diameter cores within the existing road footprint to a depth of up to 1.2m or 0.2m below subgrade level (whichever is greater) • The extracted core will be logged and sent off-site for laboratory testing by a specialist. • The remaining core hole will be reinstated in line with council or TfNSW requirements (depending on the location of the hole). This will typically be a mixture of any of the following materials depending on the existing pavement and the applicable road authority requirements: <ul style="list-style-type: none"> ◦ granular material ◦ heavily bound or stabilised select material ◦ concrete ◦ bituminous binders, tar and pavement seals ◦ granulated blast furnace slag and flyash binder ◦ asphalt. <p>ERSED controls will be implemented in areas where there are potential ERSED risks (more information is included in Section 8).</p> <p><u>Geophysics</u></p> <p>The geophysics scope involves a number of locations to be surveyed, for a total length of approximately seven kilometres across the alignment. These predominately comprise pairs of lines; one along the centreline of the proposed cut and one cross-line. The proposed methods include both Multi-Channel Analysis of Surface Waves (MASW) and Seismic Refraction (SR). Both methods will involve personnel and a light vehicle. For geophysics lines in areas of dense vegetation or over a steep grade etc., personnel will conduct the work on foot as per the Site Environmental Plan (SEP) for each location (see Appendix B).</p> <p>Methodology:</p> <ul style="list-style-type: none"> • Multi-Channel Analysis of Surface Waves (MASW) to achieve a target depth of 30m: <ul style="list-style-type: none"> ◦ Using a receiving array consisting of several 4.5Hz geophones set at 2m intervals on a land streamer attached to a 4x4 is used (see Figure below)
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Details of Proposed Works

- Roll on readings every 4m along the lines, totalling 250 readings every 1000m profile
- An acquisition target of 1000m data recording per day
- PEG – Accelerated weight drop source, impacting a hardened rubber or metal plate (TBD from initial testing)
- Multi-Channel Analysis of Surface Waves (MASW) for spot readings to 5m depth:
 - Using a receiving array of several 4.5Hz or 10 Hz geophones set at 0.5m intervals set out by hand
 - Single reading at each site offset at 1m from first geophone.
- Seismic Refraction (SR):
 - Several channel geophones are spread using 4.5Hz or 10Hz geophones. The geophones will be at either 5m or 3m geophone separation.
 - In the areas requiring shallow profile depths, a 1m spaced channel array with geophones of 10 or 28Hz frequency is used (using a small array will mean easier handling of equipment and less weight in the areas which will need to be accessed on foot)
 - The seismic energy source proposed would be either the same accelerated weight drop unit proposed for MASW or a 9kg sledgehammer on a plate (see Figure below).

Seismic data acquisition will be carried out using a Summit X One (DMT) or Geode (GEOMETRICS) multi-channel seismic system. The system comprises an array of up to 60 geophones set at five meter intervals with data telemetry connected to a digital seismograph. Seismic energy will be generated using PEG-40(RT Clark) accelerated weight drop with stacked source points made both within the seismic spread and at offset distances to achieve a maximum target depth of 30 meters below the existing ground level. These works will include a feature and level survey. Geophysics is non-invasive and does not require ground disturbance. The figures below provide a visual depiction of geophysics (MASW and SR).



Details of Proposed Works



Push-tube testing:

- Used for testing within the rail formation with a small impact footprint and without causing ballast collapse
- The push tube method utilises a rubber tracked drill rig to hydraulically drive a 100mm-1.5m sample tube through the rail formation at test locations.
- The hole is then reinstated with stabilised sand/cement or gravel/cement mix in lifts and compacted with the rig's hammer attachment (rod with 90mm flat foot). The casing can then be extracted and the ballast depth reinstated utilising loose ballast from the surrounding site and tamped with hand tools.

Details of Proposed Works



Example of a push-tube test sample

Access:

- Via existing farm tracks, gates and public road corridors. Access gates and indicative routes are provided in SEPs (Appendix A).

Site Location / Description:

- Between the townships of Illabo and Stockinbingal, within the Cootamundra-Gundagai and Junee Shire LGA.

Proposed plant and equipment

Survey:

- Survey trolley
- Light vehicles / site Utes
- Spray paint
- Star pickets
- Pegs
- Hammers
- Concrete mix (bagged)
- Buckets and/or wheelbarrows
- Bollards, bunting, tape
- GPS
- Total Station
- A total station is a surveying tool that measures distance and angles, and is made up of a theodolite, an electronic distance metre, and a control panel. An image of a total station is provided.



Boreholes:

- Light vehicles / site Utes

Details of Proposed Works	
	<ul style="list-style-type: none"> • Drill Rig (using different attachments e.g. Flight auger with diamond core) • Flatbed truck (to facilitate plant movement) • Trailer mounted water tank • Vacuum truck <p><u>Geotechnical test pits:</u></p> <ul style="list-style-type: none"> • Light vehicles / site utes • Backhoe or excavator • Hand tools • Vacuum truck <p><u>Subsoil and topsoil test pits:</u></p> <ul style="list-style-type: none"> • Light vehicles / site utes • Excavator or backhoe • Hand tools • Vacuum truck <p><u>Service investigations (including prior to the September possession:</u></p> <ul style="list-style-type: none"> • Vacuum truck • Excavator • Hand tools • Light vehicle / site utes <p><u>Auger holes:</u></p> <ul style="list-style-type: none"> • Light vehicles / site utes • Flatbed truck (to facilitate plant movement) • Excavator with auger attachment • Hand tools <p><u>Pavement cores:</u></p> <ul style="list-style-type: none"> • Light vehicles / site utes • Hand tools (handheld electric drill) • Handheld diamond core drill <p><u>Geophysics:</u></p> <ul style="list-style-type: none"> • Light vehicles / site Utes • Summit X One (DMT) or Geode (GEOMETRICS) multi-channel seismic system <p><u>Push-tube test pits:</u></p> <ul style="list-style-type: none"> • Flatbed truck • Light vehicles/ site utes • 8t backhoe • Rubber tracked drill rig (various attachments) • Hand tools
Proposed dates of works:	The works proposed as part of this application are for a period commencing following the approval of this LIWA (est. 25 th April, 2025) to the end of July 2025, subject to all relevant approvals being obtained.

Details of Proposed Works	
	<p>Further to the above, potholing/service searching works will also occur in the lead up to the September possession i.e. between 08/09/2025 and 12/09/2025.</p>
<p>Will works outside of the standard hours of construction be required? <i>Standard hours as specified by the relevant SSI approval.</i></p>	<p>If 'Yes', justification is to be provided, and an activity specific noise assessment is required to predict potential noise impacts and identify impacted sensitive receivers:</p> <p>The approved working hours on the Project are (CoA E1):</p> <ul style="list-style-type: none"> • Monday to Friday: 7am to 6pm • Saturday: 7am to 6pm • Sunday and public holidays: no work <p>Works included in this assessment will be undertaken during the working hours (standard hours) specified under CoA E1 as much as possible.</p> <p>Note that despite Conditions E1 and E2 work may be undertaken outside the hours specified in the following circumstances (E3):</p> <p>(a) <i>Safety and emergencies, including:</i></p> <ul style="list-style-type: none"> (i) <i>for the delivery of materials required by the NSW Police Force or other authority for safety reasons; or</i> (ii) <i>where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm; or</i> <p>(b) <i>Low impact noise activities, including:</i></p> <ul style="list-style-type: none"> (i) <i>construction that causes LAeq(15 minute) noise levels:</i> <ul style="list-style-type: none"> • <i>no more than 5 dB(A) above the rating background level at any residence in accordance with the ICNG, and</i> • <i>no more than the 'noise affected' NMLs specified in Table 3 of the ICNG at other sensitive land uses; and</i> (ii) <i>construction that causes LAFmax noise levels no more than 15 dB(A) above the rating background level at any residence during the night period as defined in the Noise Policy for Industry (EPA, 2017); and</i> (iii) <i>construction that causes:</i> <ul style="list-style-type: none"> • <i>continuous or impulsive vibration values, measured at the most affected residence, are no more than the preferred values for human exposure to vibration specified in Table 2.2 of Assessing vibration: A technical guideline (DEC, 2006), or</i> • <i>intermittent vibration values, measured at the most affected residence, are no more than the preferred values for human exposure to vibration, specified in Table 2.4 of Assessing vibration: A technical guideline (DEC, 2006); or</i> <p>(c) <i>By approval or agreement, including:</i></p> <ul style="list-style-type: none"> (i) <i>where different construction hours are permitted or required under an EPL in force in respect of the CSSI; or</i> (ii) <i>works which are not subject to an EPL that are approved under an Out-of-Hours Work Protocol as required by Condition E5; or</i> (iii) <i>negotiated agreements with directly affected residents and sensitive land uses.</i>

Details of Proposed Works	
	<p>Out of Hours Works undertaken outside of the rail corridor must comply with CoA E3 for the works to be considered LIW.</p> <p>A noise assessment has been conducted for the works included in this application, provided in Appendix B.</p> <p>The additional potholing works in the lead up to the September possession will be undertaken during approved working hours. No OOHW will be required.</p>
Other relevant licenses and approvals	<p>Some works in this assessment may be required to be undertaken under a possession arrangement for works within an existing rail corridor, including survey, geotechnical and other works.</p> <p>All works will be undertaken in accordance with the relevant EPL with the approval/agreement of the license holder (ARTC for ARTC EPL 3142).</p> <p>LIW must comply with the parameters set in CoA E3 (b) where Out of Hours Works are proposed to be undertaken outside the rail corridor.</p> <p>OOHW within the rail corridor will be subject to, and must be compliant with, ARTC EPL #3142.</p> <p>Whilst no works are proposed within the UGL rail corridor at this stage, all works within the UGL rail corridor will be subject to, and must be compliant with UGL EPL #13421.</p> <p>Activities denoted with an asterisk (*) in Table 4-1 are subject to the outcomes/approval of Consistency Assessment (Minor) – Utility Investigations (5-0019-220-EEC-00-RP-0007) due to their location outside of the CIZ (SSI-9406). These works may not commence until the outcomes of 5-0019-220-EEC-00-RP-0007 have been determined. Workforce will be briefed on the locations that have/have not been approved under this LIWA before works commencement.</p> <p>This LIWA only applies to works within SSI-9406 or activities assessed under a CA to confirm consistency with SSI-9406.</p> <p>The additional potholing works in the lead up to the September possession will be undertaken in accordance with the JH EPL #22021.</p>

A summary of the access gates that will be utilised for the work has also been included below in Table 4-2. Fences may be cut and reinstated at locations to facilitate temporary access to the rail corridor, in consultation with ARTC (or other operator of the corridor) and landowners. Any Minor Ancillary Facilities (MAFs) required for these works will be applied for in a separate application and will be subject to approval by the ER in accordance with CSSI CoA C9.

Whilst all activities expected to be conducted throughout LIW have been included in SEPs (Appendix A), this application only extends to those locations included in Table 4-1. This LIWA has determined that the proposed works will not adversely impact on heritage or biodiversity in accordance with the definition of LIW in SSI-9406 (provided in Table 4-3). In addition, some activities will only commence after ecological clearance. This process is outlined in Appendix G.

Table 4-2: LIW Proposed Work Activities and Locations

Activity Type	ID # (as labelled in SEPs, Appendix A)	Applicable SEP #	Chainage (m)
Slot Trench	1-ST-001*	2	-120
Pot Hole	1-PH-001*	2	-120
Pot Hole	OP-PH-001*	2	-120
Pot Hole	OP-PH-002*	2	-120
Pot Hole	OP-PH-003*	2	-120
Pot Hole	OP-PH-004*	2	-120
Pot Hole	OP-PH-005*	2	-120
Pot Hole	OP-PH-006*	2	-120
Pot Hole	OP-PH-007*	2	-120
Push-Tube Test	N/A	3	0-420
Utility Locating	N/A	4.1	1600 - 2800
Pot Hole	1-PH-004*	4	1471
Slot Trench	2-ST-014*	5	3171
Slot Trench	2-ST-014*	5	3171
Slot Trench	2-ST-039*	5	3171
Pot Hole	OP-PH-011*	5	3200
Pot Hole	OP-PH-012*	5	3200
Pot Hole	OP-PH-013*	5	3200
Pot Hole	OP-PH-014*	5	3200
Pot Hole	OP-PH-015*	5	3200
Pot Hole	OP-PH-016*	5	3200
Pot Hole	OP-PH-017*	5	3200
Pot Hole	OP-PH-018*	5	3200
Pavement Core	220-05-PC5001	6	8150
Pavement Core	220-05-PD5011	6	8150
Pot Hole	2-PH-007*	6	8417
Pavement Core	220-05-PD5002	7	22150
Pot Hole	2-PH-022*	8	28314
Pot Hole	2-PH-036*	8	28325
Pot Hole	2-PH-023*	8	28377
Slot Trench	2-ST-012*	9	37201
Slot Trench	2-ST-009*	9	37238
Pot Hole	2-PH-044*	9	37265
Pot Hole	2-PH-043*	9	37265
Pot Hole	2-PH-042*	9	37265
Pot Hole	2-PH-045*	9	37265
Slot Trench	2-ST-008*	9	37265
Slot Trench	2-ST-003*	9	37290
Slot Trench	2-ST-004	9	37290

Slot Trench	2-ST-005	9	37290
Slot Trench	2-ST-006	9	37290
Slot Trench	2-ST-025*	10	37300
Slot Trench	2-ST-026*	10	37300
Slot Trench	2-ST-027*	10	37300
Pot Hole	2-PH-046	10	37320
Slot Trench	2-ST-010*	9	37328
Pot Hole	2-PH-028*	10	37382
Slot Trench	2-ST-017	12	37500
Bore Hole	220-05-BH5079	11	37400
Bore Hole	220-05-BH5081	11	37400
Bore Hole	220-05-BH5080	11	37400
Bore Hole	220-05-BH5082	11	37400
Pavement Core	220-05-PD5005	12	37544
Test Pit	220-05-TP5086	12	37544
Slot Trench	3-ST-003*	13	39400
Slot Trench	3-ST-002*	13	39456
Slot Trench	3-ST-001*	13	40067
Pot Hole	CSR-PH-01	Sheet 5 (Appendix F)	464.260km
Pot Hole	CSR-PH-02	Sheet 3 (Appendix F)	464.840km
Pot Hole	CSR-PH-03	Sheet 7 (Appendix F)	466.159km
Pot Hole	CSR-PH-04	Sheet 7 (Appendix F)	466.159km
Pot Hole	CSR-PH-05	Sheet 8 (Appendix F)	467.600km to 468.140km
Pot Hole	CSR-PH-06	Sheet 8 (Appendix F)	468.140km

Table 4-3: Access Gates

SAP ID	Location	Gate Location (CH)	Property Boundary
CSR 1	Existing Olympic Highway gate at chainage	467.050km (MSL chainage)	June Shire Council road corridor of Olympic Highway and ARTC railway corridor
i	Existing Olympic Hwy LX Note: This access point is within the Project area of CSSI-1055.	-700	01 - Pam McInerney & Peter Curran
XLVIII	Warrens Lane	400	01 - Pam McInerney & Peter Curran
XLIX	Old Sydney Rd	1300	2 – Davis & Jenny Thompson
2	Olympic Highway	2793	2 – Davis & Jenny Thompson 3 – Helen Dunstan
3 South	Old Sydney Rd	5600	3 – Helen Dunstan
3 North	Old Sydney Rd	5600	04 - John Green
xxxix	Ironbong Rd	8000	05 - Mal & Maria Lloyd-Jones
4	Ironbong Rd	8200	06 - Tony Lloyd-Jones
li	Eulomo Settlement Rd	8750	05 - Mal & Maria Lloyd-Jones
lii	Ironbong Rd	8750	06 - Tony Lloyd-Jones
xxxv	Ironbong Rd	8800	05 - Mal & Maria Lloyd-Jones, 06 - Tony Lloyd-Jones
xxxvi	Ironbong Rd	9700	05 - Mal & Maria Lloyd-Jones
4A	Ironbong Rd	11400	05 - Mal & Maria Lloyd-Jones ARTC (Deakin), ARTC (Gumflat)
iv	Ironbong Rd	11950	ARTC (Deakin), ARTC (Gumflat)
vii	Ironbong Rd	16000	7 – Eric & Diane McKenzie; Yvette McKenzie
xii South Access	Dirnaseer Rd	18450	7 – Eric & Diane McKenzie; Yvette McKenzie
xiii	Private Road of Dudauman Road South	19800	08 / 09 – Chris Friend 10 – David Carr (CC)
xix	Private Road of Old Cootamunda Road	24580	11 – Charlie Ryals 12 – Nigel Emery
xxi	Private Road of Old Cootamundra Road	27470	12 – Nigel Emery
6	Old Cootamundra Rd	28250	12 - Nigel Emery, 13 - Peter McClintock
LIII	Dudauman Rd North	29950	13 - Peter McClintock
7	Private Rd of Dudauman Rd North	30850	15 - Tony & Diana Hill
LI	Dudauman Rd North	31000	15 - Tony & Diana Hill
xxii	Dudauman Rd North	32150	14 - Tony & Diana Hill; Alex Hill
xxiii	Dudauman Rd North	32150	14 - Tony & Diana Hill; Alex Hill
xxx	Corbys Lane	33780	16 – Tony & Diana Hill; Alex Hill, 17 – Tim Berryman
7A	Dudauman Rd North	34950	18 – Peter Kepreotes (Tony Hill)
LII	Temora St	37200	17 – Tim Berryman

SAP ID	Location	Gate Location (CH)	Property Boundary
8	Burley Griffin Way (East)	37250	17 – Tim Berryman
xxvi	Burley Griffin Way (West)	37300	ARTC – Harold Park
XLV	Burley Griffin Way (East)	37500	19 – Linx Haulage
XLIV	Hibernia St	37550	Stockinbingal Yard
10	Hibernia St	37550	Stockinbingal Yard
XLIII	West St	37700	20 – Little & Gray
xxxi	West St	38200	21 – Craig Morton
11	Grogan Road	40250	21 – Craig Morton
xxix	McLaughlins Ln	40700	21 – Craig Morton
xxvii	McLaughlins Ln	40700	21 – Craig Morton
XLI	Grogan Road	40950	ARTC Corridor
XLII	Freeman’s Lane	41665	ARTC Corridor

4.1 Conditions of Approval and Classification of LIW

This assessment has been developed in accordance with the Condition of Approval (CoA) definitions of Low Impact Work, which is provided in Table 4-3. The checked boxes indicate the applicable clauses of LIW definition that is included in this assessment.

Table 4-4: LIW as defined in the CoA

Ref	Description	Applicable
	The work subject to this submission meets the definition of Low Impact Work under SSI 9406 by being (where a green shaded check box is ticked, the ER shall endorse this form):	
(a)	survey works including carrying out general alignment surveys, installing survey controls (including installation of global positioning system (GPS)), installing repeater stations, carrying out surveys of existing and future utilities and building and road dilapidation surveys;	<input checked="" type="checkbox"/>
(b)	Investigations including investigative drilling, contamination investigations and excavation	<input checked="" type="checkbox"/>
(c)	installation of mitigation measures including erosion and sediment controls, temporary exclusion fencing for sensitive areas and acoustic treatments;	<input checked="" type="checkbox"/>
(d)	property acquisition adjustment work including installation of property fencing;	<input type="checkbox"/>
(e)	archaeological testing under the Code of practice for archaeological investigation of Aboriginal objects in NSW (Department of Environment Climate Change and Water, 2010) or archaeological monitoring undertaken in association with Low Impact work to ensure that there is no impact on heritage items;	<input type="checkbox"/>
(f)	archaeological and cultural salvage undertaken in accordance with a strategy or salvage operation required by the conditions of this approval;	<input type="checkbox"/>
(g)	maintenance work to existing buildings and structures as required to facilitate the carrying out of the CSSI; and	<input type="checkbox"/>
(h)	other activities determined by the ER to have minimal environmental impact which may include relocation and connection of utilities, establishment of minor ancillary	<input type="checkbox"/>

Ref	Description	Applicable
	The work subject to this submission meets the definition of Low Impact Work under SSI 9406 by being (where a green shaded check box is ticked, the ER shall endorse this form):	
	facilities in accordance with Condition C9 construction of minor access roads (other than access roads' connection to the road network), temporary relocation of pedestrian paths and the provision of property access.	
(i)	Site establishment work approved under a Site Establishment Management Plan in accordance with Condition C5.	<input type="checkbox"/>
Despite the above, the following works are not Low Impact Work:		
(i)	where heritage items, or threatened species or their habitat, or threatened ecological communities (within the meaning of the Biodiversity Conservation Act 2016), are adversely affected or potentially adversely affected by any low impact work as defined in (a) to (i) above, that work is construction, unless otherwise determined by the Planning Secretary in consultation with Heritage NSW, BCS or DPI Fisheries (in the case of impact upon fish, aquatic invertebrates or marine vegetation); and	<input type="checkbox"/>
(ii)	any Work undertaken outside the hours specified in Condition E1 that exceeds noise management and vibration levels as identified in Condition E3(b)	<input type="checkbox"/>
Will Low Impact Work?		
Adversely affect or potentially adversely affect Heritage Items		YES <input type="checkbox"/>
		NO <input checked="" type="checkbox"/>
Adversely affect or potentially adversely affect Threatened Species (or their habitat)		YES <input type="checkbox"/>
		NO <input checked="" type="checkbox"/>
Adversely affect or potentially adversely affect Threatened Ecological Communities (within the meaning of the <i>Biodiversity Conservation Act 2016</i>)		YES <input type="checkbox"/>
		NO <input checked="" type="checkbox"/>
Adversely affect or potentially adversely affect matters of national significance (within the meaning of the <i>Environmental Protection and Biodiversity Conservation Act 1999</i>)		YES <input type="checkbox"/>
		NO <input checked="" type="checkbox"/>
If the answer is "YES" to any of the above, then the work is Construction (unless otherwise agreed or determined by the Planning Secretary in consultation with Heritage NSW, EHG or DPI Fisheries.		

JHG has determined that the proposed LIW activities meet the description for survey works (a), investigation works (b), the installation of mitigation measures (c). The determination of these proposed works being LIW is provided in Section 8 of this document.

4.2 Change Management

In accordance with Condition A27(b) of the Environmental Impact Statement (EIS) and the Conditions of Approval (CoAs), the Project team has initially identified locations for each Low Impact Work (LIW) activity for the ER's consideration by evaluating:

- Proximity to a sensitive receiver or environment
- Environmental constraints identified within existing GIS layers of the EIS
- Subject matter expert (SME) advice
- General requirements of the EIS, CoA and associated IRPL and JHG IRPL guidelines and documents.

To comply with the CoAs and to ensure the ER is involved in the change management process, the process for managing changes for access or any other scope associated with works in this LIW will be the following:

1. If the scope of work or access is found that it will deviate from the detail or maps included in the LIWA document, The Project team will contact the JHG Environmental Representative to advise of the change.
2. Details of the change including relevant evidence documentation will be provided to the ER and IRPL over Aconex, which will require review by IRPL and endorsement or approval by the ER. The documentation provided must show that the new location or activity has been assessed, and confirmation that the changes are of low impact and remain consistent with the definition of Low Impact Work under SSI-9406.

5 Workforce Notification

5.1 Induction

All personnel (including sub-contractors) will attend a compulsory site induction that includes an environmental component prior to commencement on-site. This is done to ensure all personnel involved in the Project are aware of the requirements of LIW and to ensure the implementation of mitigation measures as indicated in this assessment. The Project induction includes a summary of the following environmental factors:

- Obligations on I2S, including individual obligations under the *Protection of the Environment Operations Act 1997 (NSW)* and approvals (SSI-9406) and EPBC (2018-8233).
- Noise and vibration
- Waste management
- Biodiversity and biosecurity
- How to use and follow a Site Environmental Plan (SEP)
- Water
- Soil, erosion and sediment control
- Heritage (including Aboriginal and non-Aboriginal Heritage)
- Contamination

5.2 Pre-Start Briefing

The details included in this application and permit will be communicated to all staff at the daily pre-start meeting.

The Construction Superintendent (or delegate) will conduct a daily pre-start meeting with the site workforce before the commencement of work each day (or shift) or where changes occur during a shift. Daily pre-start meetings are generally succinct in nature and take approximately 10-15 minutes.

Specific environmental components relevant to the location of works to be undertaken will be communicated by the relevant foreman (or delegate) and environmental personnel and will include any environmental issues that could potentially be impacted by, or impact on, the day's activities (as defined in the relevant Site Environment Plan).

All attendees will be required to sign on to the pre-start and acknowledge their understanding of the issues explained.

5.3 In-field Reference Materials

A copy of this application and permit will be required to be retained in the field by the Site Supervisor for reference as required.

Site Environmental Plans (SEPs) are visual figures that outline the location of protection measures, monitoring requirements, sensitive receivers and environmentally sensitive areas. SEPs are to be used in project inductions, during site set-up and as part of general work management.

SEPs identify control measures and mitigation strategies outlined in the operational control documentation such as this assessment. As more information relating to land access becomes available to JHG, SEPs may be updated to reflect the correct work method (as per the change management process in Section 4.2) and will be developed specifically for each work area as part of the survey and MAF activities.

A copy of the SEPs prepared for these Low Impact Works have been included in Appendix A.

5.4 Training

Targeted environmental awareness training will be provided to individuals or groups of workers with a specific authority or responsibility for environmental management or those undertaking an activity with a high risk of environmental impact. John Holland will establish and maintain a register of environmental training carried out, including dates, names of persons trained and trainer details. JHG are required to complete relevant safety inductions for works within the rail corridor.

6 Consultation

Consultation with relevant land holders is required 7 days before the commencement of works relating to that landholder. The landowner relevant to this application is Property #1 – Peter McInerney and Peter Curren. In accordance with CoA C7 and C8, written permission from the landowner has been obtained for use of the existing private access to access the works sites.

Complaints and enquiries will be managed in accordance with the I2S Community Communication Strategy (4-0000-220-PCS-00-ST-0001), which was endorsed by the ER on the 15th October, 2024.

Enquiries and complaints will be managed in line with Inland Rail's:

- i) 0-0000-900-PCS-00-SP-0001 *Specification – Complaints Management Requirements*
- ii) 0-0000-900-PCS-00-ST-0005 *Inland Rail Reputation Strategic Plan*
- iii) 2-0000-220-PCS-00-PL-0001 *I2S Engagement Implementation Plan; and*
- iv) *Conditions of Approval.*

Complaints may include any interaction with a stakeholder who expresses dissatisfaction with the project, policies, contractor's services, staff members, actions or proposed actions during the project.

John Holland will attend to enquiries and complaints in a responsive and consistent manner to ensure feedback is considered and addressed in a timely and productive way. This will help ensure that the Project benefits from local input and impacts on the community are minimised wherever possible.

Community enquiries and complaints will generally be received via:

- Inland Rail's 24-hour telephone number: 1800 732 761
- Inland Rail's email: inlandrailnsw@inlandrail.com.au

The 24-hour telephone number and email address will be answered by John Holland, during business hours and Possessions, any Out of Hours phone calls not associated with possessions will be directed to a call Centre who will notify John Holland the following day. All complaints will be managed in accordance with the Community Communication Strategy. John Holland will notify Inland Rail of all content specific to the Project for investigation and response in accordance with required response time frames. The phone number and email are included on all written project communications.

All calls to 1800 732 761 are answered and responded to 24 hours a day, seven days a week

7 Roles and Responsibilities

An outline of responsibilities for site personnel throughout the duration of LIW is included in Table 7-1.

Table 7-1: Roles and responsibilities during LIW

Role	Responsibility
Environmental and Sustainability Manager	<ul style="list-style-type: none"> • Implementation of procedures • Liaise with specialist consultants and IRPL. • Notify regulators and relevant stakeholders as required • Complete incident investigation and reporting (where required) • Updates to scheduled activities and management plans as a result of varying on-site conditions and any changes are communicated to the Project Team • Ensures compliance on site with the project approvals, including this assessment.
Site Supervisors	<ul style="list-style-type: none"> • Ensure that this Assessment Report and relevant documentation are communicated to all site personnel under their management and are being fully implemented on site • Stop work as required • Ensure that any scope changes are approved by ER/IRPL prior to undertaking works. • Delineate the area • Contact Environmental Manager and Project Manager • Manage access into and out of the site
Specialist consultants – Ecologist, Archaeologist, Contaminated Land Expert, Site Auditor (Contamination)	<ul style="list-style-type: none"> • Indicate the required exclusion area or “no-go” zone for any nearby works • Advise on any controls that should be put in place to due to changing on-site conditions • Develop any required management plan (or equivalent) for the management of LIW • Call on other technical specialists as required to assist in any identification and management of LIW • Assist in the completion of any required notifications in consultation with the Project Environment Team • Assist in implementation of the unexpected and incidental finds procedure
ARTC / Inland Rail	<ul style="list-style-type: none"> • Liaise between relevant government agencies and relevant stakeholders in relation to any incidents • Provide written approval for works • Liaise between relevant government agencies for any ARTC approvals and/or with other stakeholders as required in relation to incidents/events.
Community and Stakeholder Engagement Team	<ul style="list-style-type: none"> • Develop and maintain open lines with the community, stakeholders, and landowners to ensure their concerns and feedback are effectively captured and addressed • Provide notifications to the community for LIWA and manage the complaints management process associated with LIWA.

Role	Responsibility
	<ul style="list-style-type: none"> Facilitate engagement activities, such as public meetings, information sessions, and consultations Coordinate with the Project Team to integrate community feedback into project planning and decision-making processes Prepare and disseminate clear, accurate, and timely information about activities and changes to ensure transparency
Environmental Representative(s) (ER)	<ul style="list-style-type: none"> Consider and recommend improvements to work practices to reduce environmental impact and enhance community well-being Review and validate project documentation to ensure consistency with planning approvals and environmental regulations Conduct regular site inspections to monitor compliance with environmental standards and provide on-site environmental advice to support the project team

7.1 Emergency Contacts

A list of key emergency services contacts is provided in Table 7-2. Specific contacts from ARTC/IRPL and JHG will be included in each SEP for staff in the field to be able to contact the relevant parties in the event of an incident or unexpected find.

Table 7-2: Emergency Services Contacts

Emergency Contact	Contact Details	When to contact
Environment Protection Authority (EPA)	131 555	In the event of confirmed contamination
SafeWork NSW	131 050	In the event of confirmed contamination
RSPCA / WIRES	1300 094 737	To report injury to wildlife
Heritage NSW	(02) 9873 8500	In the event of confirmed heritage item or suspected human remains
NSW Police	(02) 6922 2599 (Wagga Wagga District Command) 000 (emergency only)	In the event of suspected human remains
DPHI Unit (Compliance)	1300 305 695	In the event of an incident
Cootamundra – Gundagai Council	1300 459 689	As required
Junee Council	(02) 6924 8100	As required

7.2 Review

This assessment will be reviewed as needed in response to circumstances where on-site conditions vary from the time of desktop assessment.

7.3 Hold Points

The following hold points have been identified in the ARTC Construction Environmental Management Framework and are to be included in planning to manage risks associated with these activities. Hold points are anticipated to be triggered by this LIW associated with general approvals are confirmed to be in place prior to commencement.

Table 7-3: Environment Hold Points

Hold Point	Release Authority	Milestone
All Approvals required for commencement of early works or other works (as the case may be) have been obtained prior to commencing those works.	ARTC Environmental Manager or delegate	Submission of evidence to ARTC 5 days before commencing works, including a list of applicable approval requirements (including under any CoA) and a statement of how those requirements have been satisfied
Outside Hours Work Permit for proposed out of hours works	ARTC Environmental Manager or delegate	Submission of evidence to ARTC 5 days before commencing works
Relaxation of impact to sensitive receivers	ARTC Environmental Manager or delegate	Submission of evidence to ARTC 5 days before commencing works
Flora and Fauna No Go Zones assessed and protected/delineated prior to commencing any relevant works	ARTC Environmental Manager or delegate	Submission of evidence to ARTC 5 days before commencing works.
Cultural Heritage No Go Zones have been assessed, protected/delineated and (where relevant) salvaged prior to commencing any works	ARTC Environmental Manager or delegate	Submission of evidence to ARTC 5 days before commencing works.
Disturbance footprint/Construction Impact Zone to be delineated by a surveyor before works commence.	ARTC Environmental Manager or delegate	Submission of evidence to ARTC 5 days before commencing works.

7.4 Incident Reporting

If an environmental incident occurs whilst conducting LIW activities, the ARTC Environmental Event Management Process is to be followed. In addition, the JH Incident Management Procedure (JH-MPR-SQE-010) will be used to manage incidents. All events are to be entered into the Horizon360 software for reporting and close-out.

Soteria is John Holland’s Health, Safety, Environment, & Sustainability platform. Soteria is a web-based application for entry and review of events, incident Management, NCRs, infringements, investigations and action data. Incidents must also be lodged through Aconex. The Project Environment Advisor and/or appropriate delegates will immediately notify (verbally) IRPL of any incidents or non-compliances.

This includes any environmental or heritage incidents or the Unexpected Finds Protocol and associated procedures. Soteria will be regularly updated with identified corrective actions, non-compliances, proposed actions, close-out dates, and the owner of specific actions. Upon completion of proposed actions, the Project Environment Advisor will update the register to review and ensure close out as appropriate and has been addressed in a timely manner.



7.5 Inspections

Inspections of the works will include monitoring for the implementation of environmental controls in accordance with this assessment, and performance of the controls.

The Project Environment Team will undertake inspections of the work sites to evaluate the effectiveness of environmental controls using John Holland's reporting system, Soteria. Additional inspections may be undertaken by other appropriate delegates.

If any maintenance and/or deficiencies in environmental controls or in the standard of environmental performance are observed, they will be recorded in Soteria. Records will also include details of any maintenance required, the nature of the deficiency, any actions required and an implementation priority.

All inspections will be uploaded/recorded in Soteria along with any corresponding corrective action items or non-conformances.



8 Environmental Impact and Risk Assessment

This environmental impact and risk assessment considers whether the LIW for the works proposed meets the relevant conditions of approval and Revised Mitigation Measures (REMMs) from the EIS. This assessment also considers whether these CoA's and REMMs can be implemented in a compliant manner (where relevant) as part of the proposed works. Mitigation measures to be implemented on-site have been included in Table 8-1.

For the purposes of determining whether the proposed activities meet the description of LIW, a summary for each environmental aspect has been considered below.



8.1 Risk and Impact Assessment

The following table (Table 8-1) provides a description of the risks identified based on the outcomes of the assessment. The table below provides a summary of the risks identified per aspect. The SEPs show constraints across the areas included in this assessment and mitigation measures to be applied on-site, and are included in Appendix A.

Table 8-1 Summary of impacts

Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
<p>Aboriginal Heritage</p>	<p>No ground disturbing LIW activities included in this package were identified as being in the Indigenous Survey Zones listed in the EIS (Zones 1-11 East) Specialist heritage advice provided in Appendix C allows for non-ground disturbing activities (walk-through, visual observation and driving on existing vehicle tracks) to occur within Indigenous Survey Zones 1-11 East. No ground disturbance is to occur in the Indigenous Survey Zones to avoid harm to Aboriginal sites or objects. These zones are identified in SEPs (see Appendix A).</p> <p>Some sites or identified artefacts are located outside Indigenous Survey Zones 1-11 East. These sites are indicated on SEPs, and will be avoided. Appropriate demarcation of these sites or identified artefacts will be implemented when works are occurring near them or as required.</p> <p>An example of physical demarcation at ARTC-20 is provided in Figure 1.</p>	<p>YES</p> <p>Works will be undertaken in accordance with the following conditions and REMMs.</p> <ul style="list-style-type: none"> - Conditions A17 - Condition E127 & E128 - Condition E143 & E144 - AH1 - AH8 - AH11 - Condition E130 - Condition E135 - Condition E140 - Condition E142



Figure 1: Demarcation of ARTC-20 with bollards.



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
	<p>Driving through Indigenous Survey Zones 1-11 East is included in this assessment. Personnel will walk through these zones and drive only on existing vehicle tracks to validate, conduct on-foot topographic survey (non-ground disturbing), and visually examine them or access other portions of the alignment, which will aid in informing the design and upcoming geotechnical activities in these zones. No ground disturbance is to occur in areas of Aboriginal Heritage sensitivity prior to the relevant Heritage approvals being obtained.</p> <p>The activities described in this assessment are not vibration intensive works that are liable to create ground borne vibration. No ground disturbance works are to occur in Indigenous Survey Zones (Zones 1-11 East). The works identified in this assessment can proceed under the definition of LIW.</p> <p>Specialist heritage advice will be obtained prior to the commencement of activities within Indigenous Survey Zones 1-11 East. No ground disturbance in Indigenous Survey Zones 1-11 East are included in this LIWA.</p> <p>220-05-PC5001 and 220-05-PD5011 (SEP 6, Appendix A) are within 25m of Indigenous Survey Zone 2. These pavement core activities will only be conducted within the road seal and are not at risk of harming unidentified Aboriginal items or artefacts. Temporary delineation (bollards and bunting, or other non-ground disturbing methods) of Indigenous Survey Zone 2 will be in place whilst the works are undertaken. Any traffic control in place for the works will only be implemented on the north side of Ironbong Road (outside Indigenous Survey Zone 2).</p> <p>Items identified as sensitive with respect to Aboriginal Heritage (within and outside Indigenous Survey Zones 1-11 East) are provided below.</p>	



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS																																																																																		
	<p>Table 5: Items identified as sensitive with respect to Aboriginal Heritage</p> <table border="1"> <thead> <tr> <th>Zone</th> <th>New site recording</th> <th>AHIMS ID¹</th> <th>Site type</th> </tr> </thead> <tbody> <tr> <td rowspan="5">1</td> <td>ARTC1</td> <td>50-5-0266</td> <td rowspan="5">Low-density artefact scatter/isolated artefacts</td> </tr> <tr> <td>ARTC2</td> <td>50-5-0267</td> </tr> <tr> <td>ARTC3</td> <td>50-5-0274</td> </tr> <tr> <td>ARTC4</td> <td>50-5-0276</td> </tr> <tr> <td>ARTC5</td> <td>50-5-0275</td> <td>Grindstone and zone of archaeological potential</td> </tr> <tr> <td></td> <td>Site Zone 1</td> <td>50-5-0280</td> <td>Zone of archaeological potential</td> </tr> <tr> <td rowspan="2">2</td> <td>ARTC6</td> <td>50-5-0277</td> <td>Scarred tree</td> </tr> <tr> <td>Site Zone 2</td> <td>50-5-0287</td> <td>Zone of archaeological potential</td> </tr> <tr> <td rowspan="5">3</td> <td>–²</td> <td>50-5-0117²</td> <td>Scarred tree</td> </tr> <tr> <td>–</td> <td>50-5-0120²</td> <td>Scarred tree</td> </tr> <tr> <td>–</td> <td>50-5-0121²</td> <td>Scarred tree</td> </tr> <tr> <td>ARTC18</td> <td>50-5-0286</td> <td>Scarred tree</td> </tr> <tr> <td>ARTC 20</td> <td>AHIMS pending</td> <td>Scarred tree</td> </tr> <tr> <td rowspan="3">4</td> <td>ARTC7</td> <td>50-5-0285</td> <td>Isolated artefact</td> </tr> <tr> <td>ARTC8</td> <td>50-5-0284</td> <td>Artefact scatter and zone of archaeological potential</td> </tr> <tr> <td>ARTC9</td> <td>50-5-0283</td> <td>Isolated artefact</td> </tr> <tr> <td rowspan="6">7</td> <td>ARTC12</td> <td>50-5-0268</td> <td rowspan="6">Isolated artefacts</td> </tr> <tr> <td>ARTC13</td> <td>50-5-0269</td> </tr> <tr> <td>ARTC14</td> <td>50-5-0270</td> </tr> <tr> <td>ARTC15</td> <td>50-5-0271</td> </tr> <tr> <td>ARTC16</td> <td>50-5-0272</td> </tr> <tr> <td>ARTC17</td> <td>50-5-0273</td> </tr> <tr> <td>8</td> <td>–</td> <td>–</td> <td>–</td> </tr> <tr> <td rowspan="2">11</td> <td>ARTC10</td> <td>50-2-0054</td> <td rowspan="2">Isolated artefacts and zone of archaeological potential</td> </tr> <tr> <td>ARTC11</td> <td>50-2-0055</td> </tr> <tr> <td>11 East³</td> <td>ARTC19</td> <td>50-2-0058</td> <td>Scarred tree</td> </tr> </tbody> </table> <p>1. New site recordings identified during survey were subsequently registered as AHIMS sites. 2. Three scarred trees were previously recorded in the AHIMS search. 3. Zone 11 East was not included in the original survey, but subsequent investigation revealed a scarred tree within a new zone of the proposed alignment.</p> <p>It is noted that some items are located outside of Indigenous Survey Zones 1-11 East (e.g. ARTC-20).</p>	Zone	New site recording	AHIMS ID ¹	Site type	1	ARTC1	50-5-0266	Low-density artefact scatter/isolated artefacts	ARTC2	50-5-0267	ARTC3	50-5-0274	ARTC4	50-5-0276	ARTC5	50-5-0275	Grindstone and zone of archaeological potential		Site Zone 1	50-5-0280	Zone of archaeological potential	2	ARTC6	50-5-0277	Scarred tree	Site Zone 2	50-5-0287	Zone of archaeological potential	3	– ²	50-5-0117 ²	Scarred tree	–	50-5-0120 ²	Scarred tree	–	50-5-0121 ²	Scarred tree	ARTC18	50-5-0286	Scarred tree	ARTC 20	AHIMS pending	Scarred tree	4	ARTC7	50-5-0285	Isolated artefact	ARTC8	50-5-0284	Artefact scatter and zone of archaeological potential	ARTC9	50-5-0283	Isolated artefact	7	ARTC12	50-5-0268	Isolated artefacts	ARTC13	50-5-0269	ARTC14	50-5-0270	ARTC15	50-5-0271	ARTC16	50-5-0272	ARTC17	50-5-0273	8	–	–	–	11	ARTC10	50-2-0054	Isolated artefacts and zone of archaeological potential	ARTC11	50-2-0055	11 East ³	ARTC19	50-2-0058	Scarred tree	
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Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
	<p>The additional potholing works in the lead up to the September possession will not impact on any Indigenous heritage sites, objects or any areas with archaeological potential. As detailed in the Consistency Assessment – CSR works during September Possession (5-0019-220-EEC-00-RP-0014), the following Indigenous heritage databases and assessments were reviewed to determine whether there are any known Indigenous heritage items located within or in the immediate vicinity of the proposed works.</p> <ul style="list-style-type: none"> • Aboriginal Heritage Information Management System (AHIMS) • A2I EIS, Chapter 10 and Technical Paper 2 – Aboriginal Cultural Heritage Assessment Report, including Site Investigation Zone 14 which concludes there are no artefacts noted, and the areas was considered to have nil archaeological potential. • I2S EIS, Chapter 15 and Technical Paper 7 <p>Based on the above, there are no known Indigenous heritage sites within 50m of the proposed work area. Further, the work area is located within the ARTC MSL railway corridor which has been subject to significant ground disturbance works in the past. Therefore, impacts to heritage are not anticipated.</p> <p>The works would be undertaken in accordance with the Unexpected and Incidental Finds Protocol and Procedure that has been prepared by John Holland, approved by IRPL and DPHI and implemented for the project.</p> <p>Further details, including heritage database searches and assessment extracts, are provided in the Consistency Assessment – CSR works during September Possession (5-0019-220-EEC-00-RP-0014).</p> <p><u>Additional mitigation measures:</u></p> <ul style="list-style-type: none"> • Items identified as sensitive with respect to Aboriginal Heritage, are indicated on SEPs. Aboriginal Heritage items are provided in Table 5. Items located outside of Indigenous Survey Zones 1-11 East are also indicated on SEPs, and will be avoided. • A 25m no-ground disturbance buffer on Indigenous Survey Zones 1-11 East will remain in place for this portion of work. Walking through the zones and driving on existing vehicle tracks will be permitted as per the specialist heritage advice provided in Appendix C. • Delineation using bollards and/or star picketed signage will be in place as the work group progresses through the alignment. The delineation marks the beginning of the no-ground disturbance zone. 	



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
	<ul style="list-style-type: none"> On-site personnel will be regularly briefed on the exact locations of Indigenous Survey Zones. All site personnel will be inducted to the Project before the commencement of work activities. The project induction includes a visual depiction of sensitive Aboriginal Heritage areas (including Indigenous Survey Zones 1-11 East and other Aboriginal Heritage items) along the alignment, and their restrictions. Indigenous Survey Zones 1-11 East are indicated on SEPs. Hard copies are available on site and provided to all JHG site personnel via email. The Unexpected and Incidental Finds Procedures for heritage are available on site and provided to all JHG site personnel via email. Consultation with Heritage NSW and relevant local council will occur as required to ensure impact to Aboriginal Heritage items are avoided and mitigated. No consultation is expected to be required for this portion of LIW. Consultation requirements would be undertaken in line with the conditions of approval and the Unexpected and Incidental Finds Protocol and Procedure(s). Site personnel will have access to geospatial data indicating areas of Aboriginal Heritage (Indigenous Survey Zones 1-11 East, plus a 25m buffer zone on each border) available whilst moving across the alignment. 	
<p>Non-Aboriginal Heritage</p>	<p><u>Heritage listed items:</u> Two non-Aboriginal heritage listed items have been identified within the proposal site:</p> <ul style="list-style-type: none"> the Stockinbinal Railway Station Stockinbinal Heritage Conservation Area (heritage conservation area). <p>Both are listed with 'local' significance under the Cootamundra LEP.</p> <p>Two non-Aboriginal heritage items have been identified during the EIS phase as holding potential heritage significance:</p> <ul style="list-style-type: none"> Billabong Creek Rail Underbridge 	<p>YES</p> <p>Works will be undertaken in accordance with the following conditions and REMMs.</p> <ul style="list-style-type: none"> - NAH1 - NAH2 - NAH4 - Conditions A17



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
	<ul style="list-style-type: none"> • Historic sawmill site <p>No impact is expected to occur to non-Aboriginal heritage listed items during this portion of LIW, with all works in excess of 200m from the Stockinbingal Heritage Conservation Area. The TfNSW Construction Noise and Vibration Guideline states that; "Attended vibration measurements shall be undertaken at all buildings within 25 m of vibration generating activities when these activities commence to confirm that vibration levels are within the acceptable range to prevent cosmetic building damage." Vibration monitoring is therefore not deemed to be required during LIW.</p> <p>Potential impacts to non-Aboriginal heritage items may include:</p> <ul style="list-style-type: none"> • potential for vibration impacts close the proposal site as a result of construction works and the movement of plant, vehicles and machinery • accidental damage because of the movement of machinery and equipment. • changes to the visual landscape, noise and vibration <p>Impacts to non-Aboriginal Heritage are not expected to occur as a result of the works included in this application, as the works do not require vibration generating equipment. Items of non-Aboriginal Heritage are indicated as no-go zones in the LIW induction, and as such, are unlikely to face accidental damage due to plant movements.</p> <p>The additional potholing works in the lead up to the September possession will not impact on any non-Indigenous heritage sites. As detailed in the Consistency Assessment – CSR works during September Possession (5-0019-220-EEC-00-RP-0014), the following non-Indigenous heritage databases and assessments were reviewed to determine whether there are any known non-Indigenous heritage items located within or in the immediate vicinity of the proposed works.</p> <ul style="list-style-type: none"> • State Heritage Inventory • Junee Local Environment Plan 2012 • S170 Heritage Register • A2I EIS, Chapter 11 and Technical Paper 3 – Non-Aboriginal Heritage • I2S EIS, Chapter 15 and Technical Paper 7 <p>Based on the above, there are no known non-Indigenous heritage sites within 50m of the proposed work area. Further, the work area is located within the ARTC MSL railway corridor which has been subject to significant ground disturbance works in the past. Therefore, impacts to heritage are not anticipated.</p>	<ul style="list-style-type: none"> - Condition E127 & E128 - Conditions E143 and E144



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
	<p>The works would be undertaken in accordance with the Unexpected and Incidental Finds Protocol and Procedure that has been prepared by John Holland, approved by IRPL and DPHI and implemented for the project.</p> <p>Further details, including heritage database searches and assessment extracts, are provided in the Consistency Assessment – CSR works during September Possession (5-0019-220-EEC-00-RP-0014).</p> <p><u>Additional mitigation measures:</u></p> <ul style="list-style-type: none"> • Non-Aboriginal heritage sites will be clearly defined as exclusion zones in SEPs, with appropriate barriers such as bollards and hazard tape where required to ensure their preservation and to mitigate the risk of inadvertent damage. • The project teams will be updated on the exact locations of these heritage-sensitive areas and the importance of complying with restrictions via toolboxes, pre-starts, SEPs, and the LIW induction. • Regular checks and documentation procedures will be established to monitor the integrity and adherence to No-Go zone restrictions. • Consultation with Heritage NSW and relevant local council will occur as required to ensure impact to non-Aboriginal heritage assets are avoided and mitigated. No consultation is expected to be required for this portion of LIW due to the low-risk nature of the works. Consultation requirements would be undertaken in line with the conditions of approval and the Unexpected and Incidental Finds Protocol and Procedure(s). 	
<p>Biodiversity and Biosecurity</p>	<p>The Project site is predominantly Category 1 Land (exempt land where native vegetation can be cleared without approval from Local Land Services, low conservation grasslands or land containing only low conservation groundcover (not being grasslands)) and has been heavily fragmented and disturbed due to ongoing agricultural practices, with existing habitat connectivity to remnant vegetation to the east and west limited to creek lines and road reserves.</p> <p>LIW will be undertaken in a manner to avoid areas with known biodiversity values or their accompanying habitat. This measure has been precursor to the assessment of other environmental factors to eliminate avoidable direct and indirect impacts to biodiversity.</p> <p>Ground disturbing activities in this assessment will occur in areas of TEC or TEC habitat.</p>	<p>YES</p> <p>Works will be undertaken in accordance with the following conditions and REMMs.</p> <ul style="list-style-type: none"> - Condition C9 - Condition E27



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
	<p>Ecologist pre-clearance of sites will be undertaken prior to work commencement in areas requiring it (including lands not ecologically surveyed), as per biodiversity advice provided in Appendix E. This will ensure that no impacts to the biodiversity values of the CSSI will occur prior to the retirement of biodiversity credits. Ecologist pre-clearance forms will be provided to the ER and IRPL at appropriate intervals.</p> <p>To ensure these mitigation measures at the proposed locations can be effectively implemented and that the vegetation reflects the mapping associated with the site, an ecologist pre-clearance form for each site will be provided to the ER at appropriate intervals as evidence. No clearing of vegetation is proposed during LIW.</p> <p>Any additional mitigation measures imposed by Land Access Agreements (LAA) and Farm Management Plans (FMPs) for LIW will be included as mitigation measures as they become available to JHG. Crossing property boundaries within the alignment and to access the alignment have been avoided to the maximum extent practicable. Property boundaries have been included in the SEPs where applicable (Appendix A).</p> <p>No trimming or clearing will occur for work proposed within SSI 1055.</p> <p>The additional potholing works in the lead up to the September possession will not impact on any Biodiversity values. As detailed in the Consistency Assessment – CSR works during September Possession (5-0019-220-EEC-00-RP-0014), a review of the NSW State Vegetation Type Map on the Central Resource for Sharing and Enabling Environmental Data in NSW (SEED) database which confirmed that there is no EEC or PCT vegetation within 50m of the proposed works. The works will not impact any PCT or EEC vegetation.</p> <p>A review of the BioNet Atlas database was undertaken. As shown in Appendix A, there are no threatened flora or fauna species within the work area. There are several threatened species within the 10km x 10km buffer area however they will not be impacted by the proposed works. It's noted that there is a Diamond Firetail (<i>Stagonopleura guttata</i>) sighting record approximately 60m from the work area however it will not be impacted by the proposed works.</p>	<ul style="list-style-type: none"> - BD-4 - BD-5 - BD-6



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
	<p>A review of the Inland Rail – Albury to Illabo EIS, Chapter 16 and Technical Paper 8 confirms that there is no EEC vegetation within or directly adjacent to the work area. Vegetation is limited to grasses mapped as ‘Miscellaneous ecosystem – highly disturbed areas with no or limited native vegetation’. See Appendix A for further details.</p> <p>An ecological inspection was undertaken by OzArk which verified the above points and concluded that the proposed work would not impact any biodiversity values.</p> <p>Further details, including database searches, EIS assessment extracts and the OzArk assessment, are provided in the Consistency Assessment – CSR works during September Possession (5-0019-220-EEC-00-RP-0014).</p> <p><u>Additional mitigation measures:</u></p> <ul style="list-style-type: none"> • Bollards and bunting will be used where required to delineate the approved works area from no-ground disturbance zones. • On-site personnel will receive an induction on biodiversity and biosecurity which includes; <ul style="list-style-type: none"> • A list of TEC’s and their habitat, • Instructions for no-go and no-ground disturbance areas, • What to do in the case of an unexpected find. • TEC zones are indicated on SEPs. Hard copies are available in site Utes and provided to all JHG site personnel via email. SEPs are provided in Appendix A. • Lands not surveyed are included in SEPs. • The Unexpected and Incidental Finds Procedures for biodiversity are available in site Utes and provided to all JHG site personnel via email. • A biosecurity fact sheet is provided in site Utes. • Biosecurity risk will be mitigated through the implementation of a Cleanliness Declaration Checklist. The checklist will be completed when making between-property movements as part of conducting the activities included in this assessment. This checklist ensures that prior to making between-property movements, vehicles and personnel footwear are visually inspected and free of 	



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS						
	<p>organic material. Vehicles will be required to be brush down if required to remove any organic material.</p> <ul style="list-style-type: none"> Personnel footwear and vehicles will then be disinfected before moving to the next property. The checklist remains valid as long as the vehicle/equipment/personnel stay within the designated work area (the CIZ footprint) and have not crossed a property boundary or other designated boundary. Site personnel will have access to geospatial data indicating areas containing TECs or their habitat available whilst moving across the alignment. Covers will be placed on top of open excavations if they are to remain open overnight to prevent fauna entrapment. 							
Noise and Vibration	<p>Due to the nature of the proposed LIW in this assessment daily noise and vibration impacts are expected to be negligible. Out of hours work, where required, will comply with SSI-10055 CoA E71 (b) and SSI-9406 CoA E3 (b), and any requirements detailed under an EPL (i.e. ARTC or UGL). Out of Hours works may need to be conducted under a possession arrangement. All OOHW requirements must be approved prior to the commencement of OOHW and comply with any conditions specified under an EPL.</p> <p>A noise assessment has been prepared for all activities included in this assessment (Appendix B) for works during standard hours. Noise modelling was undertaken using a 'worst case scenario' approach. The table below provides a summary of the dBA exceedances (if any) of NML each activity to residential receivers. More detail is presented in Appendix B.</p> <p>The closest receiver for these works would be at Hibernia St, chainage 37650. Positioned within the CIZ, this receiver is within 25 metres from the proposed work area. The impacts (as per the ICNG) are deemed to be not within the highly noise affect dBA range (75dB(A)) during standard hours</p> <table border="1" data-bbox="376 1246 1525 1335"> <thead> <tr> <th data-bbox="376 1246 728 1335">Activity</th> <th data-bbox="728 1246 1117 1335">dBA exceedance of NML</th> <th data-bbox="1117 1246 1525 1335">Number of properties affected</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Activity	dBA exceedance of NML	Number of properties affected				<p>YES</p> <p>Works will be undertaken in accordance with the following conditions and REMMs</p> <ul style="list-style-type: none"> - Condition C9 - Condition E3 - Condition E6 and E7 - NV8 - E1 - E2 - E3(b)
Activity	dBA exceedance of NML	Number of properties affected						



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment			Consistency with CoA & EIS																				
	Survey	0	0																					
	Borehole	1	2																					
	Test Pit	3	1																					
	Slot Trench	13	15																					
	Geophysics	1	0 (no identifiable residential properties)																					
	Auger Hole	3	1																					
	Pot Hole	20	1																					
	Pavement Core	21	8																					
	Ballast push tube	0	0																					
<p>REMMs and CoAs will be applied to the LIW for these works, including project notification and verification monitoring in response to complaints. There are no significant noise related impacts associated with access routes. Noise impacts from access routes will be temporary, due to the intermittent nature of access/egress.</p> <p><u>Additional mitigation measures:</u></p> <p>TABLE 16-1: NOISE MANAGEMENT LEVELS FOR RESIDENTIAL RECEIVERS</p> <table border="1"> <thead> <tr> <th>Timing</th> <th>RBL (dBA)¹</th> <th>NML (dBA)</th> <th>Highly noise affected level (dBA)</th> </tr> </thead> <tbody> <tr> <td>Standard hours</td> <td>35</td> <td>45</td> <td>75</td> </tr> <tr> <td>Out of hours—Day</td> <td>35</td> <td>40</td> <td>N/A</td> </tr> <tr> <td>Out of hours—Evening</td> <td>30</td> <td>35</td> <td>N/A</td> </tr> <tr> <td>Out of hours—Night</td> <td>30</td> <td>35</td> <td>N/A</td> </tr> </tbody> </table> <p>1. Background levels are below the minimum assumed rating background noise levels at all measurement locations along the proposal site; as such, they have been adjusted to 35dBA during the day period, and 30dBA during the evening and night periods.</p>					Timing	RBL (dBA) ¹	NML (dBA)	Highly noise affected level (dBA)	Standard hours	35	45	75	Out of hours—Day	35	40	N/A	Out of hours—Evening	30	35	N/A	Out of hours—Night	30	35	N/A
Timing	RBL (dBA) ¹	NML (dBA)	Highly noise affected level (dBA)																					
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Out of hours—Night	30	35	N/A																					



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
	<p>As a minimum, all affected landowners will be notified of the works to be undertaken in or around their properties at least 7 days prior to works commencement in accordance with the Community Communication Strategy (CCS). Generally, affected residences will be notified of;</p> <ul style="list-style-type: none"> • A diagram that identifies the location of the proposed works in relation to nearby cross streets and local landmarks • The nature, scope and duration of the works, including start and finish times • The expected noise impacts on receivers • Information on how to obtain further information or make a complaint, including an after-hours number • and Inland Rail Program website. <p>As these works are planned to be undertaken within standard hours, the recommended mitigation as per the ARTC NSW Construction Noise and Vibration Framework will be the implementation of standard environmental mitigation measures. These are provided below and will be implemented where reasonable and feasible.</p> <p>For the additional potholing works in the lead up to the September possession as detailed in the Consistency Assessment – CSR works during September Possession (5-0019-220-EEC-00-RP-0014), the closest nearest receivers to each work location are summarised as follows.</p> <ul style="list-style-type: none"> • Potholing at the ULX at chainage 468.140km and CSR longitudinal trench between chainages 467.600km to 468.140km – The closest receiver is approximately 50m away on Tooheys Lane. There are a total of 3 sensitive receivers located within the 200m of the proposed works. • Potholing at the ULX and URX at chainage 466.159km – The nearest sensitive receiver is located approximately 800m away on Warrens Lane. <p>Several noise assessments were undertaken for the works which are summarised below – see Appendix G for the full CNVISs.</p> <ul style="list-style-type: none"> • Noise Assessment 1 – ULX and URX at chainage 466.159km (potholing only) – These works are proposed to occur during standard construction hours prior to the September possession. As detailed in the CNVIS, there are no sensitive receivers which are above NML. 	



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS								
	<ul style="list-style-type: none"> Noise Assessment 2 – ULX at chainage 468.140km (potholing only) – These works are proposed to occur during standard construction hours prior to the September possession. As detailed in the CNVIS, there are 15 receivers which are above NML (for standard construction hours). Noise Assessment 3 – CSR longitudinal trench between chainages 467.600km to 468.140km (potholing only) – These works are proposed to occur during standard construction hours prior to the September possession. As detailed in the CNVIS, there are 12 receivers which are above NML (for standard construction hours). <p>The CNVISs indicates that noise level impacts (as per the ICNG) are deemed not to be within the highly noise affect dBA range (greater than or equal to 75dB(A)).</p> <p>There are no sensitive receivers within the highly noise affected category as per the ICNG i.e. >75dB(A).</p> <table border="1" data-bbox="376 695 1579 1326"> <thead> <tr> <th data-bbox="376 695 1579 738">Mitigation measures</th> </tr> </thead> <tbody> <tr> <td data-bbox="376 738 1579 783">Using portable temporary acoustic screens where effective to screen the noise emissions.</td> </tr> <tr> <td data-bbox="376 783 1579 863">Avoid the simultaneous operation of noisy plant within discernible range of noise sensitive receivers where possible.</td> </tr> <tr> <td data-bbox="376 863 1579 943">Where available, equipment selection will favour the use of quieter and less vibration emitting construction methods.</td> </tr> <tr> <td data-bbox="376 943 1579 1023">Using noise source controls, such as the use of residential class mufflers, to reduce noise from all plant and equipment including bulldozers, cranes, graders, excavators and trucks</td> </tr> <tr> <td data-bbox="376 1023 1579 1137">Static plant should be located as far as possible from sensitive receivers, be located to take advantage of natural acoustic screening such as terrain, site buildings, etc and where necessary for reduction of noise impacts, provided with an acoustic enclosure.</td> </tr> <tr> <td data-bbox="376 1137 1579 1252">A telephone, email and web-based community information service shall be established to allow the community to obtain additional information on construction activities, provide feedback or make a complaint.</td> </tr> <tr> <td data-bbox="376 1252 1579 1326">Regular communications on the activities and progress of the proposal shall be provided to the community (e.g. via newsletter, email and/or website).</td> </tr> </tbody> </table>	Mitigation measures	Using portable temporary acoustic screens where effective to screen the noise emissions.	Avoid the simultaneous operation of noisy plant within discernible range of noise sensitive receivers where possible.	Where available, equipment selection will favour the use of quieter and less vibration emitting construction methods.	Using noise source controls, such as the use of residential class mufflers, to reduce noise from all plant and equipment including bulldozers, cranes, graders, excavators and trucks	Static plant should be located as far as possible from sensitive receivers, be located to take advantage of natural acoustic screening such as terrain, site buildings, etc and where necessary for reduction of noise impacts, provided with an acoustic enclosure.	A telephone, email and web-based community information service shall be established to allow the community to obtain additional information on construction activities, provide feedback or make a complaint.	Regular communications on the activities and progress of the proposal shall be provided to the community (e.g. via newsletter, email and/or website).	
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Regular communications on the activities and progress of the proposal shall be provided to the community (e.g. via newsletter, email and/or website).										



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
	<p>Noise or vibration monitoring in response to complaints shall be undertaken where the results or the process assist in resolving or understanding the receiver's issue.</p> <p>Where vibration levels are predicted to approach the criteria for cosmetic building damage or limits for critical or sensitive areas, attended vibration measurements shall be undertaken at the commencement of vibration generating activities to confirm that vibration limits are within the acceptable range.</p> <p>A respite period shall be provided for receivers impacted by weekend work (see Definitions). The respite period will ensure that no single receiver is impacted for two consecutive periods of weekend work. Respite will be provided every second weekend commencing at 1pm on Saturday and concluding at 7am on Monday.</p> <p>Additionally, Project inductions and pre-starts will include that;</p> <ul style="list-style-type: none"> • Non-tonal reversing alarms must be fitted and used on all construction vehicles and mobile plant. • Quieter and less noise emitting construction methods should be used whenever possible. • Avoid shouting and slamming doors to minimise unnecessary noise. • All vehicles accessing the project site must comply with local speed restrictions. • Plant equipment engines should be turned off when not in use to reduce potential noise impacts on surrounding stakeholders. <p>Based on the assessment of noise impacts, these works can be undertaken as low impact works. Noise monitoring equipment will available on-site in case of monitoring required to be undertaken in response to complaints or during OOHW.</p>	<p>Consistency with CoA & EIS</p>
Soils (ERSED)	<p>During early works a number of temporary stockpiles may be required. Stockpile sites may be required to store material. Stockpiles are to be managed in accordance with the 'Blue Book' (Landcom 2004) as well as Condition C9 of the MCoA.</p> <p>The risk of soil erosion is deemed low. Mitigation measures included in this LIW Assessment will be sufficient in mitigating the potential impacts associated with soil and ERSED management.</p>	<p>YES</p> <p>Works will be undertaken in accordance with the following conditions and REMMs</p> <ul style="list-style-type: none"> - Condition C9 - Condition E150 - SC9



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
	<p>For the additional potholing works in the lead up to the September possession, ground disturbance will be minimal and limited to approximately 0.5m² per pothole. Further, there are no waterways located within 40m of the proposed potholing areas. Refer to the Consistency Assessment – CSR works during September Possession (5-0019-220-EEC-00-RP-0014) for further details.</p> <p><u>Additional mitigation measures:</u></p> <ul style="list-style-type: none"> • Appropriate sediment and erosion control devices are to be installed on site to minimise transport of sediment for geotechnical works. Indicative control measures to be used as appropriate are outlined the SEPs. In addition, sediment/erosion controls such as the installation of coir logs, sediment fencing and the application of geofabric will be installed where required (near drains, waterways and high slope angles). • Erosion and sediment control measures would be maintained and left in place until the works are complete and areas are stabilised. • Reinstatement of voids will be completed to ensure stable landform consistent with the surrounding environment. • Drilling mud and fluid as a result of the excavations will be stored in an Intermediate Bulk Container (IBC) until its offsite disposal at a facility licensed to accept the waste. IBC tanks will be either bunded or underlaid with geofabric (or other protective material) and surrounded with sandbags where immediate disposal offsite is not available. • All temporary stockpiles will be covered with geofabric or plastic sheeting to prevent wind and water erosion (where wind and water erosion is anticipated). Stockpiles will be removed from site as soon as possible to reduce potential erosion and sediment control risks. • The volume of excavated material to be removed from site will be minimised by maximising reuse of excavated material where possible and practical. 	



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
	<ul style="list-style-type: none"> All erosion and sediment control measures are to be inspected, and any damage would be rectified. Control measures are required to be inspected regularly during and after rainfall events to ensure their effectiveness over the duration of the works. Sediment would be cleared from behind barriers/sand bags/filtration devices on a regular basis and all controls would be managed to ensure they always work effectively. 	
Contamination	<p>Site investigations undertaken as part of the Environmental Assessment for I2S identified a number of areas requiring further investigation and potential remediation (i.e. AECs). Works included in this LIWA are at low risk of mobilising contaminants. In the event contaminated land or material is encountered, it will be managed in accordance with the Unexpected and Incidental Finds Protocol and mitigation measures specific for working in and around each AEC.</p> <p>Some works within this LIWA are within AEC, specifically, works within the existing rail corridor between chainages 0 and 3100 (AEC 8 to 10, The Main South Line rail corridor). Mitigation measures provided by a contamination specialist and endorsed by the Site Auditor are provided below.</p> <ul style="list-style-type: none"> Appropriate PPE will be worn as required, such as in dusty / high wind conditions, confined spaces or works likely to result in particulate inhalation. Do not disturb building and demolition waste. Ensure equipment is inspected, clean and contaminant free prior to leaving site. Double bag soil samples and label with "Warning this sample may contain asbestos fibres and fines". <p>Soil contamination could occur as a result of any accidental spills or leaks of fuels, oils and other chemicals from equipment and vehicles during construction. The REMMS relevant to this LIW assessment are sufficient in managing potential contamination risks associated with the works.</p> <p>For the additional potholing works in the lead up to the September possession, and as detailed in the Consistency Assessment – CSR works during September Possession (5-0019-220-EEC-00-RP-0014), the works are no located within the vicinity of any known contamination, including salinity. This was determined by reviewing the I2S EIS, A2I EIS and an additional search of the NSW EPA Contamination land record of notices. The work locations are not within any Areas of Environmental Concern for both the I2S and A2A Project.</p>	<p>YES</p> <p>Works will be undertaken in accordance with the following conditions and REMMs</p> <ul style="list-style-type: none"> - Condition A17 - Condition E159 - Condition E161



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
	<p><u>Additional mitigation measures:</u></p> <ul style="list-style-type: none"> • Vehicles are to drive on established pathways and farm tracks as much as reasonably practicable. • Works in proximity to AECs must be undertaken in accordance with the appropriate mitigation measures determined by a contamination specialist and endorsed by the Site Auditor. The proximity around each AEC that is required will also be agreed with the Site Auditor to confirm the extent of locations where mitigation measures are required (above and beyond the current measure of undertaking works under the Unexpected and Incidental Finds Protocol). • Driving over AECs are of low risk at mobilising contaminants as no contamination is expected to be present at the surface. • Contamination encountered will be managed in accordance with the Unexpected and Incidental Finds Protocol for Contamination. • Spill kits (50L) will be stored in site vehicles and their nominated locations indicated on SEPs. • Site personnel will be made aware of AECs via SEPs. • All refuelling operations (if any are required) will occur >50m from a waterway, ephemeral watercourse or wetland. All refuelling activities will be undertaken in either a bunded area or with a drip tray. 	
Waste	<p>Waste streams in high volumes are not expected to be generated from the LIW activities in this assessment. All excavations will be backfilled into the hole. All excess materials will be removed offsite. Waste generated may include:</p> <ul style="list-style-type: none"> • Hard plastic • Soft plastic • Organic/food waste • Paper/cardboard • Vegetative waste (as a result of vehicle wheel cleaning and boot brush) • Concrete • Liquid waste from potholing • General Solid Waste (GSW) and spoil (excavated material) 	<p>YES</p> <p>Works will be undertaken in accordance with the following conditions and REMMs</p> <ul style="list-style-type: none"> - WM3 - Condition C9 - Condition E165 - Condition E163



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
	<p><u>Additional mitigation measures:</u></p> <ul style="list-style-type: none"> • All spoil generated as a result of the excavations will be backfilled into the excavations. Any excess spoil will be disposed of offsite. <ul style="list-style-type: none"> ○ All waste being disposed of offsite must be classified in accordance with the NSW Waste Classification Guidelines. Waste will be disposed of at a facility licensed to accept the waste type. • Plastic bags will be in place in site vehicles to ensure that any waste produced by the team remains in the site vehicles and is contained. • Drilling mud and fluid as a result of the excavations will be stored in an Intermediate Bulk Container (IBC) or other suitable receptacle until its offsite disposal at a facility licensed to accept the waste. IBC tanks will be either bunded or underlaid with geofabric (or other protective material) and surrounded with sandbags where immediate disposal offsite is not available. • All waste will be recycled where possible. • Waste generation will be avoided where possible, and where avoidance is not reasonably practicable, waste generation will be reduced. • Concrete to stabilise survey marks will be required. Mixing of concrete will occur on site within a bucket or wheelbarrow. Concrete washout of buckets, wheelbarrows and mixing tools is not permitted to be undertaken on site to avoid potential impacts to the receiving environment. Mixing of concrete prior to pouring will occur on flat surfaces where possible atop plastic sheeting to prevent aggregate spill into the surrounding environment. • All waste will be disposed of at facilities licensed to accept the respective waste types. • Where disposal at waste facilities is undertaken, waste transport and disposal dockets will be maintained. 	
Water	<p>No LIW activities submitted in this package are within a waterbody. Water bodies in this case include farm dams, streams, creeks, and rivers, or other depressions in the landscape carrying water.</p> <p>Construction teams will use routes indicated on the SEPs and JHG risk management documentation (AMSs and TRAs).</p> <p>Based on the assessment of impacts to water, these works can be undertaken as low impact works.</p>	<p>YES</p> <p>Works will be undertaken in accordance with the following conditions and REMMs</p> <p style="text-align: center;">- Condition C9</p>



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
	<p>For the additional potholing works in the lead up to the September possession, ground disturbance will be minimal and limited to approximately 0.5m² per pothole. Further, there are no waterways located within 40m of the proposed potholing areas. Refer to the Consistency Assessment – CSR works during September Possession (5-0019-220-EEC-00-RP-0014) for further details.</p> <p><u>Additional mitigation measures:</u></p> <p>Prior to crossing a dry creek, stream or drainage line with a vehicle, onsite personnel are to assess whether site conditions will not cause adverse environmental impacts to the receiving environment. These include large slope angles (erosion potential), weather forecasts, potential biosecurity concerns, the presence of overly dry or wet soil, and the presence of vegetation. Personnel are to contact the JHG environmental manager or delegate prior to crossing a dry creek where there is a significant risk of generating sediment runoff, impacting vegetation or altering the existing landform to a state that would require rehabilitation or alter existing flow paths.</p>	<ul style="list-style-type: none"> - Condition E150 - SC9 - E42
<p>Traffic and transport</p>	<p>The proposal is located between sections of existing rail line near the townships of Illabo in the south and Stockinbingal in the north. These townships are predominantly surrounded by large rural properties connected by minor local roads. There are no major towns located along the proposal site between Illabo and Stockinbingal.</p> <p>The LIW may generate some additional traffic as a result of light and heavy vehicles accessing sites. The volume of extra vehicles and traffic is expected to be minimal. No closure or diversion of roads, level crossings or other ancillary transport items will occur as part of the activities in this assessment. Based on the assessment of traffic and transport, the works can be classified as low impact.</p> <p>Road occupancy licenses (ROLs) from the relevant approval authorities (TfNSW or otherwise) will be obtained prior to works occurring within the road seal or verge. Road occupancy licenses for Burley Griffin Way and Olympic Highway are appended to this assessment.</p> <p>For the additional potholing works in the lead up to the September possession, the works would be in proximity to existing roadways including Olympic Highway. The works would utilise existing ARTC haul roads and access points, including SAP – i and CSR 1. The establishment of new additional access tracks or gates/access points would be required.</p>	<p>YES</p> <p>Survey works will be undertaken in accordance with the following conditions and REMMs</p> <ul style="list-style-type: none"> - T6 - Condition C9 - Condition E100 - Condition E107



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
	<p>There will be a negligible amount of additional traffic on Olympic Highway from the sucker truck and light vehicles travelling to and from the proposed works area however this will be minimal and short term.</p> <p>One sucker truck and several light vehicles will progressively to each potholing location. There are no road, lane or footpath closures, temporary road closures/diversions required as a result of the works.</p> <p><u>Additional mitigation measures:</u></p> <ul style="list-style-type: none"> • Right of way will be given to the public (road users and pedestrians) at access points into work areas. • Traffic control will be implemented where required to manage the flow of traffic at access gates. • Appropriate land access approvals will be obtained prior to the commencement of LIW. • The construction workforce and project staff will be encouraged to ride-share to reduce the number of light vehicles travelling to and from site and within the project alignment. 	
Access	<p>Access routes are visually presented in Appendix A.</p> <p>Proposed access points for activities in this assessment are provided in Table 4-2. Existing approved access points (SAP 2-11, Chapter 11 p. 15 of the EIS) will be preferentially used, however, many of these locations are limited due to constructability constraints (i.e. the size of gates, landscape limitations, the requirement to cross creeks to access the worksite, etc.). All access routes proposed for these works are either public roads or existing farm tracks, no construction of new access roads will be required.</p> <p>Access locations will be subject to landowner approval in accordance with the Inland Rail Community Communication Strategy (CCS). Agreements are to be reached between landholders and JHG and communications to be undertaken in accordance with the CCS.</p> <p>Movement of plant and equipment within the site boundary will be dictated by No-Go zones. These are provided in the SEPs (Appendix A). Indicative plant paths are provided in SEPs.</p> <p>SAP i (shown in Appendix A and Table 4-2) is within the Project area of CSSI-1055 (the Olympic Highway Level Crossing).</p>	<p>YES</p> <p>Works will be undertaken in accordance with the following conditions and REMMs</p> <ul style="list-style-type: none"> - LP1 - LP4 - LP5 - LP7 - LP8 - LP10 - Condition C9 - Condition E94 - Condition E95 - Condition E97



Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
	<p>For the additional potholing works in the lead up to the September possession, refer to the response provide din the Traffic and Transport section.</p> <p>Based on the assessment of access gates and routes to the LIW activities included, the works have been classified as low impact. These works can be carried out as LIW using the mitigation measures included in this LIWA.</p>	
Air quality	<p>LIW could result in minor air quality impacts associated with:</p> <ul style="list-style-type: none"> • Dust emissions: the use of light vehicles during investigations. • Gaseous emissions: inclusive of vehicle emissions and fugitive emissions from equipment and plant. <p>Based on the assessment of impacts to air quality, the works can be undertaken as low impact works. <u>Additional mitigation measures:</u></p> <ul style="list-style-type: none"> • Site vehicles are to go the speed limits enforced on NSW roads and within private properties to avoid excessive dust and disturbance of dirt roads. 	<p>YES</p> <p>Works will be undertaken in accordance with the following conditions and REMMs</p> <p>- AQ2</p>
Sustainability	<p>Sustainable practices would be implemented from the outset of the LIW. Efficient plant use and effective waste management processes would be undertaken. This includes the reporting of energy, waste and water in Project Pack Web (PPW) - John Holland's compliance reporting program. Procurement would be undertaken in accordance with the <i>Inland Rail Sustainable Procurement Policy</i> (ARTC, 2018c), the <i>Sustainable Procurement Guide</i> (Commonwealth of Australia, 2021) and the <i>NSW Government Resource Efficiency Policy</i> (OEH, 2014b).</p>	<p>YES</p> <p>Works will be undertaken in accordance with the following conditions and REMMs</p> <p>- SU1</p>
Landscape & Visual Impacts	<p>Landscape and visual impacts are not anticipated during LIW. LIW included in this assessment will be mobile and minor in terms of vehicles, plant and equipment with all materials and staff moving offsite at the end of each day and moving throughout the CIZ footprint.</p>	<p>YES</p> <p>Works will be undertaken in accordance with the following conditions and REMMs</p> <p>- LV4</p>

Discipline	Risk Summary Based On The Outcomes Of The Risk Assessment	Consistency with CoA & EIS
		<ul style="list-style-type: none">- LV6- Condition C9

9 Mitigation Measures

Based on the level of impacts described above, the LIW activities associated with this package will be managed under the REMMs and relevant conditions of approval.

Communication of specific REMMs associated with activities will be described and communicated through the planning and implementation documents prepared by John Holland (the AMS, TRA and SEP) as well as this document communicated as part of the sign off process for staff prior to undertaking any work. In addition to the REMMs and CoA's, the following General Mitigation Measures have been included for works associated with this assessment:

- All vehicles entering the site will be equipped with portable spill kits and all personnel will have access to these kits, to rapidly address any incidental leaks, ensuring immediate containment and cleanup.
- Concrete washouts (if any) would be contained and removed off-site.
- Ecologist pre-clearance of sites will be undertaken prior to work commencement in areas requiring it (including lands not ecologically surveyed), as per biodiversity advice provided in Appendix E.
- All spoil generated as a result of the excavations will be backfilled into the excavations. Any excess spoil will be disposed of offsite.
 - All waste being disposed of offsite must be classified in accordance with the NSW Waste Classification Guidelines. Waste will be disposed of at a facility licensed to accept the waste type.
- Vehicles transitioning from dirt roads onto public asphalted roads will undergo a visual inspection to prevent debris from being transported off-site and to maintain cleanliness on public roadways.
- Farm gates encountered during LIW will be left in the condition specified by the landowner, whether that be open or closed. If no contact with relevant landowner is achieved, the specific gate will be left in the condition it was found in.
- TEC's and TEC habitat locations will be available electronically and via hard copies of the SEPs to all site personnel. Vegetation within the CIZ will be delineated as required with appropriate barriers such as bollards and bunting.
- All site personnel are to be inducted to the Project. The project induction includes the controls and mitigation measures within this assessment, along with visual depictions of no-go zones.
- Biosecurity measures will be established. Prior to making between-property movements, all personnel's boots and vehicles will undergo a cleanliness inspection to ensure they are clean and free of organic material.
- Prior to the initiation of any work, access routes crossing private property will be established in consensus with the respective landowners.
- The utilisation of existing farm tracks will be adhered to as much as reasonably practicable for the proposed activities, thereby reducing the environmental impact of the works.
- Non-tonal reversing alarms must be fitted and used on all construction vehicles and mobile plant.
- Quieter and less noise emitting construction methods will be used whenever possible.
- Shouting and slamming doors to minimise unnecessary noise will be avoided.
- All vehicles accessing the project site must comply with local speed restrictions.
- Plant equipment engines should be turned off when not in use to reduce potential noise impacts on surrounding stakeholders
- Mitigation measures for works in and around AECs must be adhered to. A hard copy of these mitigation measures will be kept on site.
- All OOHW approvals must be obtained from the relevant authority and in place prior to the commencement of OOHW. All OOHW will be undertaken in accordance with the conditions of the relevant approval.





10 Appendices

Appendix A – Site Environmental Plans (SEPs)

General	
Misc. Construction Controls to avoid Environmental Incidents	
Out of Hours Work (OOHW) as approved by Inland Rail and the ER. OOHW as described in the Out of Hours Work Protocol (5-0019-220-EEC-00-PO-0001).	
No works to be undertaken outside of standard construction hours without prior approval from the ER.	
Fatigue monitored to ensure environmental & safety incidents are avoided.	
Plant and equipment to be operated by a trained competent and authorised person only.	
Pre-mobilisation Inspection for all plant and equipment.	
Licensed Asbestos Contractor Class A for removal of friable asbestos and Class B for bonded asbestos.	
Environmental Risks	
Impact	Risk
Noise Pollution	[L]
Water Pollution	[M]
Air Quality	[L]
Chemical Spills	[L]
Waste and Resource	[L]
Flora & Flora	[M]
Housekeeping	[L]
Traffic Management	[L]
Heritage	[M]
EVENT MANAGEMENT	
All environmental incidents to be reported immediately to Inland Rail and Environmental Representative and entered into Horizon360 within 24 hours of the event.	
Air Quality Management	
Avoid works during unfavourable weather conditions, i.e., following BOM weather alerts and/or warnings.	Site Supervisor
Plant/equipment will cease where excessive emission of black smoke from the responsible plant/equipment is observed.	Site Supervisor
Contamination	
Controls / Actions	Responsibility
Upon identification/suspicion of contaminants, work must cease and the procedure in the Unexpected and Incidental Finds Protocol be adhered to (5-0019-220-PES-00-PR-0001).	Site Personnel

Project Contacts		
Project Title	Name	Contact No.
Site Supervisor	Matt Estens	0407 310 353
JHG Rail Systems Manager	Andy Buchanan	0417 014 864
JHG Construction Manager	Chad Bevan	0492 853 768
JHG Environment Manager	Dave Carberry	0428 918 886
JHG Environment Delegate	Tess Anastakis	0427 275 193
JHG Safety Manager	Kevin Hasler	0483 308 737
IRPL Project Manager	Michael Matthews	0411 324 445
EPA Pollution Hotline		131 555
WIRES – Animal rescue		1300 094 737
Project Information Line		1800 732 761
Riverina Fire Brigade		6929 5700
Emergency – Police, Fire and Rescue		000 OR 112
Working Hours		
Standard Construction Hours: Mon – Sat 07:00 to 18:00		
ALL HOURS OUTSIDE OF THESE TIMES ARE TO BE CONSIDERED AS OUT OF HOURS WORK (OOHW) AND MUST BE APPROVED BY THE ER PRIOR TO OOHW COMMENCING		
Traffic Management		
Controls / Actions	Responsibility	
Ensure safe exit and entry to the site is maintained at all times.	Site Supervisor	
Site vehicles will be parked within or in close proximity to the CIZ to support project activities and minimise public disruption and overall impact.	Site Supervisor	
Ensure public/pedestrian access is maintained.	Site Supervisor	
Site access is only permitted via routes that have been approved by the ER, IRPL and relevant landowners.	Site Supervisor	
Adhere to speed limit restrictions on all roads to minimise dust generation	Site Supervisor	

Soil and Water Management	
Controls / Actions	Responsibility
Appropriate erosion and sediment controls will be installed in accordance with Blue Book for stormwater/rail corridor drains (as required). Monitor the sediment and erosion controls – repair and reinstate where these are damaged.	Site Supervisor Project Manager
Water will not be discharged unless approved by the JHG Environment Team.	Project Engineer
Inspection of the erosion and sediment controls to be completed after 20mm in 24hours.	Site Supervisor
Groundwater would be managed in accordance with the requirements of the Waste Classification Guidelines (EPA, 2014)	Site Supervisor
Refuelling / Servicing	
Spill kits to be located in close proximity to refuelling operations.	Site Supervisor
If required, only minor servicing activities are to be undertaken on site. >50m from drainage lines.	Site Personnel
Ground protection measures (drip trays and plastic sheeting) must be installed prior to servicing / refuelling activities.	Site Personnel
Prevent the discharge of pollutants to stormwater. Undertake regular checks of equipment to ensure leaks and spills are rectified and cleaned immediately.	Site Supervisor Site Personnel
Report all environmental incidents to the JHG Environment Team.	Site Personnel
Waste and Resource Consumption	
Prevent waste being blown or washed outside of the construction boundary (CIZ).	Site Supervisor
Waste generated from workers consumables to be disposed of in bins.	Site Supervisor
All waste will be classified and managed in accordance with the NSW Environment Protection Agency (EPA) <i>Waste Classification Guidelines</i> .	Project Engineer
Chemical Storage	
Chemicals, fuels and oils to be stored in the securely bunded area within the storage area.	All personnel
Spill kits and absorbent material to be located in the site plant, light vehicles and in work area.	Site Supervisor

Heritage Management	
Controls / Actions	Responsibility
No ground disturbance to Aboriginal Heritage Zones (1-11).	Site Supervisor Project Manager
Activities permitted in these zones: • Driving (existing vehicle tracks ONLY) • Walking	
No works within 10m of Stockinbingal Heritage Conservation Area.	
Unexpected Heritage finds must be managed in accordance with the Unexpected and Incidental Finds Protocol (5-0019-220-PES-00-PR-0001).	Site Personnel
Flora and Fauna Management	
No ground disturbance within TEC zones prior to endorsement of the Project ecologist	Site Personnel
Contact project ecologist to have fauna relocated if found.	Site Personnel
NO VEGETATION IS TO BE REMOVED OR TRIMMED.	Site Personnel
Unexpected biodiversity finds must be managed in accordance with the Unexpected and Incidental Finds Protocol (5-0019-220-PES-00-PR-0001).	Site Personnel
Where no TEC polygons are present on the SEPs, all trees are to be avoided and protected where required.	Site Personnel
Vehicles to be inspected before movement between different landowners' properties.	Site Personnel
Vehicles to be brushed down of any mud/soil material and tires sprayed with disinfectant prior to making between-between-property movements.	Site Personnel
Noise Management	
No works to occur outside standard construction hours, unless otherwise approved by Inland Rail and the ER.	Project Manager Site Engineer
Comply with Out of Hours Protocol conditions of approval, if applicable.	
All plant equipment engines, including delivery vehicles, must be turned off when not in use to reduce potential noise impacts to the surrounding community.	Site Supervisor Environmental Representative
Non-tonal reverse mechanisms will be installed on plant.	
No unnecessary shouting, slamming doors	

Site Environmental Plan 1

Site Access Point: i (Olympic Highway LX)
 Property #1 – Pam McInerney & Peter Curran
 Access via separate CSSI Project corridor

Chainage from (m): 0

Chainage to (m): 750

Total length (m): 750

JOHN HOLLAND



Legend

	AEC (Contamination)		Euphrasia arguta, Grevillea wilkinsonii, Prasopphyllum sp. Wybong
	Sensitive area		Flora - Diuris Tricolor
	Native vegetation		Flora - Cullen Parvum
	CIZ boundary		Caladenia arenaria, Eleocharis obicis, Indigofera efoliata, Swainsona sericea
	Aboriginal Heritage artefact		Austrostipa Wakoolica, Swainsona Murrayana
	Black Falcon		Ammobium craspedioides
	Brown Treecreeper		Acacia ausfeldii
	Diamond Firetail		Habitat connectivity
	Dusk Woodswallow		Stream (incl. ephemeral)
	Flame Robin		Grey Box (E. macrocarpa)
	Grey-crowned Babbler		White-Box-Yellow Box-Blakely's Red Gum
	Little Eagle		Receivers
	Little Eagle Nest		Indigenous Survey Zones
	Spotted Harrier		Local Heritage
	Spotted Harrier Nest		State Heritage
	Square-tailed Kite		Scattered Paddock Tree
	Squirrel Glider		Land not surveyed
	Superb Parrot		Access/egress point
	Superb Parrot - Nesting		Public level crossing
	White-fronted Chat		Private level crossing
	Spill kit		Bridge point
	Chainage		Stock crossing
			Culvert point

Erosion and Sediment Controls (ESC):

- All erosion and sediment controls are to follow the requirements of the Blue Book Managing Urban Stormwater, Volume 1, 4th Edition, March 2004.
- ERSED controls have been included on the SEPs in areas where potential ERSED risks are anticipated. Additional ERSED control equipment will be available to site teams if required. The orientation and position of ERSED controls indicated in maps must be determined appropriately on site (i.e. downslope of work activity, covering a drain, etc.).
- The following ESC are implemented for the project site:
 - Appropriate ESC (e.g. geofabric) to be placed over stormwater/rail corridor drains (as required – if works have potential to impact).
 - All temporary stockpiling of materials will take place away from drainage lines and creeks.
 - Geotechnical excavation will be backfilled by excess soil.
 - Water will not be discharged or pumped off-site or to drains. For any water discharge, the Environment Team must be contacted immediately (for water testing methodology for removal i.e. vacuum truck or to re-use on site).
 - Sediment control to be implemented in all laydown areas, specifically drains and gutters for stormwater control.
 - ESC to be in place on the downward side of stockpiles. All temporary stockpiles to be covered and weighted down with plastic sheeting to prevent wind and water erosion.
 - All spoil generated as a result of hydraulic excavation will be contained within a sucker truck and liquid waste bins and will be disposed of as liquid waste at an appropriately licenced facility.
 - Stockpiles not to exceed 2 metres in height.
 - Any material delivered to site or excavated material to be reused as fill would be neatly stockpiled only in the designated stockpile location until required. Materials may be stored in 'Bulka Bags' or covered skip bins (cover is essential for preventing ingress of rainwater).
 - Where stockpiles are to be established overnight, they would be covered with impermeable material such as builder's plastic and a sandbag bund will be created to prevent erosion and sedimentation.
 - Where appropriate, geofabric would underlay the stockpile to facilitate easier site clean-up upon removal of the stockpile.
 - Groundwater will be managed in accordance with the requirements of the Waste Classification Guidelines (EPA, 2014).
 - Water will be used for dust suppression as required.

Monitoring of ESC:

- Periodic monitoring of the effectiveness of the ESC to be undertaken as part of environmental inspections, prior to unfavourable weather conditions and after heavy rainfall events (>20mm in 24-hour period).

INDIGENOUS SURVEY ZONES +25m:

- No ground disturbance activities to commence prior to heritage endorsement of works
- Walking permitted
- Driving on existing vehicle tracks *only*

UNSURVEYED LANDS:

- No activities to commence prior to endorsement of works by an ecologist.

TEC ZONES OR TEC HABITAT:

- No ground disturbance activities to commence prior to endorsement of works by ecologist. Ecologist mitigation to be included on all excavation permits (where relevant to the works).

WATERWAYS (OR POTENTIAL WATERWAYS):

- Vehicles may only proceed following an assessment of on-site conditions (i.e. high risk of erosion, >20mm of rainfall in 24h, change to existing flow path)

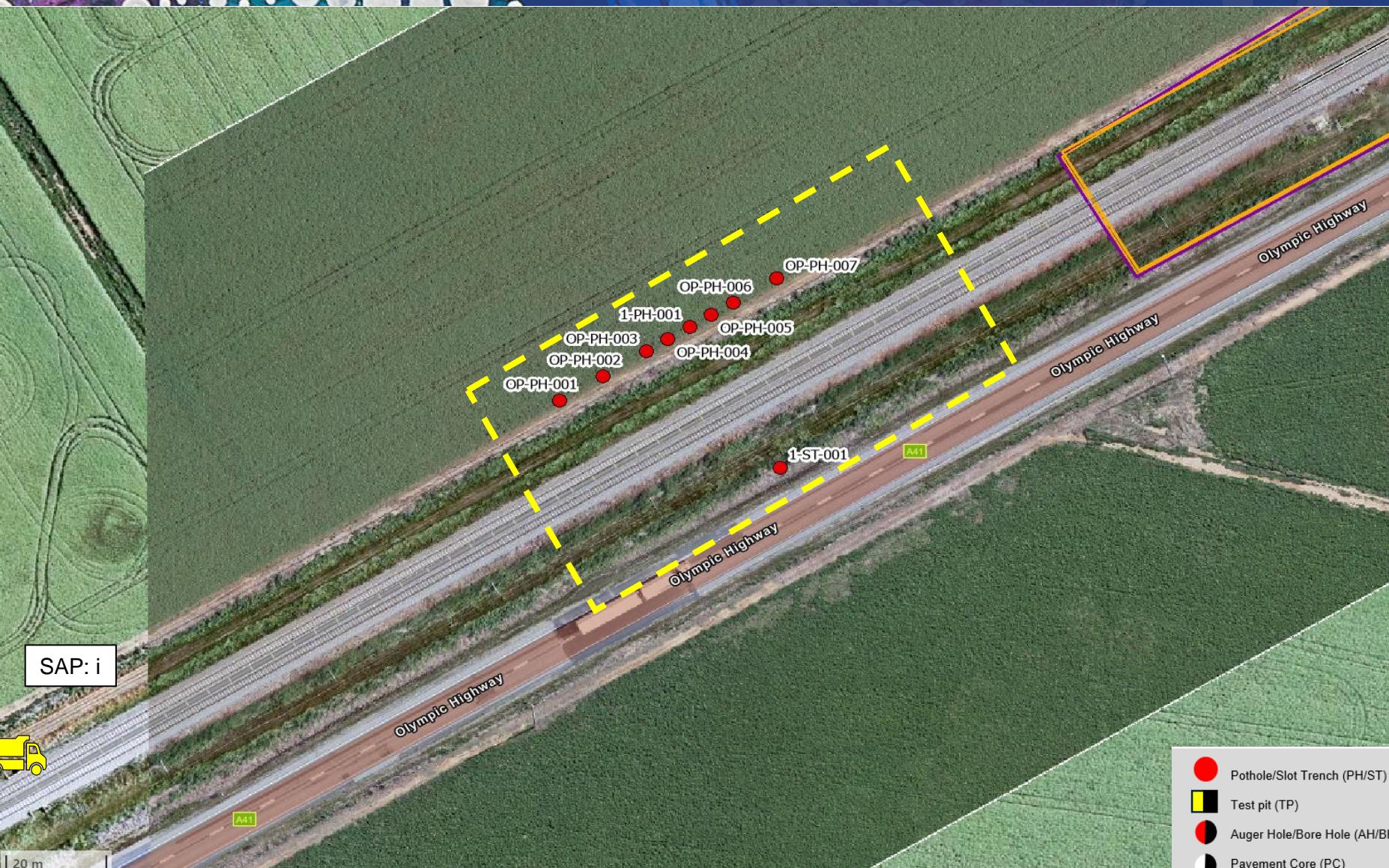
Site Environmental Plan 2

Site Access Point: i (Olympic Highway LX)
Property #1 – Pam McInerney & Peter Curran

Chainage from (m): -200

Chainage to (m): 50

Total length (m): 150



Legend

	AEC (Contamination)		Euphrasia arguta, Grevillea wilkinsonii, Prasophyllum sp. Wybong
	Sensitive area		Flora - Diuris Tricolor
	Native vegetation		Flora - Cullen Parvum
	Assessment area (CA)		Caladenia arenaria, Eleocharis obicis, Indigofera efoliata, Swainsona sericea
	CIZ boundary		Austrostipa Wakoolica, Swainsona Murrayana
	Aboriginal Heritage artefact		Ammobium craspedioides
	Black Falcon		Acacia ausfeldii
	Brown Treecreeper		Habitat connectivity
	Diamond Firetail		Stream (incl. ephemeral)
	Dusk Woodswallow		Grey Box (E. macrocarpa)
	Flame Robin		White-Box-Yellow Box-Blakely's Red Gum
	Grey-crowned Babbler		Receivers
	Little Eagle		Indigenous Survey Zones
	Little Eagle Nest		Local Heritage
	Spotted Harrier		State Heritage
	Spotted Harrier Nest		Scattered Paddock Tree
	Square-tailed Kite		Land not surveyed
	Squirrel Glider		Access/egress point
	Superb Parrot		Public level crossing
	Superb Parrot - Nesting		Private level crossing
	White-fronted Chat		Bridge point
	Spill kit		Stock crossing
	Chainage		Culvert point
	Pothole/Slot Trench (PH/ST)		
	Test pit (TP)		
	Auger Hole/Bore Hole (AH/BH)		
	Pavement Core (PC)		

Erosion and Sediment Controls (ESC):

- All erosion and sediment controls are to follow the requirements of the Blue Book Managing Urban Stormwater, Volume 1, 4th Edition, March 2004.
 - ERSED controls have been included on the SEPs in areas where potential ERSED risks are anticipated. Additional ERSED control equipment will be available to site teams if required. The orientation and position of ERSED controls indicated in maps must be determined appropriately on site (i.e. downslope of work activity, covering a drain, etc.).
- The following ESC are implemented for the project site:
- Appropriate ESC (e.g. geofabric) to be placed over stormwater/rail corridor drains (as required – if works have potential to impact).
 - All temporary stockpiling of materials will take place away from drainage lines and creeks.
 - Geotechnical excavation will be backfilled by excess soil.
 - Water will not be discharged or pumped off-site or to drains. For any water discharge, the Environment Team must be contacted immediately (for water testing methodology for removal i.e. vacuum truck or to re-use on site).
 - Sediment control to be implemented in all laydown areas, specifically drains and gutters for stormwater control.
 - ESC to be in place on the downward side of stockpiles. All temporary stockpiles to be covered and weighted down with plastic sheeting to prevent wind and water erosion.
 - All spoil generated as a result of hydraulic excavation will be contained within a sucker truck and liquid waste bins and will be disposed of as liquid waste at an appropriately licenced facility.
 - Stockpiles not to exceed 2 metres in height.
 - Any material delivered to site or excavated material to be reused as fill would be neatly stockpiled only in the designated stockpile location until required. Materials may be stored in 'Bulka Bags' or covered skip bins (cover is essential for preventing ingress of rainwater).
 - Where stockpiles are to be established overnight, they would be covered with impermeable material such as builder's plastic and a sandbag bund will be created to prevent erosion and sedimentation.
 - Where appropriate, geofabric would underlay the stockpile to facilitate easier site clean-up upon removal of the stockpile.
 - Groundwater will be managed in accordance with the requirements of the Waste Classification Guidelines (EPA, 2014).
 - Water will be used for dust suppression as required.

Monitoring of ESC:

- Periodic monitoring of the effectiveness of the ESC to be undertaken as part of environmental inspections, prior to unfavourable weather conditions and after heavy rainfall events (>20mm in 24-hour period).

INDIGENOUS SURVEY ZONES +25m:

- No ground disturbance activities to commence prior to heritage endorsement of works
- Walking permitted
- Driving on existing vehicle tracks only

UNSURVEYED LANDS:

- No activities to commence prior to endorsement of works by an ecologist.

TEC ZONES OR TEC HABITAT:

- No ground disturbance activities to commence prior to endorsement of works by ecologist. Ecologist mitigation to be included on all excavation permits (where relevant to the works).

WATERWAYS (OR POTENTIAL WATERWAYS):

- Vehicles may only proceed following an assessment of on-site conditions (i.e. high risk of erosion, >20mm of rainfall in 24h, change to existing flow path)

Site Environmental Plan 3

Site Access Point: i (Olympic Highway LX)
 Property #1 – Pam McInerney & Peter Curran

Chainage from (m): 100
 Chainage to (m): 400
 Total length (m): 300



Legend			
	AEC (Contamination)		Euphrasia arguta, Grevillea wilkinsonii, Prasopphyllum sp. Wybong
	Sensitive area		Flora - Diuris Tricolor
	Native vegetation		Flora - Cullen Parvum
	Assessment area (CA)		Caladenia arenaria, Eleocharis obicis, Indigofera efoliata, Swainsona sericea
	CIZ boundary		Austrostipa Wakoolica, Swainsona Murrayanaa
	Aboriginal Heritage artefact		Ammobium craspedioides
	Black Falcon		Acacia ausfeldii
	Brown Treecreeper		Habitat connectivity
	Diamond Firetail		Stream (incl. ephemeral)
	Dusk Woodswallow		Grey Box (E. macrocarpa)
	Flame Robin		White-Box-Yellow Box-Blakely's Red Gum
	Grey-crowned Babbler		Receivers
	Little Eagle		Indigenous Survey Zones
	Little Eagle Nest		Local Heritage
	Spotted Harrier		State Heritage
	Spotted Harrier Nest		Scattered Paddock Tree
	Square-tailed Kite		Land not surveyed
	Squirrel Glider		Access/egress point
	Superb Parrot		Public level crossing
	Superb Parrot - Nesting		Private level crossing
	White-fronted Chat		Bridge point
	Spill kit		Stock crossing
	Chainage		Culvert point
	Ballast push-tube area		

Erosion and Sediment Controls (ESC):

- All erosion and sediment controls are to follow the requirements of the Blue Book Managing Urban Stormwater, Volume 1, 4th Edition, March 2004.
- ERSED controls have been included on the SEPs in areas where potential ERSED risks are anticipated. Additional ERSED control equipment will be available to site teams if required. The orientation and position of ERSED controls indicated in maps must be determined appropriately on site (i.e. downslope of work activity, covering a drain, etc.).
- The following ESC are implemented for the project site:
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 - All temporary stockpiling of materials will take place away from drainage lines and creeks.
 - Geotechnical excavation will be backfilled by excess soil.
 - Water will not be discharged or pumped off-site or to drains. For any water discharge, the Environment Team must be contacted immediately (for water testing methodology for removal i.e. vacuum truck or to re-use on site).
 - Sediment control to be implemented in all laydown areas, specifically drains and gutters for stormwater control.
 - ESC to be in place on the downward side of stockpiles. All temporary stockpiles to be covered and weighted down with plastic sheeting to prevent wind and water erosion.
 - All spoil generated as a result of hydraulic excavation will be contained within a sucker truck and liquid waste bins and will be disposed of as liquid waste at an appropriately licenced facility.
 - Stockpiles not to exceed 2 metres in height.
 - Any material delivered to site or excavated material to be reused as fill would be neatly stockpiled only in the designated stockpile location until required. Materials may be stored in 'Bulka Bags' or covered skip bins (cover is essential for preventing ingress of rainwater).
 - Where stockpiles are to be established overnight, they would be covered with impermeable material such as builder's plastic and a sandbag bund will be created to prevent erosion and sedimentation.
 - Where appropriate, geofabric would underlay the stockpile to facilitate easier site clean-up upon removal of the stockpile.
 - Groundwater will be managed in accordance with the requirements of the Waste Classification Guidelines (EPA, 2014).
 - Water will be used for dust suppression as required.

Monitoring of ESC:

- Periodic monitoring of the effectiveness of the ESC to be undertaken as part of environmental inspections, prior to unfavourable weather conditions and after heavy rainfall events (>20mm in 24-hour period).

INDIGENOUS SURVEY ZONES +25m:

- No ground disturbance activities to commence prior to heritage endorsement of works
 - Walking permitted
 - Driving on existing vehicle tracks *only*

UNSURVEYED LANDS:

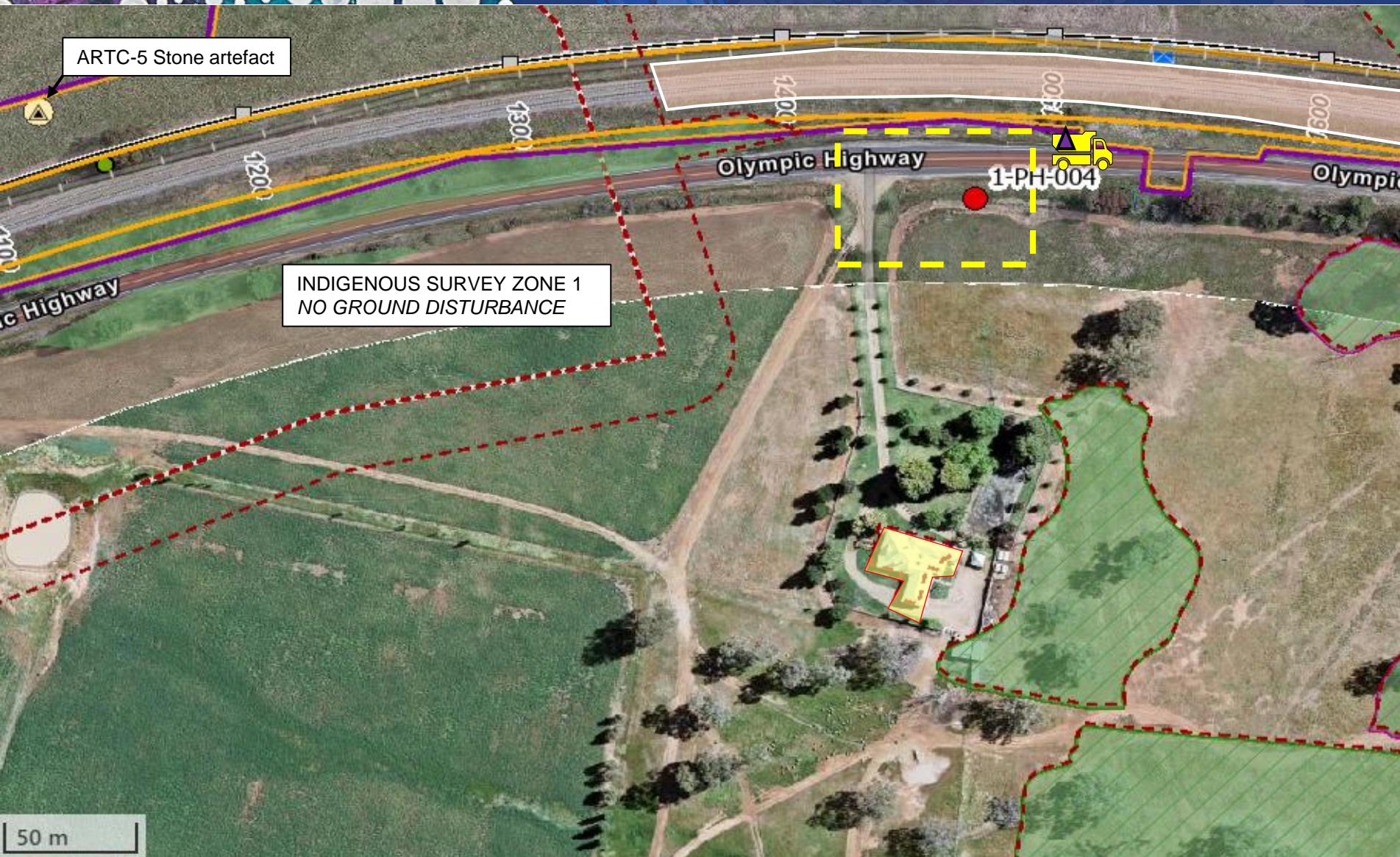
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TEC ZONES OR TEC HABITAT:

- No ground disturbance activities to commence prior to endorsement of works by ecologist. Ecologist mitigation to be included on all excavation permits (where relevant to the works).

WATERWAYS (OR POTENTIAL WATERWAYS):

- Vehicles may only proceed following an assessment of on-site conditions (i.e. high risk of erosion, >20mm of rainfall in 24h, change to existing flow path)



Legend

	AEC (Contamination)		Euphrasia arguta, Grevillea wilkinsonii, Prasopphyllum sp. Wybong
	Sensitive area		Flora - Diuris Tricolor
	Native vegetation		Flora - Cullen Parvum
	Assessment area (CA)		Caladenia arenaria, Eleocharis obicis, Indigofera efoliata, Swainsona sericea
	CIZ boundary		Austrostipa Wakoolica, Swainsona Murrayana
	Aboriginal Heritage artefact		Ammobium craspedioides
	Black Falcon		Acacia ausfeldii
	Brown Treecreeper		Habitat connectivity
	Diamond Firetail		Stream (incl. ephemeral)
	Dusk Woodswallow		Grey Box (E. macrocarpa)
	Flame Robin		White-Box-Yellow Box-Blakely's Red Gum
	Grey-crowned Babbler		Receivers
	Little Eagle		Indigenous Survey Zones
	Little Eagle Nest		Local Heritage
	Spotted Harrier		State Heritage
	Spotted Harrier Nest		Scattered Paddock Tree
	Square-tailed Kite		Land not surveyed
	Squirrel Glider		Access/egress point
	Superb Parrot		Public level crossing
	Superb Parrot - Nesting		Private level crossing
	White-fronted Chat		Bridge point
	Spill kit		Stock crossing
	Chainage		Culvert point
	Utility investigation		

Erosion and Sediment Controls (ESC):

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 - ESC to be in place on the downward side of stockpiles. All temporary stockpiles to be covered and weighted down with plastic sheeting to prevent wind and water erosion.
 - All spoil generated as a result of hydraulic excavation will be contained within a sucker truck and liquid waste bins and will be disposed of as liquid waste at an appropriately licenced facility.
 - Stockpiles not to exceed 2 metres in height.
 - Any material delivered to site or excavated material to be reused as fill would be neatly stockpiled only in the designated stockpile location until required. Materials may be stored in 'Bulka Bags' or covered skip bins (cover is essential for preventing ingress of rainwater).
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 - Where appropriate, geofabric would underlay the stockpile to facilitate easier site clean-up upon removal of the stockpile.
 - Groundwater will be managed in accordance with the requirements of the Waste Classification Guidelines (EPA, 2014).
 - Water will be used for dust suppression as required.

Monitoring of ESC:

- Periodic monitoring of the effectiveness of the ESC to be undertaken as part of environmental inspections, prior to unfavourable weather conditions and after heavy rainfall events (>20mm in 24-hour period).

INDIGENOUS SURVEY ZONES +25m:

No ground disturbance activities to commence prior to heritage endorsement of works

- Walking permitted
- Driving on existing vehicle tracks only

UNSURVEYED LANDS:

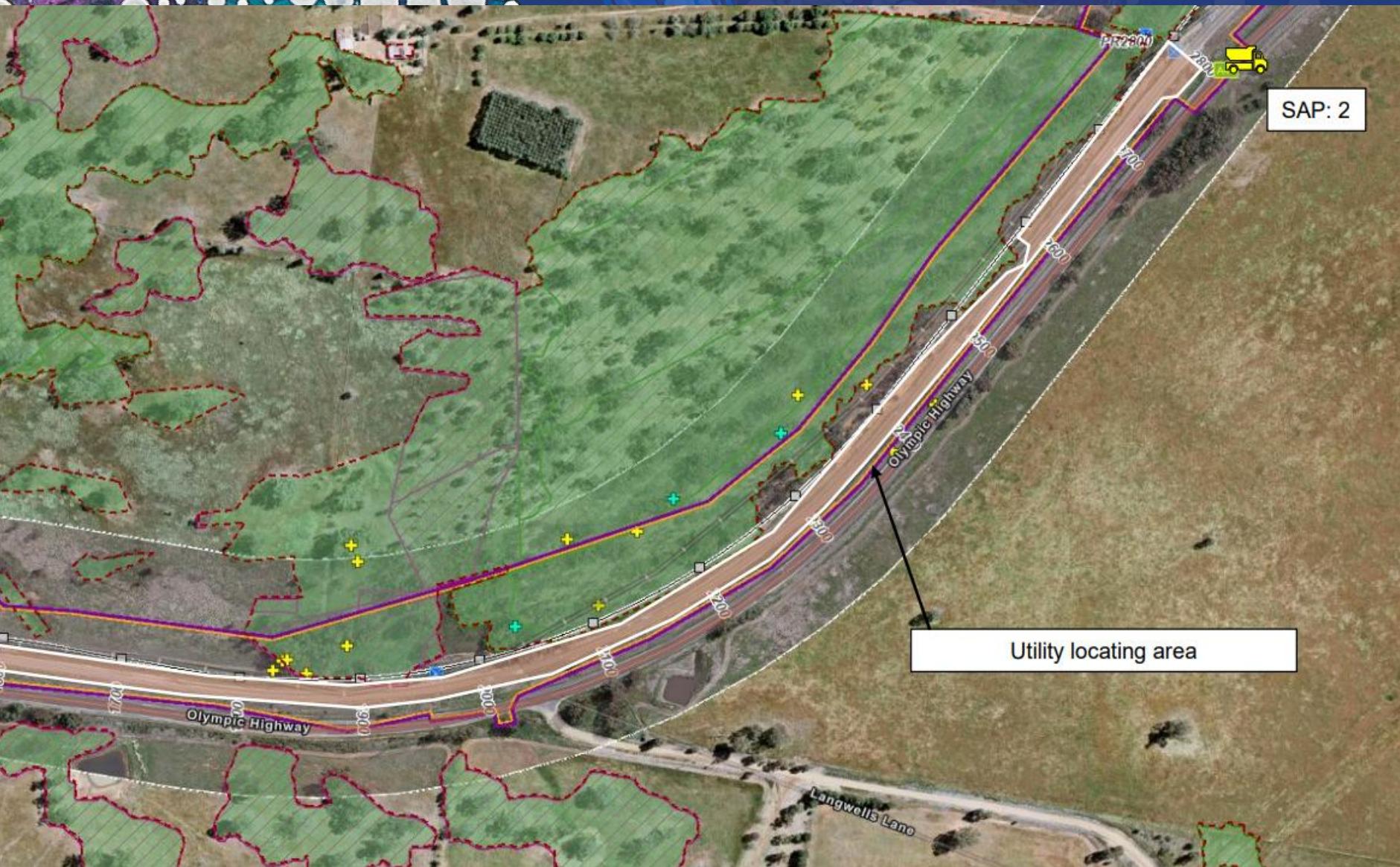
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	Dusk Woodswallow		Grey Box (E. macrocarpa)
	Flame Robin		White-Box-Yellow Box-Blakely's Red Gum
	Grey-crowned Babbler		Receivers
	Little Eagle		Indigenous Survey Zones
	Little Eagle Nest		Local Heritage
	Spotted Harrier		State Heritage
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Monitoring of ESC:

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INDIGENOUS SURVEY ZONES +25m:

- No ground disturbance activities to commence prior to heritage endorsement of works
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- Driving on existing vehicle tracks only

UNSURVEYED LANDS:

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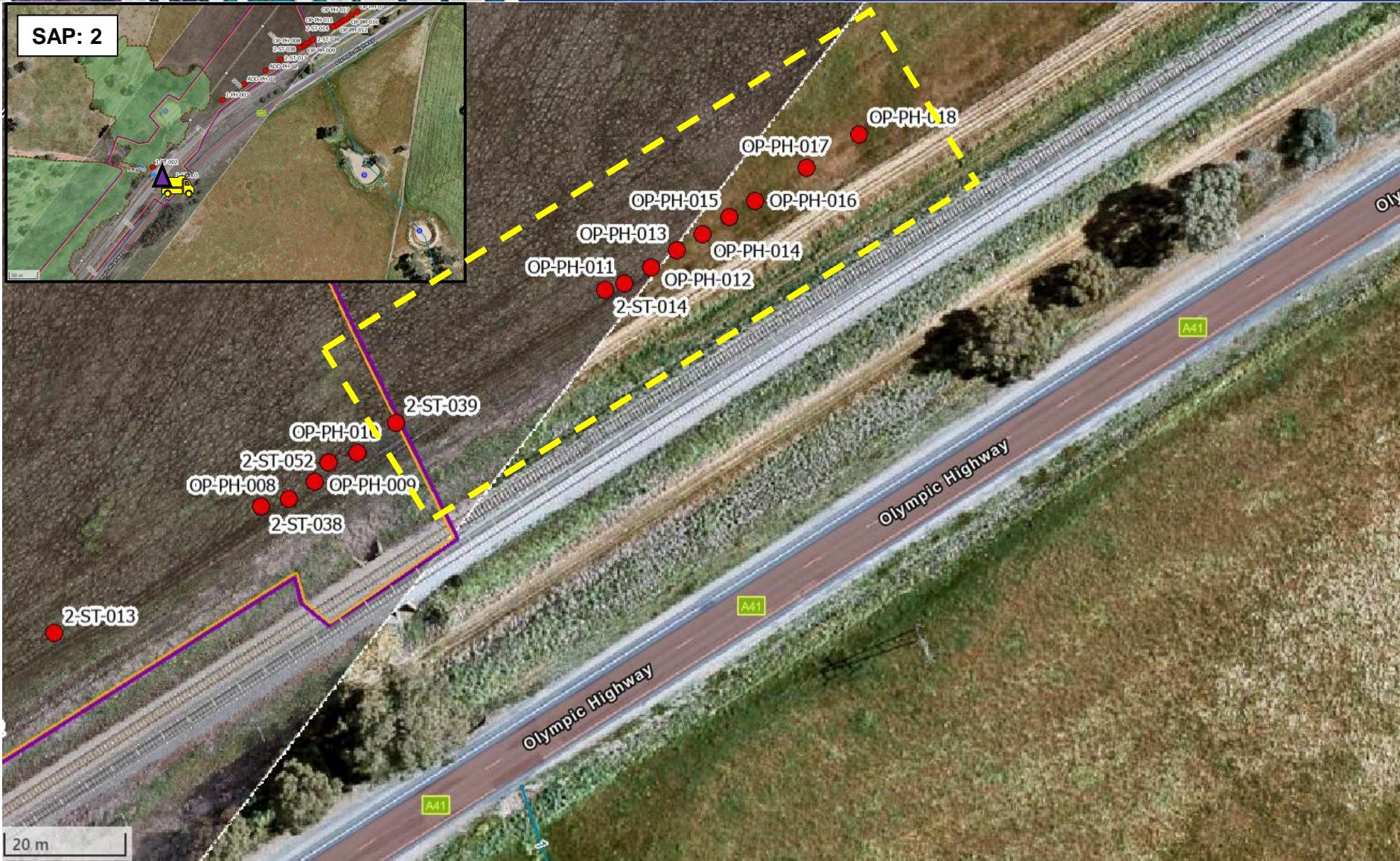
WATERWAYS (OR POTENTIAL WATERWAYS):

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Site Environmental Plan 5

Site Access Point: 2
Property: #3 – Helen Dunstan

Chainage from (m): 3000
Chainage to (m): 3200
Total length (m): 200



Legend

	AEC (Contamination)		Euphrasia arguta, Grevillea wilkinsonii, Prasopphyllum sp. Wybong
	Sensitive area		Flora - Diuris Tricolor
	Native vegetation		Flora - Cullen Parvum
	Assessment area (CA)		Caladenia arenaria, Eleocharis obicis, Indigofera efoliata, Swainsona sericea
	CIZ boundary		Austrostipa Wakoolica, Swainsona Murrayana
	Aboriginal Heritage artefact		Ammobium craspedioides
	Black Falcon		Acacia ausfeldii
	Brown Treecreeper		Habitat connectivity
	Diamond Firetail		Stream (incl. ephemeral)
	Dusk Woodswallow		Grey Box (E. macrocarpa)
	Flame Robin		White-Box-Yellow Box-Blakely's Red Gum
	Grey-crowned Babbler		Receivers
	Little Eagle		Indigenous Survey Zones
	Little Eagle Nest		Local Heritage
	Spotted Harrier		State Heritage
	Spotted Harrier Nest		Scattered Paddock Tree
	Square-tailed Kite		Land not surveyed
	Squirrel Glider		Access/egress point
	Superb Parrot		Public level crossing
	Superb Parrot - Nesting		Private level crossing
	White-fronted Chat		Bridge point
	Spill kit		Stock crossing
	Chainage		Culvert point
	Utility investigation		

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Monitoring of ESC:

- Periodic monitoring of the effectiveness of the ESC to be undertaken as part of environmental inspections, prior to unfavourable weather conditions and after heavy rainfall events (>20mm in 24-hour period).

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- Driving on existing vehicle tracks only

UNSURVEYED LANDS:

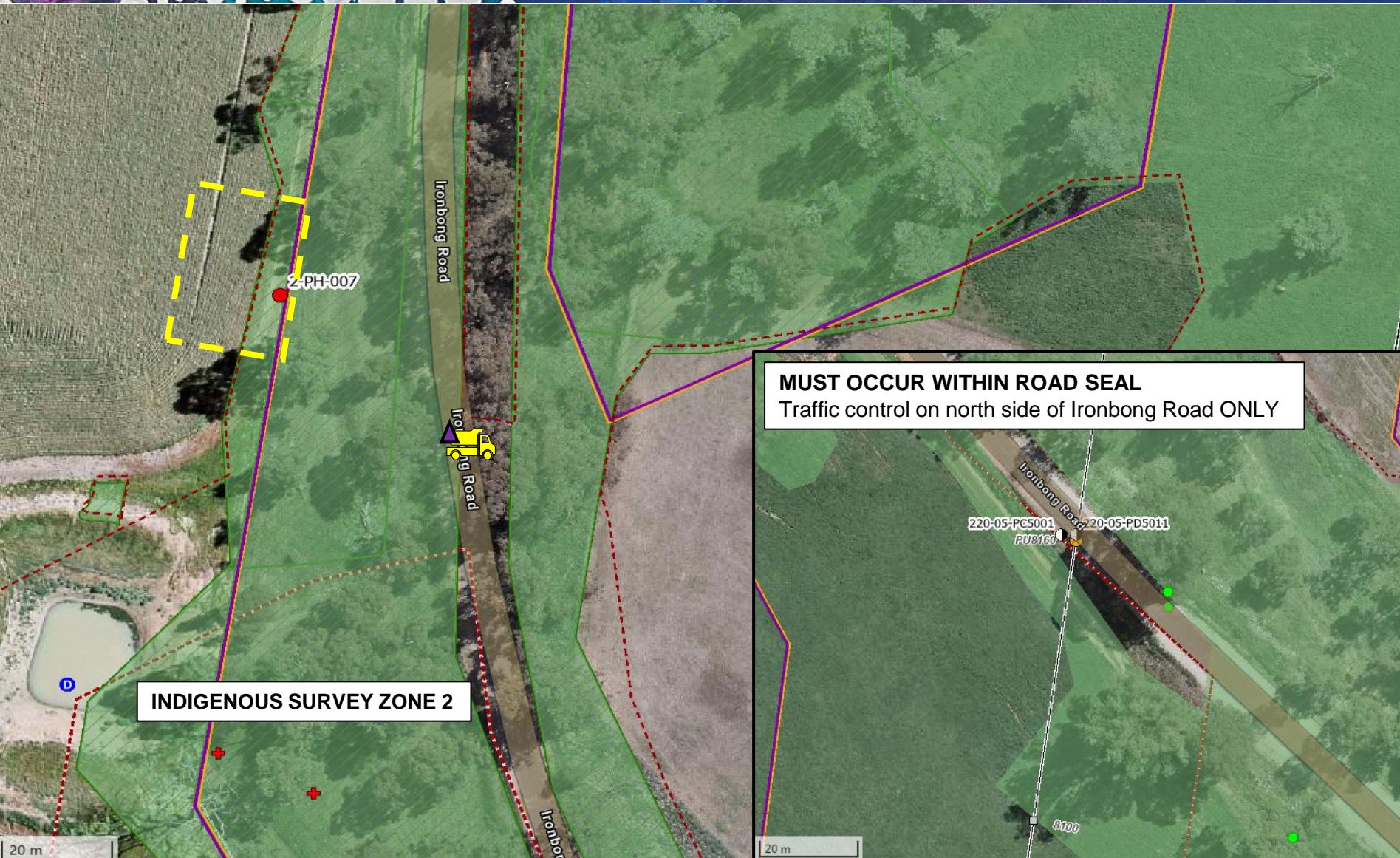
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WATERWAYS (OR POTENTIAL WATERWAYS):

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Legend

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	Brown Treecreeper		Habitat connectivity
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	Little Eagle Nest		Local Heritage
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	Superb Parrot		Public level crossing
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	White-fronted Chat		Bridge point
	Spill kit		Stock crossing
	Chainage		Culvert point
	Utility investigation		

MUST OCCUR WITHIN ROAD SEAL
 Traffic control on north side of Ironbong Road ONLY

INDIGENOUS SURVEY ZONE 2

Erosion and Sediment Controls (ESC):

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Monitoring of ESC:

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INDIGENOUS SURVEY ZONES +25m:

No ground disturbance activities to commence prior to heritage endorsement of works

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Site Environmental Plan 7

Site Access Point: xiii

Property: #10 – David Carr (CCC)

Chainage from (m): 22100

Chainage to (m): 22200

Total length (m): 100



Legend

	AEC (Contamination)		Euphrasia arguta, Grevillea wilkinsonii, Prasophyllum sp. Wybong
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	Little Eagle		Indigenous Survey Zones
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Site Environmental Plan 8

Site Access Point: 6

Property: #13 – Peter McClintock

Chainage from (m): 28250

Chainage to (m): 28420

Total length (m): 100

JOHN HOLLAND



Legend

	AEC (Contamination)		Euphrasia arguta, Grevillea wilkinsonii, Prasophyllum sp. Wybong
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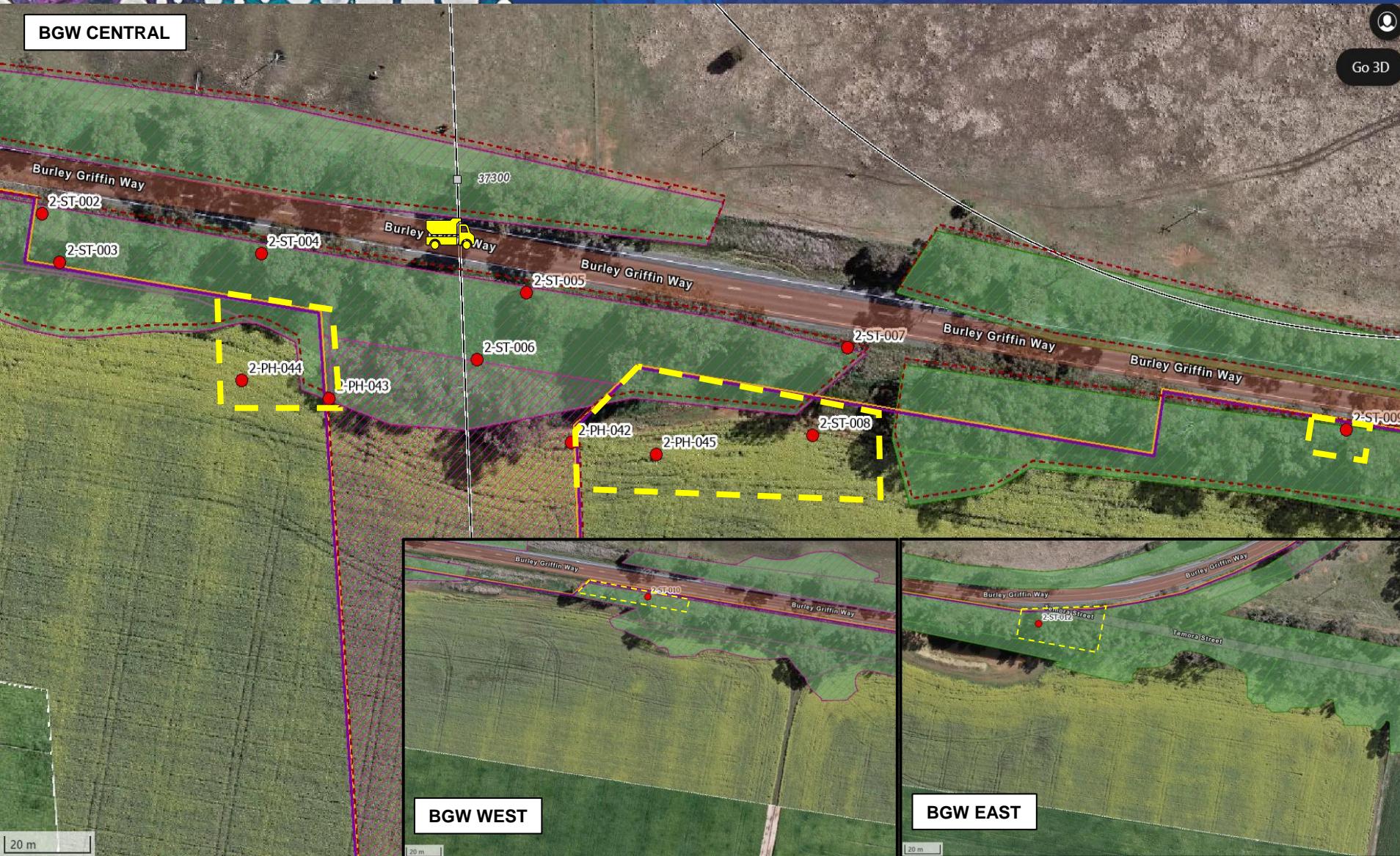
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	Spotted Harrier Nest		Scattered Paddock Tree
	Square-tailed Kite		Land not surveyed
	Squirrel Glider		Access/egress point
	Superb Parrot		Public level crossing
	Superb Parrot - Nesting		Private level crossing
	White-fronted Chat		Bridge point
	Spill kit		Stock crossing
	Chainage		Culvert point
	Utility investigation		

Erosion and Sediment Controls (ESC):

- All erosion and sediment controls are to follow the requirements of the Blue Book Managing Urban Stormwater, Volume 1, 4th Edition, March 2004.
- ERSED controls have been included on the SEPs in areas where potential ERSED risks are anticipated. Additional ERSED control equipment will be available to site teams if required. The orientation and position of ERSED controls indicated in maps must be determined appropriately on site (i.e. downslope of work activity, covering a drain, etc.).

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- All spoil generated as a result of hydraulic excavation will be contained within a sucker truck and liquid waste bins and will be disposed of as liquid waste at an appropriately licenced facility.
- Stockpiles not to exceed 2 metres in height.
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- Where stockpiles are to be established overnight, they would be covered with impermeable material such as builder's plastic and a sandbag bund will be created to prevent erosion and sedimentation.
- Where appropriate, geofabric would underlay the stockpile to facilitate easier site clean-up upon removal of the stockpile.
- Groundwater will be managed in accordance with the requirements of the Waste Classification Guidelines (EPA, 2014).
- Water will be used for dust suppression as required.

Monitoring of ESC:

- Periodic monitoring of the effectiveness of the ESC to be undertaken as part of environmental inspections, prior to unfavourable weather conditions and after heavy rainfall events (>20mm in 24-hour period).

INDIGENOUS SURVEY ZONES +25m:

- No ground disturbance activities to commence prior to heritage endorsement of works
- Walking permitted
- Driving on existing vehicle tracks only

UNSURVEYED LANDS:

- No activities to commence prior to endorsement of works by an ecologist.

TEC ZONES OR TEC HABITAT:

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WATERWAYS (OR POTENTIAL WATERWAYS):

- Vehicles may only proceed following an assessment of on-site conditions (i.e. high risk of erosion, >20mm of rainfall in 24h, change to existing flow path)



Legend			
	AEC (Contamination)		Euphrasia arguta, Grevillea wilkinsonii, Prasophyllum sp. Wybong
	Sensitive area		Flora - Diuris Tricolor
	Native vegetation		Flora - Cullen Parvum
	Assessment area (CA)		Caladenia arenaria, Eleocharis obicis, Indigofera efoliata, Swainsona sericea
	CIZ boundary		Austrostipa Wakoolica, Swainsona Murrayana
	Aboriginal Heritage artefact		Ammobium craspedioides
	Black Falcon		Acacia ausfeldii
	Brown Treecreeper		Habitat connectivity
	Diamond Firetail		Stream (incl. ephemeral)
	Dusk Woodswallow		Grey Box (E. macrocarpa)
	Flame Robin		White-Box-Yellow Box-Blakely's Red Gum
	Grey-crowned Babbler		Receivers
	Little Eagle		Indigenous Survey Zones
	Little Eagle Nest		Local Heritage
	Spotted Harrier		State Heritage
	Spotted Harrier Nest		Scattered Paddock Tree
	Square-tailed Kite		Land not surveyed
	Squirrel Glider		Access/egress point
	Superb Parrot		Public level crossing
	Superb Parrot - Nesting		Private level crossing
	White-fronted Chat		Bridge point
	Spill kit		Stock crossing
	Chainage		Culvert point
	Utility investigation		

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Legend

ERSED control	Euphrasia arguta, Grevillea wilkinsonii, Prasophyllum sp. Wybong
Sensitive area	Flora - Diuris Tricolor
Native vegetation	Flora - Cullen Parvum
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Black Falcon	Acacia ausfeldii
Brown Treecreeper	Habitat connectivity
Diamond Firetail	Stream (incl. ephemeral)
Dusk Woodswallow	Grey Box (E. macrocarpa)
Flame Robin	White-Box-Yellow Box-Blakely's Red Gum
Grey-crowned Babbler	Receivers
Little Eagle	Indigenous Survey Zones
Little Eagle Nest	Local Heritage
Spotted Harrier	State Heritage
Spotted Harrier Nest	Scattered Paddock Tree
Square-tailed Kite	Land not surveyed
Squirrel Glider	Access/egress point
Superb Parrot	Public level crossing
Superb Parrot - Nesting	Private level crossing
White-fronted Chat	Bridge point
Spill kit	Stock crossing
Chainage	Culvert point
Utility investigation	

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Site Environmental Plan 12

Site Access Point: XLV, xxvii, xxvi, Burley Griffin Way, Troy St
 Property: ARTC 37500 – Harold Park

Chainage from (m): 37500
 Chainage to (m): 37600
 Total length (m): 100



Legend			
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	White-fronted Chat		Bridge point
	Spill kit		Stock crossing
	Chainage		Utility investigation
	Pothole/Slot Trench (PH/ST)		Culvert point
	Test pit (TP)		
	Auger Hole/Bore Hole (AH/BH)		
	Pavement Core (PC)		

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Site Environmental Plan 13

Site Access Point: Grogan Rd

Property: #21 – Craig Morton

Chainage from (m): 39200

Chainage to (m): 39400

Total length (m): 200



Legend

	AEC (Contamination)		Euphrasia arguta, Grevillea wilkinsonii, Prasophyllum sp. Wybong
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Appendix B – Noise Assessment



Appendix B – Noise Assessment

Noise model summary:

A scenario-based approach has been applied to the low impact works assessment to assess potential noise impacts associated with Low Impact Works (LIW) occurring during standard hours (CoA E1).

Standard construction hours on I2S are;

- 7:00am to 6:00pm Monday to Friday
- 7:00am to 6:00pm Saturday
- At no time on Sunday or public holidays.

Where out of hours works are required, they must comply with CoA E3 (b) as per the definition of ‘Low impact work’ as per SSI-9406. All relevant OOHW must be obtained prior to the commencement of OOHW activities. This approval will be sought via separate application/permit as OOHW are required.

Site Characteristics:

The existing noise environment is characteristic of a rural landscape. Most of the proposal site has little or no road traffic noise, sparse settlement patterns, and generally being characterised by low background noise levels. Burley Griffin Way, Olympic Highway and the existing rail lines are the main noise sources within the proposal site; however, traffic along these roads is typically sparse and does not significantly impact the background noise levels of the surrounding environment.

The most significant existing sources of vibration along the proposal site include those generated by traffic on the local road network and existing rail operations at Illabo and Stockinbingal. Although not measured directly, vibration due to existing road and rail sources is considered to be below the structural damage and human comfort criteria for all vibration sensitive receivers.

Most residential receivers are in Stockinbingal, east of the proposal site, including low-density residential dwellings. Residential receivers located within the study area outside of Stockinbingal are typically present as isolated rural residential dwellings within open farmland. Residential dwellings located near the proposal are predominantly single storey.

Rationale:

The works planned for 2025, which are included in this assessment, are mostly set to occur at expansive distances from sensitive and residential receivers, as established by an initial assessment of access and on-site investigations. The closest receiver for these works would be at Hibernia St, chainage 37650. Positioned within the CIZ, this receiver is within 25 metres from the proposed work area. The impacts (as per the ICNG) are deemed to be not within the highly noise affect dBA range (75dB(A)).

Modelling has been conducted via a ‘worst case scenario’ approach for each activity to be conducted throughout LIW. Activities included in this noise assessment are not proposed to be undertaken



INLAND RAIL ILLABO TO STOCKINBINGAL

concurrently. If any activities overlap, this would be subject to additional noise modelling to assess the potential cumulative impacts of multiple work activities at the same location. This would be subject to approval by the ER.

A model for each activity is provided in the below sections, which includes;

- A map, showing the work activities and their proximity to receivers (if any);
- The noise model inputs (showing equipment usage percentages and quantity);
- The noise model outputs (showing the results of the modelling).

Noise Management Levels

TABLE 16-1: NOISE MANAGEMENT LEVELS FOR RESIDENTIAL RECEIVERS

Timing	RBL (dBA) ¹	NML (dBA)	Highly noise affected level (dBA)
Standard hours	35	45	75
Out of hours—Day	35	40	N/A
Out of hours—Evening	30	35	N/A
Out of hours—Night	30	35	N/A

1. Background levels are below the minimum assumed rating background noise levels at all measurement locations along the proposal site; as such, they have been adjusted to 35dBA during the day period, and 30dBA during the evening and night periods.

Modelling was conducted using standard hours Noise Management Level (NML) of 45dBA. The NMLs used are source from the EIS and Construction Noise and Vibration Impact Assessment prepared for the Project (*Environmental Impact Statement: Inland Rail: Illabo to Stockinbingal, 2022*). Noise modelling has been conducted using Hutchinson Weller’s KNOWNoise software.

Survey:

Map Overview (CH9400)

The following map is based on a residential property located on Ironbong Road at CH9400.



** Note as no impacts are anticipated based on the outputs of the model, the map only shows the residential receiver and the surrounding potential works locations.*

Noise Model Inputs:

The following inputs (equipment type, quantity and usage) were entered into the noise model.

08/01/2025 10:05AM - 08/01/2025 11:05AM

SURVEY12S0.2

Equipment type	Qty	Usage	Reduction	Sound power level ⓘ	
				LAeq	LAmx
Hand Tools (electric)	3	50%	0	96	99
Ute	3	100%	0	90	90

Activity Sound Power Level: 97



INLAND RAIL ILLABO TO STOCKINBINGAL

Noise Impact Outputs:

The following noise impact output identifies that there are not expected to be any noise impacts associated with survey works during the low impact works period.

SURVEY12S	Assessment ID	SURVEY12S SURVEY12S
Requested by: nextrail environment team	Proposed work dates:	8/01/2025 to 8/01/2025
Approved by: -	Results shown for:	Weekend Day period

Predicted noise levels and impact assessment

Id	Address	NCA	Land use	NML		Predicted noise level		Highly Affected	Impact	Additional mitigation measures
				Weekend Day	Cumulative	L _{Aeq, 15 minute}	L _{max}			
nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil

Boreholes:

Map Overview (CH2020)

The following map is based on a residential property located on Olympic Highway at CH2020





INLAND RAIL ILLABO TO STOCKINBINGAL

Noise Model Inputs:

The following inputs (equipment type, quantity and usage) were entered into the noise model.

Equipment type	Qty	Usage	Reduction	Sound power level ⓘ	
				LAeq	LAmx
Auger Drill Rig	1	40%	0	114	122
Flatbed Truck	1	10%	0	83	98
Ute	1	10%	0	75	90
Water pump small	1	20%	0	73	82

Activity Sound Power Level: 114

Please note: Small water pump is being used to simulate a trailer-mounted IBC water tank, that will be used during investigation.

Noise Impact Outputs:

The following noise impact output identifies that there are noticeable noise impacts associated with borehole works during the low impact works period.

I2S Bore Holes		Assessment ID		I2SBoreHoles	I2S-Bore-Holes
Requested by:	Proposed work dates:	27/11/2024 to 27/11/2024			
Approved by:	Results shown for:	Day period			

Predicted noise levels and impact assessment										
id	Address	NCA	Land use	Day	NML			Highly Affected	Impact	Additional mitigation measures
					Cumulative	L _{Aeq, 15 minute}	L _{max}			
1563232	2325 OLYMPIC HIGHWAY BETHUNGRA	NCA 1	RES	45	46	54	FALSE	N		
1563237	CARINYA 2184 OLYMPIC HIGHWAY ILLABO	NCA 1	RES	45	46	54	FALSE	N		



Noise Impact Outputs:

The following noise impact output identifies that there are moderately intrusive noise impacts associated with borehole works at this location during the low impact works period.

I2S Pot Holes	Assessment ID	2SPotHole I2S-pot-holes
Requested by: nextrail environment te	Proposed work dates:	27/11/2024 to 27/11/2024
Approved by: -	Results shown for:	Day period

Predicted noise levels and impact assessment

Id	Address	NCA	Land use	NML Day	Predicted noise level		Highly Affected	Impact	Additional mitigation measures
					Cumulative L _{Aeq, 15 minute}	L _{max}			
1563328	84 HIBERNIA STREET STOCKINBINGAL	NCA 1	RES	45	65	76	FALSE	MI	N

Test Pits:

Map Overview (CH1450)





Noise Model Inputs:

The following inputs (equipment type, quantity and usage) were entered into the noise model.

Equipment type	Qty	Usage	Reduction	Sound power level ⓘ	
				LAeq	LMax
Back Hoe (7.5 tonne JCB)	1	40%	0	92	101
Excavator (30 tonne)	1	40%	0	105	115
Hand Tools (electric)	1	50%	0	91	99
Ute	1	10%	0	75	90
Activity Sound Power Level: 105					

Noise Impact Outputs:

The following noise impact output identifies that there are noticeable noise impacts at this location associated with test pit works during the low impact works period.

I2STestPit		Assessment ID		I2S	I2STESTPIT				
Requested by: nextrail environm		Proposed work dates:		25/11/2024	to 25/11/2024				
Approved by:		Results shown for:		Day period					
Predicted noise levels and impact assessment									
Id	Address	NCA	Land Day	NML		Lmax	Highly Affected	Impact	Additional mitigation measures
				Cumulative	Predicted noise level				
1562888	CARINYA 2184 OLYMPIC HIGHWAY ILLAB	NCA 1	RES	45	48	58	FALSE	N	



INLAND RAIL ILLABO TO STOCKINBINGAL

Slot Trenches

Map Overview (CH37600)

The following map is based on residential properties located on Wood, Troy Hibernia and Adams St at CH37600.



Noise Model Inputs:

The following inputs (equipment type, quantity and usage) were entered into the noise model.

Equipment type	Qty	Usage	Reduction	Sound power level	
				LAeq	LAmx
Excavator (06 tonne)	1	40%	0	90	101
Ute	1	20%	0	78	90
Vacc truck	1	75%	0	111	117

Activity Sound Power Level: 111



Noise Impact Outputs:

The following noise impact output identifies that there are noticeable (N) and clearly audible (CA) noise impacts associated with slot trench works during the low impact works period.

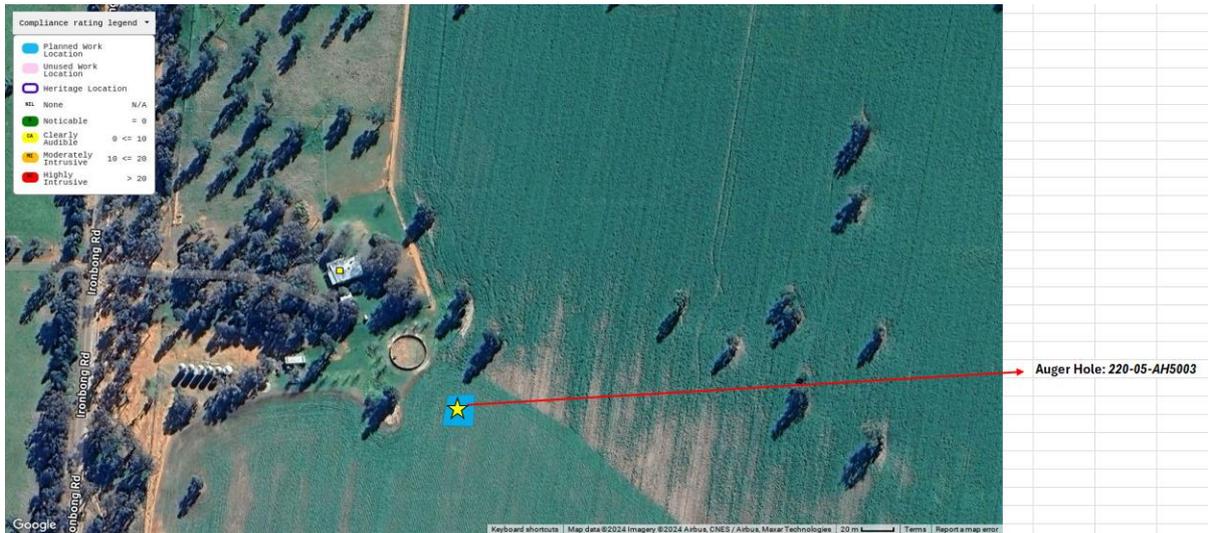
I2S Slot Trench	Assessment ID	I2S-SlotTrench I2S Slot Trench
Requested by: nextrail environme	Proposed work dates:	27/11/2024 to 27/11/2024
Approved by: -	Results shown for:	Day period

Predicted noise levels and impact assessment

Id	Address	NCA	Land Use	Day	NML			Highly Affected	Impact	Additional mitigation measures
					Cumulative	L _{Aeq, 15 minute}	L _{max}			
1563566	84 HIBERNIA STREET STOCKINBINGAL	NCA 1	RES	45	58	58	64	FALSE	CA	N
1563700	71 TROY STREET STOCKINBINGAL	NCA 1	RES	45	55	55	61	FALSE	CA	N
1563536	33 WOOD STREET STOCKINBINGAL	NCA 1	RES	45	52	52	59	FALSE	CA	N
1563631	72 HIBERNIA STREET STOCKINBINGAL	NCA 1	RES	45	52	52	58	FALSE	CA	N
1563561	64 HIBERNIA STREET STOCKINBINGAL	NCA 1	RES	45	50	50	56	FALSE	N	
1563537		NCA 1	RES	45	48	48	55	FALSE	N	
1563586	22 WOOD STREET STOCKINBINGAL	NCA 1	RES	45	48	48	54	FALSE	N	
1563678	57 TROY STREET STOCKINBINGAL	NCA 1	RES	45	47	47	54	FALSE	N	
1563544	20 WOOD STREET STOCKINBINGAL	NCA 1	RES	45	47	47	53	FALSE	N	
1563511		NCA 1	RES	45	47	47	53	FALSE	N	
1563588	18 WOOD STREET STOCKINBINGAL	NCA 1	RES	45	46	46	53	FALSE	N	
1563543	21 WOOD STREET STOCKINBINGAL	NCA 1	RES	45	46	46	52	FALSE	N	
1563677	22 ADAMS STREET STOCKINBINGAL	NCA 1	RES	45	46	46	52	FALSE	N	
1563526	52 HIBERNIA STREET STOCKINBINGAL	NCA 1	RES	45	45	45	52	FALSE	N	
1563517	19 WOOD STREET STOCKINBINGAL	NCA 1	RES	45	45	45	51	FALSE	N	

Auger Holes:

The following map is based on residential properties located on Ironbong Road at CH37600.



Noise Model Inputs:

The following inputs (equipment type, quantity and usage) were entered into the noise model.

I2SAugerHoles

Equipment type	Qty	Usage	Reduction	Sound power level ⓘ	
				L _{Aeq}	L _{Amax}
Excavator (25 tonne)	1	40%	0	101	110
Flatbed Truck	1	10%	0	83	98
Ute	1	10%	0	75	90

Activity Sound Power Level: 101

Noise Impact Outputs:

The following noise impact output identifies that there are noticeable noise impacts at this location associated with test pit works during the low impact works period.

I2SAugerHoles	Assessment ID	3AugerHol I2SAugerHoles
Requested by:	Proposed work dates:	28/11/2024 to 28/11/2024
Approved by: -	Results shown for:	Day period

Predicted noise levels and impact assessment

id	Address	NCA	Land use	Day	NML	Predicted noise level		Highly Affected	Impact	Additional mitigation measures
						Cumulative L _{Aeq, 15 minute}	L _{max}			
1563839	582 IRONBONG ROAD	NCA 1	RES	45	48	57	FALSE	CA	N	

Geophysics:

Map Overview (CH38450-39000):

The following map is based on residential properties located in and around Stockinbingal at chainages 38450-39000.



Noise Model Inputs:

The following inputs (equipment type, quantity and usage) were entered into the noise model.

Equipment type	Qty	Usage	Reduction	Sound power level	
				LAeq	LMax
Auger (hand)	1	20%	0	99	111
Hand Tools (electric)	1	20%	0	87	99
Ute	2	30%	0	83	90

Activity Sound Power Level: 99

Noise Impact Outputs:

The following noise impact output identifies that there are noticeable noise impacts at this location associated with test pit works during the low impact works period.

I2S-GeoPhysics		Assessment ID		I2S-GeoPhysics	I2S-GeoPhysics				
Requested by:		Proposed work dates:	27/11/2024	to	27/11/2024				
Approved by:		Results shown for:	Day period						
Predicted noise levels and impact assessment									
Id	Address	NCA	Land use	NML Day	Predicted noise level		Highly Affected	Impact	Additional mitigation measures
					Cumulative LAeq, 15 minute	Lmax			
		NCA1	RES	45	46	57	FALSE	N	

Ballast Push-Tube:

Map Overview (CH120-350):

The following map is based on residential properties located around Olympic Highway at chainages 120-350.



Noise Model Inputs:

The following inputs (equipment type, quantity and usage) were entered into the noise model.

05/03/2025 07:00AM - 05/03/2025 06:00PM

Standard hours model of ballast push tubes at Illabo

Equipment type	Qty	Usage	Reduction	Sound power level ⓘ	
				LAeq	LAmx
Auger Drill Rig	1	20%	0	111	122
Back Hoe (7.5 tonne JCB)	1	20%	0	89	101
Flatbed Truck	1	30%	0	88	98
Hand Tools (electric)	1	20%	0	87	99
Light vehicle	2	40%	0	84	90

Activity Sound Power Level: 111



Noise Impact Outputs:

The following noise impact output identifies that there are noticeable noise impacts at this location associated with ballast push-tube works during the low impact works period.

Noise model summary:

A scenario-based approach has been applied to the low impact works assessment to assess potential noise impacts associated with Low Impact Works (LIW). A summary of the noise impacts associated with the works are included in the table below.

Activity	dBA exceedance of NML	Number of properties affected
Survey	0	0
Borehole	1	2
Test Pit	3	1
Slot Trench	13	15
Geophysics	1	0 (no identifiable residential properties)
Auger Hole	3	1
Pot Hole	20	1
Pavement Core	21	8
Ballast push-tube	0	0

Conclusion and Mitigation:

Although noise impacts are expected to be minor based on the nature of the low impact works and their planned hours (standard hours), mitigation measures will be implemented to manage noise and vibration impacts. The following measures will be implemented where reasonable and practicable in accordance with the ARTC NSW Noise and Vibration Framework Specification.

Mitigation measures
Using portable temporary acoustic screens where effective to screen the noise emissions.
Avoid the simultaneous operation of noisy plant within discernible range of noise sensitive receivers where possible.
Where available, equipment selection will favour the use of quieter and less vibration emitting construction methods.
Using noise source controls, such as the use of residential class mufflers, to reduce noise from all plant and equipment including bulldozers, cranes, graders, excavators and trucks
Static plant should be located as far as possible from sensitive receivers, be located to take advantage of natural acoustic screening such as terrain, site buildings, etc and where necessary for reduction of noise impacts, provided with an acoustic enclosure.



A telephone, email and web-based community information service shall be established to allow the community to obtain additional information on construction activities, provide feedback or make a complaint.
Regular communications on the activities and progress of the proposal shall be provided to the community (e.g. via newsletter, email and/or website).
Noise or vibration monitoring in response to complaints shall be undertaken where the results or the process assist in resolving or understanding the receiver's issue.
Where possible, construction compounds should be located a minimum of 1km from the nearest resident or noise sensitive receiver.
Where vibration levels are predicted to approach the criteria for cosmetic building damage or limits for critical or sensitive areas, attended vibration measurements shall be undertaken at the commencement of vibration generating activities to confirm that vibration limits are within the acceptable range.
Where vibration and overpressure from blasting or construction activities are predicted to approach the relevant limits, dilapidation surveys on potentially affected buildings shall be undertaken.
Early morning works between 6am-7am will be low impact noise activities ¹
A respite period shall be provided for receivers impacted by weekend work (see Definitions). The respite period will ensure that no single receiver is impacted for two consecutive periods of weekend work. Respite will be provided every second weekend commencing at 1pm on Saturday and concluding at 7am on Monday.

Note 1: Work is limited to low impact works which generate low levels of noise and vibration at the nearest receivers (e.g. light vehicle movements, deliveries, site shed set up, toolbox talks, generators, hand-tools) and where the relevant NML or vibration criteria are not predicted to be exceeded or as defined by the relevant Conditions of Approval.

As a minimum, all affected landowners will be notified of the works to be undertaken in or around their properties at least 7 days prior to works commencement in accordance with the Community Communication Strategy (CCS).

Additionally, pre-starts and inductions will detail noise mitigation measures for all personnel, which includes that;

- Non-tonal reversing alarms must be fitted and used on all construction vehicles and mobile plant.
- Quieter and less noise emitting construction methods should be used whenever possible.
- Avoid shouting and slamming doors to minimise unnecessary noise.
- All vehicles accessing the project site must comply with local speed restrictions.
- Plant equipment engines should be turned off when not in use to reduce potential noise impacts on surrounding stakeholders.

Based on the assessment of noise impacts, these works can be undertaken as low impact works.



Appendix C – MTS Geotechnical Works Heritage Advice Letter



29 January 2025

Tess Anastakis
Environment and Sustainability Graduate
John Holland Pty Ltd
Level 5, 15 Bourke Road
Mascot NSW 2020

RE: Inland Rail, Ilabo to Stockinbingal - Heritage Advice on Geotechnical Activities

Dear Tess,

Thank you for requesting heritage advice on proposed geotechnical activities within the Inland Rail Ilabo to Stockinbingal Project area. We understand that John Holland requires access to certain parts of the Project area to conduct the following geotechnical activities:

- Bore holes
- Test pits
- Auger holes
- Survey
- Geophysics
- Pot holing
- Slot trenching
- Pavement cores

It is understood that ground disturbing geotechnical activities (i.e. bore holes, test pits, auger holes, pot holing, slot trenching and pavement cores) are only planned outside the Zones of Aboriginal Sensitivity identified by GML. In addition, no geotechnical ground disturbing activities are proposed in Zones 5, 6, 9 and 10, as they are subject to archaeological survey, test and salvage excavation as part of our current archaeological investigation and require further heritage approval. These no-ground disturbance zones are shown in Figure 1 attached.

Given the careful placement of these activities outside the no-ground disturbance zones, conducting these activities would not result in any harm to Aboriginal sites and objects and would be permissible. We support the following mitigations measures proposed by John Holland to avoid any impacts to Aboriginal heritage in the no-ground disturbance zones:

- The no-ground disturbance zones will be identified on the ground with a 25m buffer.
- Bollards will be placed to temporarily delineate the no-ground disturbance zones.
- All site personnel will be inducted to the Project before the commencement of geotechnical activities. This induction will include a visual depiction of the no-ground disturbance zones and their restrictions.
- On-site personnel will be regularly briefed on the exact locations of the no-ground disturbance zones.
- Hard-copies of maps showing the no-ground disturbance zones will be placed in site utes and provided to all JHG site personnel via email.
- Site personnel will be provided access to geospatial data which show the no-ground disturbance zones (including the 25m buffer).
- The Unexpected and Incidental Finds Procedures for Heritage are available in all site utes and provided to all JGH site personnel via email.



With regards to geotechnical survey, it is understood that John Holland and appointed Subcontractors require vehicle and pedestrian access within the Zones of Aboriginal Sensitivity to validate and visually assess these areas for future geotechnical investigations. These geotechnical surveys would not result in any ground disturbance and, as such, would be permissible. We recommend that existing vehicle tracks be used to access these areas where possible to minimise ground disturbance.

If any further heritage advice on specific activities is required, please don't hesitate to call or email.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Fiona Leslie', with a long, sweeping flourish extending to the right.

Fiona Leslie
Director / Principal Heritage Consultant

Attachment: Figure 1 – no-ground disturbance zones / zones of Aboriginal sensitivity



Appendix D—Community Notification

Low Impact Works Illabo to Stockinbingal 1 – 30 April 2025



Throughout **April 2025**, John Holland will continue with their low impact works including site investigations as part of the Inland Rail Illabo to Stockinbingal (I2S) project in New South Wales.

Description of works

Ahead of construction, site investigations are required to provide essential information to assist with design. Inland Rail's contractor, John Holland, will undertake work as part of these investigations.

Activities will include (subject to approval):

- Surveying the project/property boundaries, road and pavement levels at multiple locations
- Underground and overhead utility locating and mapping using non-destructive digging (NDD)
- Geotechnical investigation works including drilling and soil sampling
- Environmental investigations through inspection and monitoring activities
- Installation of fencing and gates in consultation with landowners
- Dilapidation survey of existing roads and buildings and road traffic counts on Burley Griffin Way.
- Establishment of temporary workers' accommodation facilities on Grogan Road, north of Stockinbingal. (More information will be provided in a separate notification).

What can I expect?

- Light vehicles entering and exiting the temporary site facilities between 6am – 7pm Monday to Saturday
- Works occurring between 7am – 6pm, Monday to Saturday
- Property owners will be contacted regarding access prior to works commencing

- Traffic management may be required in some locations where works are occurring close to roads or for safe access. Please observe all traffic management instructions and signage
- Reduced speed limits down to 40km/h near works, where applicable
- Workers operating machinery, equipment, hand tools and service vehicles at each site
- Nearby residents may hear some noise during these works and can expect some additional construction workers and vehicles in the area.

Machinery used

Excavators, drill rigs, small truck mounted drill rig, NDD (Non-destructive digging) truck, water carts and support vehicles, workers using hand tools, survey equipment, traffic management equipment and signage.

How we're managing impacts

- Traffic management and reduced road speeds, where applicable
- Environmental controls in place
- Access to private properties will be maintained
- Temporary fencing around excavation sites

Cancellation of works

Works can sometimes be cancelled at short notice depending on weather and other factors. Should this occur, works will be rescheduled.

For any concerns or enquiries phone 1800 732 761 or email inlandrailnsw@inlandrail.com.au

Thank you for your patience and cooperation while we carry out these works.

Scan QR code for latest information.



☎ 1800 732 761 @ inlandrailnsw@inlandrail.com.au

✉ GPO Box 14, Sydney NSW 2000

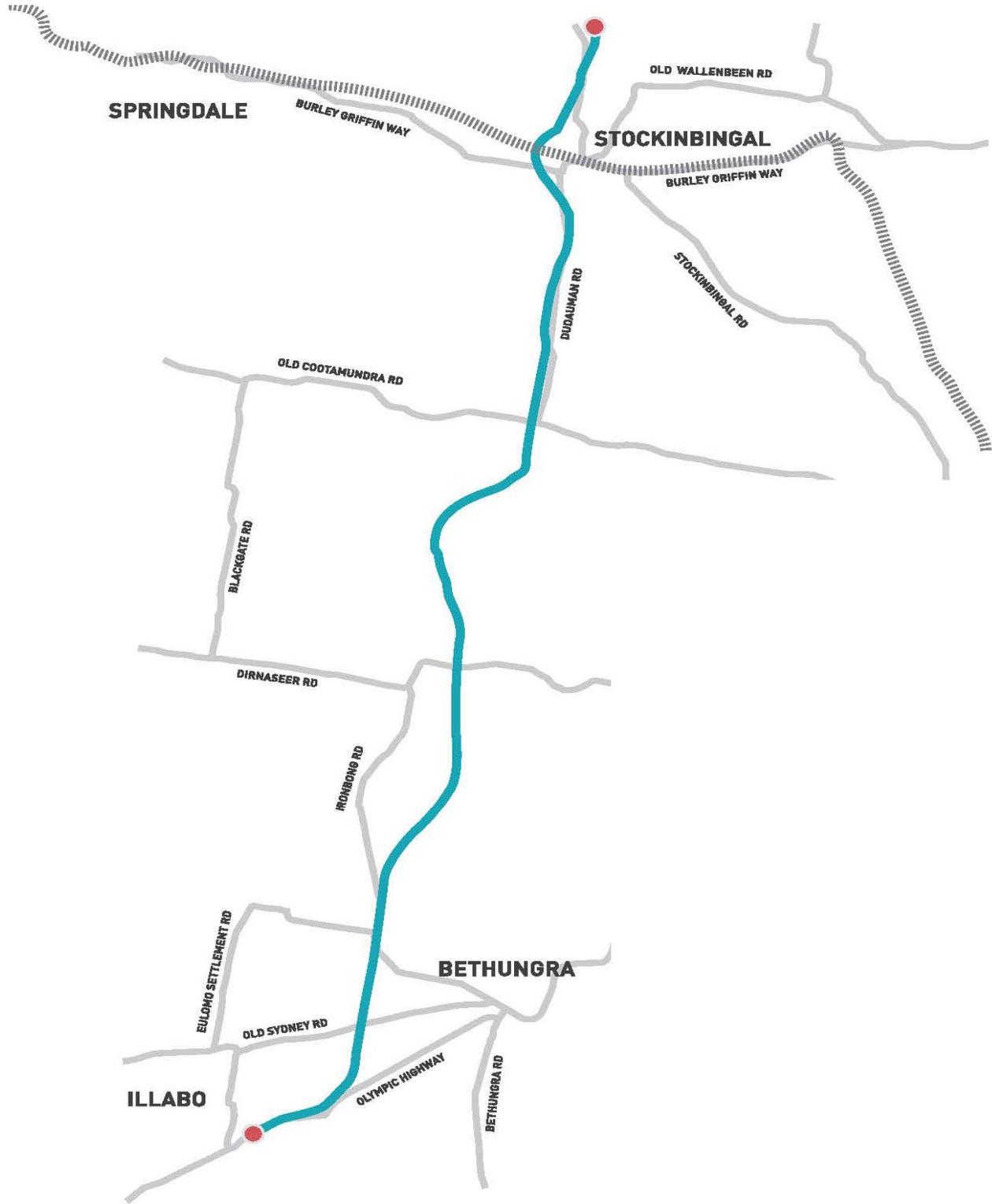


Please call our free translation and interpreter service on 131 450 (24 hours a day) if English is your second language and you need help reading this document



Work locations

Work will occur at various locations within the project boundaries (shown in blue on the map below) and will be discussed with individual property owners / lessees prior to commencement.



☎ 1800 732 761 @ inlandrailnsw@inlandrail.com.au

✉ GPO Box 14, Sydney NSW 2000

🗣 Please call our free translation and interpreter service on 131 450 (24 hours a day) if English is your second language and you need help reading this document

**INLAND
RAIL** 



Appendix E – Low Impact Work Biodiversity Advice

14 March 2025



Daniel Lidbetter
Environmental Approvals Manager
Inland Rail Illabo to Stockinbingal
John Holland Pty Ltd
Level 5, 15 Bourke Road
Mascot NSW 2020

daniel.lidbetter3@jhg.com.au
cc: tess.anastakis@jhg.com.au

Dear Daniel

Re: 240107 – Inland Rail, Illabo to Stockinbingal - Biodiversity Advice, Low Impact Works

Introduction

Thank you for requesting biodiversity advice on approved Low Impact Work (LIW) within the Inland Rail Illabo to Stockinbingal Project area prior to construction. John Holland needs to conduct LIW (Table 2) activities within the Project area under the definition of LIW and Construction as described in the conditions of consent (Table 4). LIW activities must not impact biodiversity values of the CSSI # SSI-9406 to be compliant with Conditions of Approval (CoA) including (but not limited to) E26, E28 and E29. In addition, LIW must not trigger the requirement to retire offset credits.

Low Impact Works are unlikely to result in significant ground or native vegetation disturbance over and above routine agricultural cropping, grazing and maintenance activities. To protect project biodiversity values LIW activities are limited to previously impacted land. Land **Status** (Table 1) has been conservatively derived from existing use and the vegetation zone (PCT and Condition as per the BDAR) where native vegetation is present at the LIW location. The land status used in Tables 1, 2 and 3 include:

- Existing roads and tracks
- Category 1 land (cropping land)
- Poor quality native vegetation (no shrubs & exotic groundcover), (Table 1)
- High quality native vegetation or unsurveyed land or derived grassland, (Table 1)

Table 1 Native Vegetation zones (PCT and condition) used to determine land status

Vegetation Type*	Condition*	Status
PCT 79 River Red Gum shrub/grass riparian tall woodland or open forest wetland mainly in the upper slopes sub-region of the NSW South Western Slopes Bioregion and western South Eastern Highlands Bioregion	Moderate	High
	Poor	Poor
PCT 76 Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	Good	High
	Moderate	High
	Poor	Poor
	Low -DNG	Poor
PCT 80 Western Grey Box – White Cypress Pine tall woodland on loam soil on	Moderate	High

Wagga Wagga

35 Kincaid Street (PO Box 5464) Wagga Wagga NSW 2650

T. (02) 6971 9696 E. ngh@nghconsulting.com.au W. nghconsulting.com.au ABN 31 124 444 622 ACN 124 444 622

Vegetation Type*	Condition*	Status
alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	Poor	Poor
PCT 266 White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion	Moderate	High
	Poor	Poor
	Low -DNG	Poor
PCT 276 Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion	Moderate	High
	Poor, canopy only	Poor
PCT 277 Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	Moderate	High
	Poor	Poor
	Low -DNG	Poor
	Planted	Poor
PCT 309 Black Cypress Pine – Red Stringybark – red gum – box low open forest on siliceous rocky outcrops in the NSW South Western Slopes Bioregion	Moderate	High
PCT 347 White Box – Blakely's Red Gum shrub/grass woodland on metamorphic hillslopes in the mid-southern part of the upper slopes subregion of the NSW South Western Slopes Bioregion	Moderate	High
	Poor	Poor

*PCT condition derived from BDAR

Note: Planted native vegetation will generate offset requirements. Apply traffic controls as per Table 2 and Table 3.

Land previously assessed as native vegetation has been ascribed a status based on Vegetation zone, see Table 1 and the **Process** below.

The level of controls for LIW increases with the quality of biodiversity to protect project biodiversity values. Where the controls for LIW are implemented vegetation integrity, habitat suitability, threatened species abundance, vegetation abundance, habitat connectivity, threatened species movement, flight path integrity and water sustainability would be maintained across the project.

As such, conducting LIW activities would not adversely affect, potentially adversely affect or adversely impact the biodiversity values of threatened species or Critically Endangered Ecological Community (CEEC) / Endangered Ecological Community (EEC) / Threatened Ecological Community (TEC) and would be permissible under the consent when the traffic light controls are followed (Table 3).

Note, no threatened flora species were recorded on site during field surveys for the Environmental Impact Statement (EIS). Threatened fauna species recorded during field surveys for the EIS are highly mobile and unlikely to be impacted by LIW as their foraging, nesting and breeding habitat features would not be impacted. The minor transient and infrequent nature of LIW activities are unlikely to create sufficient noise and vibration to disturb roosting or nesting fauna.

A traffic light system of controls has been adopted to manage the potential for impacts to biodiversity values across the project from LIW activities. The traffic light system uses three terms, including:

- **Allow** – negligible potential for impact to project wide biodiversity values when controls followed

- **Caution** - low potential for impact to project wide biodiversity values additional controls to follow
- **Delay** – high risk of impact to project wide biodiversity values, delay until CEMP and subplans are approved, additional surveys completed and biodiversity offset credits are retired, unless otherwise approved by the minister

Process

An ecologist will assess LIW areas and complete an Ecological Clearance Form prior to works to reduce the potential for inadvertent impacts to biodiversity values as a result of LIW.

- Identify the location for the LIW and required access.
- Determine through reference to constraints mapping/site observations the land status in Table 2.
- Check Table 2 to determine the LIW and if access is allowed, check also if caution is required or if the LIW should be delayed until “construction”.
- If the LIW is allowed, or if caution is required, refer to the traffic light controls in Table 3.
- Determine if the traffic light controls can be implemented or not.
- Ecologist to complete an Ecological Clearance Form and lodge same with Senior Project Engineer (or delegate).
- If the traffic light controls can be implemented, document the above steps in an Excavation Permit and submit to the Senior Project Engineer (or delegate) for approval.
- Once the Excavation Permit is approved, implement the controls in Table 3 and proceed with works.
- Any breach of the controls should be reported to the supervising engineer as a non-conformance for assessment and subsequent action.

Where this procedure and controls can be implemented it is expected that there will be no impact to biodiversity values across the project adversely affecting threatened species or CEEC / EEC / TEC and would be permissible under the consent.

If you have any questions, please contact me or Jane Love. We would be pleased to discuss any aspect of this letter with you.

Yours sincerely,



Michial Sutherland

Manager

0427953053

Table 2: LIW activity v land type and traffic light controls

Low Impact Work	Existing roads and tracks.	Category 1 land (cropping land)	Poor quality native vegetation (Table 1)	High quality native veg or unsurveyed land or derived grassland (Table 1)
Cadastral survey	Allowed	Allowed	Allowed	Caution
Boreholes	Allowed	Allowed	Caution	Delay
Geotechnical test pits	Allowed	Allowed	Caution	Delay
Subsoil and topsoil test pits	Allowed	Allowed	Caution	Delay
Service investigations	Allowed	Allowed	Caution	Delay
Auger holes	Allowed	Allowed	Caution	Caution
Erosion threshold velocity testing	Allowed	Allowed	Caution	Delay
Pavement cores	Allowed	N/A	N/A	N/A
Geophysics	Allowed	Allowed	Allowed	Caution
Establish minor ancillary facilities	Allowed	Allowed	Caution	Delay
Enviro. survey, investigation / site works	Allowed	Allowed	Allowed	Caution
Construct minor access roads	Allowed	Allowed	Caution	Delay
Corridor fencing	Allowed	Allowed	Caution	Caution

Table 3: Traffic light controls

Low Impact Work	Existing roads and tracks	Category 1 land (cropping land)	Poor quality native vegetation defined in Table 1	Moderate to high quality native veg or unsurveyed land or derived native grassland defined in Table 1
Cadastral survey	<ul style="list-style-type: none"> • Use existing tracks • No removal of native trees • No pruning of limbs over 50 mm diameter. • Use existing creek crossings • Remove all waste • Use vehicle hygiene 	<ul style="list-style-type: none"> • Use existing tracks where available • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings • Remove all waste • Use vehicle hygiene 	<ul style="list-style-type: none"> • Target previously disturbed areas only. • No removal of native trees • No pruning of limbs over 50 mm diameter or hollow-bearing • Use existing tracks where available • Avoid crossing flowing creeks • Use formed creek crossings where available • Remove all waste • Use vehicle hygiene 	<ul style="list-style-type: none"> • Target previously disturbed areas only. • No more than 0.2 m² ground disturbance • No pruning of limbs over 50 mm diameter or hollow-bearing ** • No removal of native trees • Avoid crossings flowing creeks • Use formed creek crossings where available • Remove all waste • Use vehicle hygiene • Light vehicles only • Stable soil conditions • Use existing tracks. Where there is no existing track, limit vehicle movements to no more than twice at any given location.
Boreholes	<ul style="list-style-type: none"> • Use existing tracks • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings • Remove all waste • Use vehicle hygiene 	<ul style="list-style-type: none"> • Use existing tracks where available • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings • Remove all waste • Use vehicle hygiene 	<ul style="list-style-type: none"> • Target previously disturbed areas only • No more than 5 m² ground disturbance • No removal of native trees • No pruning of limbs over 50 mm diameter or hollow-bearing** • Use existing tracks where available • Avoid crossing flowing creeks • Use formed creek crossings where available • Remove all waste • Use vehicle hygiene • Light vehicles only • Stable soil conditions • Ecologist review and signoff 	Delay
Geotechnical test pits	<ul style="list-style-type: none"> • Use existing tracks • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings • Remove all waste • Use vehicle hygiene 	<ul style="list-style-type: none"> • Use existing tracks where available • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings • Remove all waste • Use vehicle hygiene • Topsoil, fertilise & reseed 	<ul style="list-style-type: none"> • Target previously disturbed areas only • No more than 5 m² ground disturbance • No removal of native trees • No pruning of limbs over 50 mm diameter or hollow-bearing ** • Use existing tracks where available • Avoid crossing flowing creeks • Use formed creek crossings where available • Remove all waste 	Delay

Low Impact Work	Existing roads and tracks	Category 1 land (cropping land)	Poor quality native vegetation defined in Table 1	Moderate to high quality native veg or unsurveyed land or derived native grassland defined in Table 1
	<ul style="list-style-type: none"> • Topsoil, fertilise & reseed, or reseal 		<ul style="list-style-type: none"> • Use vehicle hygiene • Light vehicles only • Stable soil conditions • Ecologist review and signoff • Topsoil, fertilise & reseed 	
Subsoil & topsoil test pits	<ul style="list-style-type: none"> • Use existing tracks • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings • Remove all waste • Use vehicle hygiene • Topsoil, fertilise & reseed, or reseal 	<ul style="list-style-type: none"> • Use existing tracks where available • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings • Remove all waste • Use vehicle hygiene • Topsoil, fertilise & reseed 	<ul style="list-style-type: none"> • Target previously disturbed areas only • No more than 5 m² ground disturbance • No removal of native trees • No pruning of limbs over 50 mm diameter or hollow-bearing** • Use existing tracks where available • Avoid crossing flowing creeks • Use formed creek crossings where available • Remove all waste • Use vehicle hygiene • Light vehicles only • Stable soil conditions • Ecologist review and signoff • Topsoil, fertilise & reseed 	Delay
Service investigations	<ul style="list-style-type: none"> • Use existing tracks • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings • Remove all waste • Use vehicle hygiene • Topsoil, fertilise & reseed, or reseal 	<ul style="list-style-type: none"> • Use existing tracks where available • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings • Remove all waste • Use vehicle hygiene • Topsoil, fertilise & reseed 	<ul style="list-style-type: none"> • Target previously disturbed areas only • No more than 5 m² ground disturbance • No removal of native trees • No pruning of limbs over 50 mm diameter or hollow-bearing** • Use existing tracks where available • Avoid crossing flowing creeks • Use formed creek crossings where available • Remove all waste • Use vehicle hygiene • Light vehicles only • Stable soil conditions • Ecologist review and signoff • Topsoil, fertilise & reseed 	Delay
Auger holes	<ul style="list-style-type: none"> • Use existing tracks • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings 	<ul style="list-style-type: none"> • Use existing tracks where available • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings 	<ul style="list-style-type: none"> • Target previously disturbed areas only. • No more than 2 m² ground disturbance • No removal of native trees • No pruning of limbs over 50 mm diameter or hollow-bearing** • Use existing tracks where available 	Delay

Low Impact Work	Existing roads and tracks	Category 1 land (cropping land)	Poor quality native vegetation defined in Table 1	Moderate to high quality native veg or unsurveyed land or derived native grassland defined in Table 1
	<ul style="list-style-type: none"> Remove all waste Use vehicle hygiene 	<ul style="list-style-type: none"> Remove all waste Use vehicle hygiene 	<ul style="list-style-type: none"> Avoid crossing flowing creeks Use formed creek crossings where available Remove all waste Use vehicle hygiene Light vehicles only Stable soil conditions Ecologist review and signoff Topsoil, fertilise & reseed 	
Erosion threshold velocity testing	<ul style="list-style-type: none"> Use existing tracks No removal of native trees No pruning of limbs over 50 mm diameter Use existing creek crossings Remove all waste Use vehicle hygiene Topsoil, fertilise & reseed, or reseal 	<ul style="list-style-type: none"> Use existing tracks where available No removal of native trees No pruning of limbs over 50 mm diameter Use existing creek crossings Remove all waste Use vehicle hygiene Topsoil, fertilise & reseed 	<ul style="list-style-type: none"> Target previously disturbed areas only. No more than 4 m² ground disturbance No removal of native trees No pruning of limbs over 50 mm diameter or hollow-bearing** Use existing tracks where available Avoid crossing flowing creeks Use formed creek crossings where available Remove all waste Use vehicle hygiene Light vehicles only Stable soil conditions Ecologist review and signoff Topsoil, fertilise & reseed 	Delay
Pavement Cores	<ul style="list-style-type: none"> Use existing tracks No removal of native trees No pruning of limbs over 50 mm diameter Use existing creek crossings Remove all waste Use vehicle hygiene Topsoil, fertilise & reseed, or reseal 	Not Applicable	Not Applicable	Not Applicable
Geophysics	<ul style="list-style-type: none"> Use existing tracks No removal of native trees No pruning of limbs over 50 mm diameter 	<ul style="list-style-type: none"> Use existing tracks where available No removal of native trees No pruning of limbs over 50 mm diameter 	<ul style="list-style-type: none"> No removal of native trees No pruning of limbs over 50 mm diameter or hollow-bearing Use existing tracks where available Avoid crossing flowing creeks 	<ul style="list-style-type: none"> Use existing tracks where available No removal of native trees No pruning of limbs over 50 mm diameter or hollow-bearing** Avoid crossings flowing creeks

Low Impact Work	Existing roads and tracks	Category 1 land (cropping land)	Poor quality native vegetation defined in Table 1	Moderate to high quality native veg or unsurveyed land or derived native grassland defined in Table 1
	<ul style="list-style-type: none"> • Use existing creek crossings • Remove all waste • Use vehicle hygiene 	<ul style="list-style-type: none"> • Use existing creek crossings • Remove all waste • Use vehicle hygiene 	<ul style="list-style-type: none"> • Use formed creek crossings where available • Remove all waste • Use vehicle hygiene 	<ul style="list-style-type: none"> • Use formed creek crossings where available • Remove all waste • Use vehicle hygiene • Light vehicles only • Stable soil conditions • Use existing tracks. Where there is no existing track, limit vehicle movements to no more than twice at any given location.
Establish minor ancillary facilities	<ul style="list-style-type: none"> • Minimise the footprint • Use existing tracks • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings • Remove all waste • Use vehicle hygiene • Topsoil, fertilise & reseed, or reseed 	<ul style="list-style-type: none"> • Minimise the footprint • Use existing tracks where available • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings • Remove all waste • Use vehicle hygiene • Topsoil, fertilise & reseed 	Delay	Delay
Enviro. survey, investigation / site works	<ul style="list-style-type: none"> • Use existing tracks • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings • Remove all waste • Use vehicle hygiene • Topsoil, fertilise & reseed, or reseed 	<ul style="list-style-type: none"> • Use existing tracks where available • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings • Remove all waste • Use vehicle hygiene • Topsoil, fertilise & reseed 	<ul style="list-style-type: none"> • No removal of native trees • No pruning of limbs over 50 mm diameter or hollow-bearing • Use existing tracks where available • Avoid crossing flowing creeks • Use formed creek crossings where available • Remove all waste • Use vehicle hygiene • Light vehicles only • Stable soil conditions • Ecologist review and signoff • Topsoil, fertilise & reseed 	<ul style="list-style-type: none"> • Target previously disturbed areas only • No more than 2 m² ground disturbance • Use existing tracks • No removal of native trees • No pruning of limbs over 50 mm diameter or hollow-bearing** • Avoid crossings flowing creeks • Use formed creek crossings where available • Remove all waste • Use vehicle hygiene • Light vehicles only • Stable soil conditions • Ecologist review and signoff • Topsoil, fertilise & reseed • Use existing tracks where available. Where there is no existing track, limit vehicle movements to no more than twice at any given location.

Low Impact Work	Existing roads and tracks	Category 1 land (cropping land)	Poor quality native vegetation defined in Table 1	Moderate to high quality native veg or unsurveyed land or derived native grassland defined in Table 1
Construct minor access roads	<ul style="list-style-type: none"> • Not connected to a public road • Use existing tracks • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings • Remove all waste • Use vehicle hygiene • Topsoil, fertilise & reseed, or reseal 	<ul style="list-style-type: none"> • Use existing tracks where available • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings • Remove all waste • Use vehicle hygiene • Topsoil, fertilise & reseed 	<ul style="list-style-type: none"> • Use existing tracks where available • No removal of native trees • No pruning of limbs over 50 mm diameter or hollow-bearing** • Avoid crossing flowing creeks • Use formed creek crossings where available • Remove all waste • Use vehicle hygiene • Light vehicles only • Stable soil conditions • Ecologist review and signoff • Topsoil, fertilise & reseed 	Delay
Corridor fencing	<ul style="list-style-type: none"> • Use existing tracks • No removal of native trees • No pruning of limbs over 50 mm diameter. • Use existing creek crossings • Remove all waste • Use vehicle hygiene 	<ul style="list-style-type: none"> • Use existing tracks where available • No removal of native trees • No pruning of limbs over 50 mm diameter • Use existing creek crossings • Remove all waste • Use vehicle hygiene 	<ul style="list-style-type: none"> • Use existing tracks where available • No removal of native trees • No pruning of limbs over 50 mm diameter or hollow-bearing** • Avoid crossing flowing creeks • Use formed creek crossings where available • Remove all waste • Use vehicle hygiene • Light vehicles only • Stable soil conditions • Ecologist review and signoff 	<ul style="list-style-type: none"> • Target previously disturbed areas only • No more than 2 m² ground disturbance • Use existing tracks • No removal of native trees • No pruning of limbs over 50 mm diameter or hollow-bearing** • Avoid crossing flowing creeks • Use formed creek crossings where available • Remove all waste • Use vehicle hygiene • Light vehicles only • Stable soil conditions • Ecologist pre-works inspection, review and signoff • Use existing tracks where available. Where there is no existing track, limit vehicle movements to no more than twice at any given location.

** - Pruning is not considered as clearing under NSW biodiversity legislation and guidance. The 50 mm limb diameter limitation on pruning restricts the potential to impact limbs that may provide habitat for any native fauna.

Table 4: SSI-940 CoAs and Terms and Definitions 6

Term	Definition
Construction	Includes work required to construct the CSSI as defined in the documents listed in Condition A1 , including commissioning trials of equipment and temporary use of any part of the CSSI, but excluding low impact work which is carried out or completed prior to approval of the CEMP.
Low Impact work	<p>Work defined as low impact includes:</p> <ul style="list-style-type: none"> (a) survey works including carrying out general alignment surveys, installing survey controls (including installation of global positioning system (GPS)), installing repeater stations, carrying out surveys of existing and future utilities and building and road dilapidation surveys; (b) investigations including investigative drilling, contamination investigations and excavation; (c) installation of mitigation measures including erosion and sediment controls, temporary exclusion fencing for sensitive areas and acoustic treatments; (d) property acquisition adjustment work including installation of property fencing; (e) archaeological testing under the <i>Code of practice for archaeological investigation of Aboriginal objects in NSW</i> (Department of Environment Climate Change and Water, 2010) or archaeological monitoring undertaken in association with Low Impact work to ensure that there is no impact on heritage items; (f) archaeological and cultural salvage undertaken in accordance with a strategy or salvage operation required by the conditions of this approval; (g) maintenance work to existing buildings and structures as required to facilitate the carrying out of the CSSI; and (h) other activities determined by the ER to have minimal environmental impact which may include relocation and connection of utilities, establishment of minor ancillary facilities in accordance with Condition C9 construction of minor access roads (other than access roads' connection to the road network), temporary relocation of pedestrian paths and the provision of property access. (i) Site establishment work approved under a Site Establishment Management Plan in accordance with Condition C5. <p>Despite the above, the following works are not Low Impact Work:</p> <ul style="list-style-type: none"> i. where heritage items, or threatened species or their habitat, or threatened ecological communities (within the meaning of the Biodiversity Conservation Act 2016), are adversely affected or potentially adversely affected by any low impact work as defined in (a) to (i) above, that work is construction, unless otherwise determined by the Planning Secretary in consultation with Heritage NSW, BCS or DPI Fisheries (in the case of impact upon fish, aquatic invertebrates or marine vegetation); and ii. any Work undertaken outside the hours specified in Condition E1 that exceeds noise management and vibration levels as identified in Condition E3(b). <p>Notes:</p> <ul style="list-style-type: none"> 1. Early stages of Work are not necessarily low impact work. 2. Low Impact work is not Construction as defined by this approval. 3. The low impact work described in this definition becomes Construction with the approval of a CEMP. Where low impact work has already commenced, this is considered to remain as low impact work and is managed in accordance with the framework under which it commenced.
C9: Minor Ancillary Facilities	<p>Minor ancillary facilities including lunch sheds, office sheds, portable toilet facilities, material lay down sites, stockpile areas, areas used to assemble infrastructure and the like can be established and used where they satisfy the following criteria:</p> <ul style="list-style-type: none"> (a) are located within the construction boundary; and (b) have been assessed by the ER to have -

	<p>i. minimal amenity impacts to surrounding residences and businesses, after consideration of matters such as compliance with the Interim Construction Noise Guideline (DECC, 2009), traffic and access impacts, dust and odour impacts, and visual (including light spill) impacts, and</p> <p>ii. minimal environmental impact with respect to waste management and flooding, and</p> <p>iii. no impacts on biodiversity, soil and water, and heritage items beyond those already approved under other terms of this approval.</p>
E26 Biodiversity	<p>Prior to impacts on the biodiversity values of the CSSI, the number and classes of ecosystem credits and species credits (like-for-like) as set out in the BAM Biodiversity Credit Report which forms part of the Condition A1(c), must be retired. The number and classes of ecosystem credits and species credits that must be retired (prior to impacting the biodiversity values) are detailed in SCHEDULE 1 and SCHEDULE 2 of APPENDIX C.</p> <p>The Proponent may review and reduce the ecosystem and species credit requirements in Tables in SCHEDULE 1 and SCHEDULE 2 of APPENDIX C to reflect the final construction footprint; the further surveys required by Condition E31; and the resulting extent and type of plant community types to be cleared. Amendments to the ecosystem and species credit requirements must be undertaken in consultation with BCS and DECCEW(Cth) and documented in a report prepared in accordance the Biodiversity Assessment Method and accompanied by an updated Credit Report. The report and the updated Credit Report must be submitted to the Planning Secretary for approval prior to the retirement of credits.</p>
E28 Biodiversity	<p>The retirement of the credits must be carried out in accordance with the Biodiversity Conservation Act 2016 (BC Act), and can be achieved by:</p> <p>(a) acquiring and retiring “biodiversity credits” within the meaning of the BC Act; and / or</p> <p>(b) making a payment into the Biodiversity Conservation Fund of an amount equivalent to the class and number of ecosystem and species credits, as calculated by the Biodiversity Conservation Fund (BCF) Charge System; and/or</p> <p>(c) funding a biodiversity conservation action that benefits the entity impacted and is listed in the ancillary rules of the Biodiversity Offset Scheme.</p>
E29 Biodiversity	<p>Evidence of the retirement of credits in satisfaction of Condition E28 must be provided to the Planning Secretary prior to impacts to the biodiversity values occurring.</p>

Definitions

Land Type

- Existing roads and tracks include formed roads and tracks, sealed or unsealed that may include cut, fill and pavement formations, routinely used/constructed creek crossings
- Category 1 land (cropping land):
 - Land cleared of native vegetation as at 1 January 1990 or lawfully cleared after 1 January 1990
 - Low conservation grasslands
 - Land containing only low conservation groundcover (not being grasslands)
 - Native vegetation identified as regrowth in a Property Vegetation Plan (PVP) under the repealed Native Vegetation Act 2003 only where the PVP specifies a regrowth date.
 - Land bio-certified under the Biodiversity Conservation Act 2016
- Poor quality native vegetation (no shrubs & exotic groundcover) as defined in the BDAR

- High quality native vegetation or unsurveyed land or derived grassland as defined in the BDAR where minimal disturbance would have a negligible impact on to biodiversity values across the project

Biodiversity Values

The NSW *Biodiversity Conservation Act* 2016 in Cl. 1.5 states:

Biodiversity and biodiversity values for purposes of Act

- 1) For the purposes of this Act, biodiversity is the variety of living animal and plant life from all sources, and includes diversity within and between species and diversity of ecosystems.
- 2) For the purposes of this Act, biodiversity values are the following biodiversity values—
 - (a) vegetation integrity—being the degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state,
 - (b) habitat suitability—being the degree to which the habitat needs of threatened species are present at a particular site,
 - (c) biodiversity values, or biodiversity-related values, prescribed by the regulations.

The *Biodiversity Conservation Regulation* 2017 in Cl. 1.4 states:

Additional biodiversity values (section 1.5 of the Act)

The following are prescribed as additional biodiversity values for the purposes of the Act—

- (a) threatened species abundance—being the occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site,
- (b) vegetation abundance—being the occurrence and abundance of vegetation at a particular site,
- (c) habitat connectivity—being the degree to which a particular site connects different areas of habitat of threatened species to facilitate the movement of those species across their range,
- (d) threatened species movement—being the degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle,
- (e) flight path integrity—being the degree to which the flight paths of protected animals over a particular site are free from interference,
- (f) water sustainability—being the degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site.

The Updated BDAR for the project response to submissions in the definition states:

Biodiversity Are the following values:

value

- vegetation integrity--being the degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state
- habitat suitability--being the degree to which the habitat needs of threatened species are present at a particular site
- biodiversity values, or biodiversity-related values, prescribed by the regulations.



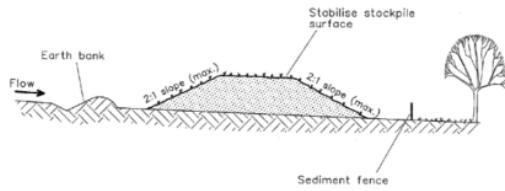
Appendix F – SEP for potholing works in September 2025

General	
Misc. Construction Controls to avoid Environmental Incidents	
Out of Hours Work (OOHW) as approved by Inland Rail and the ER. OOHW as described in the Out of Hours Work Protocol (5-0019-220-EEC-00-PO-0001).	
No works to be undertaken outside of standard construction hours without prior approval from the ER.	
Fatigue monitored to ensure environmental & safety incidents are avoided.	
Plant and equipment to be operated by a trained competent and authorised person only.	
Pre-mobilisation Inspection for all plant and equipment.	
Licensed Asbestos Contractor Class A for removal of friable asbestos and Class B for bonded asbestos.	
Environmental Risks	
Impact	Risk
Noise Pollution	[L]
Water Pollution	[L]
Air Quality	[L]
Chemical Spills	[L]
Waste and Resource	[L]
Flora & Flora	[L]
Housekeeping	[L]
Traffic Management	[L]
Heritage	[L]
EVENT MANAGEMENT	
All environmental incidents to be reported immediately to Inland Rail and Environmental Representative and entered into Horizon360 within 24 hours of the event.	
Air Quality Management	
Avoid works during unfavourable weather conditions, i.e., following BOM weather alerts and/or warnings.	Site Supervisor
Plant/equipment will cease where excessive emission of black smoke from the responsible plant/equipment is observed.	Site Supervisor
Contamination	
Controls / Actions	Responsibility
Upon identification/suspicion of contaminants, work must cease and the procedure in the Unexpected and Incidental Finds Protocol be adhered to (5-0019-220-PES-00-PR-0001).	Site Personnel

Project Contacts		
Project Title	Name	Contact No.
Superintendent	Malcom Gerrish	0439 631 524
Site Supervisor	Matt Estens	0407 310 353
JHG Rail Systems Manager	Nirmalya Chakraborty	0419 327 884
JHG Construction Manager	William Manolas	0425 316 781
JHG Environment Manager	Andy Robertson	0400 185 520
JHG Environment Delegate	Tess Anastakis	0427 275 193
JHG Safety Manager	Kevin Hasler	0483 308 737
IRPL Project Manager	Michael Matthews	0411 324 445
EPA Pollution Hotline		131 555
WIRES – Animal rescue		1300 094 737
Project Information Line		1800 732 761
Riverina Fire Brigade		6929 5700
Emergency – Police, Fire and Rescue		000 OR 112
Working Hours		
Standard Construction Hours: Mon – Sat 07:00 to 18:00		
ALL HOURS OUTSIDE OF THESE TIMES ARE TO BE CONSIDERED AS OUT OF HOURS WORK (OOHW) AND MUST BE APPROVED BY THE ER PRIOR TO OOHW COMMENCING		
Traffic Management		
Controls / Actions	Responsibility	
Ensure safe exit and entry to the site is maintained at all times.	Site Supervisor	
Site vehicles will be parked within or in close proximity to the CIZ to support project activities and minimise public disruption and overall impact.	Site Supervisor	
Ensure public/pedestrian access is maintained.	Site Supervisor	
Site access is only permitted via routes that have been approved by the ER, IRPL and relevant landowners.	Site Supervisor	
Adhere to speed limit restrictions on all roads to minimise dust generation	Site Supervisor	

Soil and Water Management	
Controls / Actions	Responsibility
Appropriate erosion and sediment controls will be installed in accordance with Blue Book for stormwater/rail corridor drains (as required). Monitor the sediment and erosion controls – repair and reinstate where these are damaged. Refer to the September Possession ESED Plan for specific details.	Site Supervisor Project Manager
Water will not be discharged unless approved by the JHG Environment Team.	Project Engineer
Inspection of the erosion and sediment controls to be completed after 20mm in 24hours.	Site Supervisor
Groundwater would be managed in accordance with the requirements of the Waste Classification Guidelines (EPA, 2014)	Site Supervisor
Refuelling / Servicing	
Spill kits to be located in close proximity to refuelling operations.	Site Supervisor
If required, only minor servicing activities are to be undertaken on site. >50m from drainage lines.	Site Personnel
Ground protection measures (drip trays and plastic sheeting) must be installed prior to servicing / refuelling activities.	Site Personnel
Prevent the discharge of pollutants to stormwater. Undertake regular checks of equipment to ensure leaks and spills are rectified and cleaned immediately.	Site Supervisor Site Personnel
Report all environmental incidents to the JHG Environment Team.	Site Personnel
Waste and Resource Consumption	
Prevent waste being blown or washed outside of the construction boundary (CIZ).	Site Supervisor
Waste generated from workers consumables to be disposed of in bins.	Site Supervisor
All waste will be classified and managed in accordance with the NSW Environment Protection Agency (EPA) <i>Waste Classification Guidelines</i> .	Project Engineer
Chemical Storage	
Chemicals, fuels and oils to be stored in the securely bunded area within the storage area.	All personnel
Spill kits and absorbent material to be located in the site plant, light vehicles and in work area.	Site Supervisor

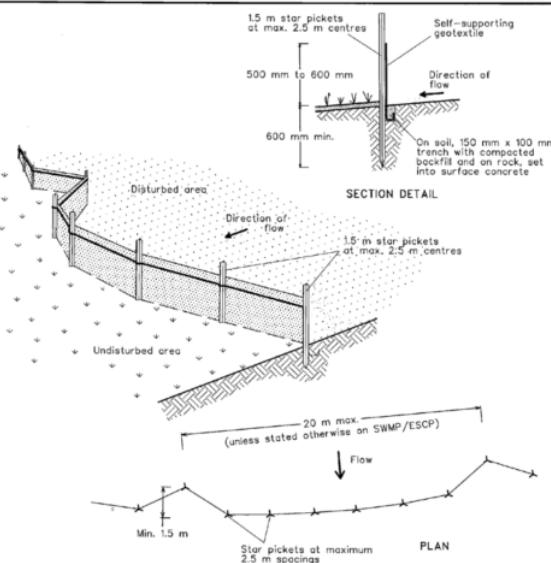
Heritage Management	
Controls / Actions	Responsibility
No impact to heritage items detailed in this SEP and the LIWA. Heritage items to be demarcated and signed.	Site Supervisor Project Manager
No works within 10m of Stockinbingal Heritage Conservation Area.	
Unexpected Heritage finds must be managed in accordance with the Unexpected and Incidental Finds Protocol (5-0019-220-PES-00-PR-0001).	Site Personnel
Flora and Fauna Management	
No ground disturbance within TEC, unsurveyed areas and native vegetation zones prior to endorsement of the Project ecologist	Site Personnel
Contact project ecologist to have fauna relocated if found.	Site Personnel
NO VEGETATION IS TO BE REMOVED OR TRIMMED.	Site Personnel
Unexpected biodiversity finds must be managed in accordance with the Unexpected and Incidental Finds Protocol (5-0019-220-PES-00-PR-0001).	Site Personnel
Where no TEC polygons are present on the SEPs, all trees are to be avoided and protected where required.	Site Personnel
Vehicles to be inspected before movement between different landowners' properties.	Site Personnel
Vehicles to be brushed down of any mud/soil material and tires sprayed with disinfectant prior to making between between-property movements.	Site Personnel
Noise Management	
No works to occur outside standard construction hours, unless otherwise approved by Inland Rail and the ER.	Project Manager
Comply with Out of Hours Protocol conditions of approval, if applicable.	Site Engineer
All plant equipment engines, including delivery vehicles, must be turned off when not in use to reduce potential noise impacts to the surrounding community.	Site Supervisor
Non-tonal reverse mechanisms will be installed on plant.	Environmental Representative
No unnecessary shouting, slamming doors	



Construction Notes

1. Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
2. Construct on the contour as low, flat, elongated mounds.
3. Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
4. Where they are to be in place for more than 10 days, stabilise following the approved ESCP or SWMP to reduce the C-factor to less than 0.10.
5. Construct earth banks (Standard Drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (Standard Drawing 6-8) 1 to 2 metres downslope.

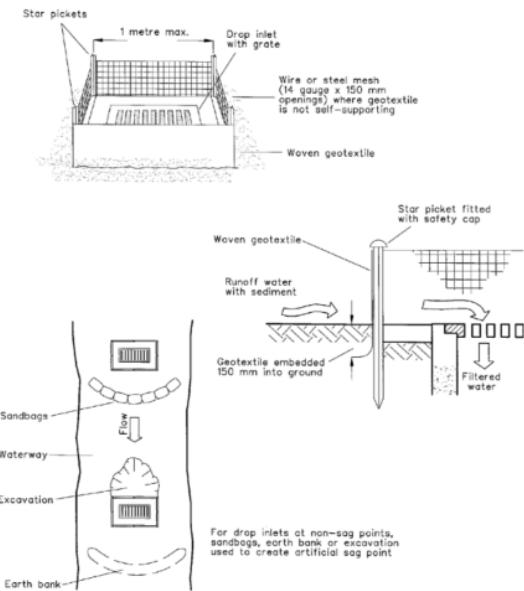
STOCKPILES SD 4-1



Construction Notes

1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

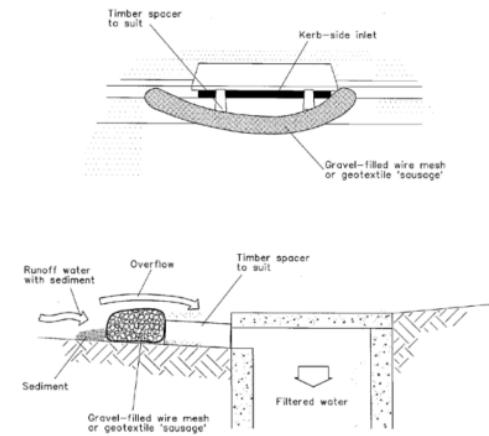
SEDIMENT FENCE SD 6-8



Construction Notes

1. Fabricate a sediment barrier made from geotextile or straw bales.
2. Follow Standard Drawing 6-7 and Standard Drawing 6-8 for installation procedures for the straw bales or geofabric. Reduce the picket spacing to 1 metre centres.
3. In waterways, artificial sag points can be created with sandbags or earth banks as shown in the drawing.
4. Do not cover the inlet with geotextile unless the design is adequate to allow for all waters to bypass it.

GEOTEXTILE INLET FILTER SD 6-12



NOTE: This practice only to be used where specified in an approved SWMP/ESCP.

Construction Notes

1. Install filters to kerb inlets only at sag points.
2. Fabricate a sleeve made from geotextile or wire mesh longer than the length of the inlet pit and fill it with 25 mm to 50 mm gravel.
3. Form an elliptical cross-section about 150 mm high x 400 mm wide.
4. Place the filter at the opening leaving at least a 100-mm space between it and the kerb inlet. Maintain the opening with spacer blocks.
5. Form a seal with the kerb to prevent sediment bypassing the filter.
6. Sandbags filled with gravel can substitute for the mesh or geotextile providing they are placed so that they firmly abut each other and sediment-laden waters cannot pass between.

MESH AND GRAVEL INLET FILTER SD 6-11

This SEP should be read in conjunction with the LIWA assessment, ERSED Plan and the full list of requirements which need to be implemented.

EROSION & SEDIMENT CONTROLS

- Refer to the ERSED Plan for the September possession which has been developed by the Project CPESC.
- All erosion and sediment controls are to follow the requirements of the Blue Book Managing Urban Stormwater, Volume 1, 4th Edition, March 2004.
- Additional ERSED control equipment will be available to site teams if required. The orientation and position of ERSED controls indicated in maps must be determined appropriately on site (i.e. downslope of work activity, covering a drain, etc.).

Monitoring of ESC:

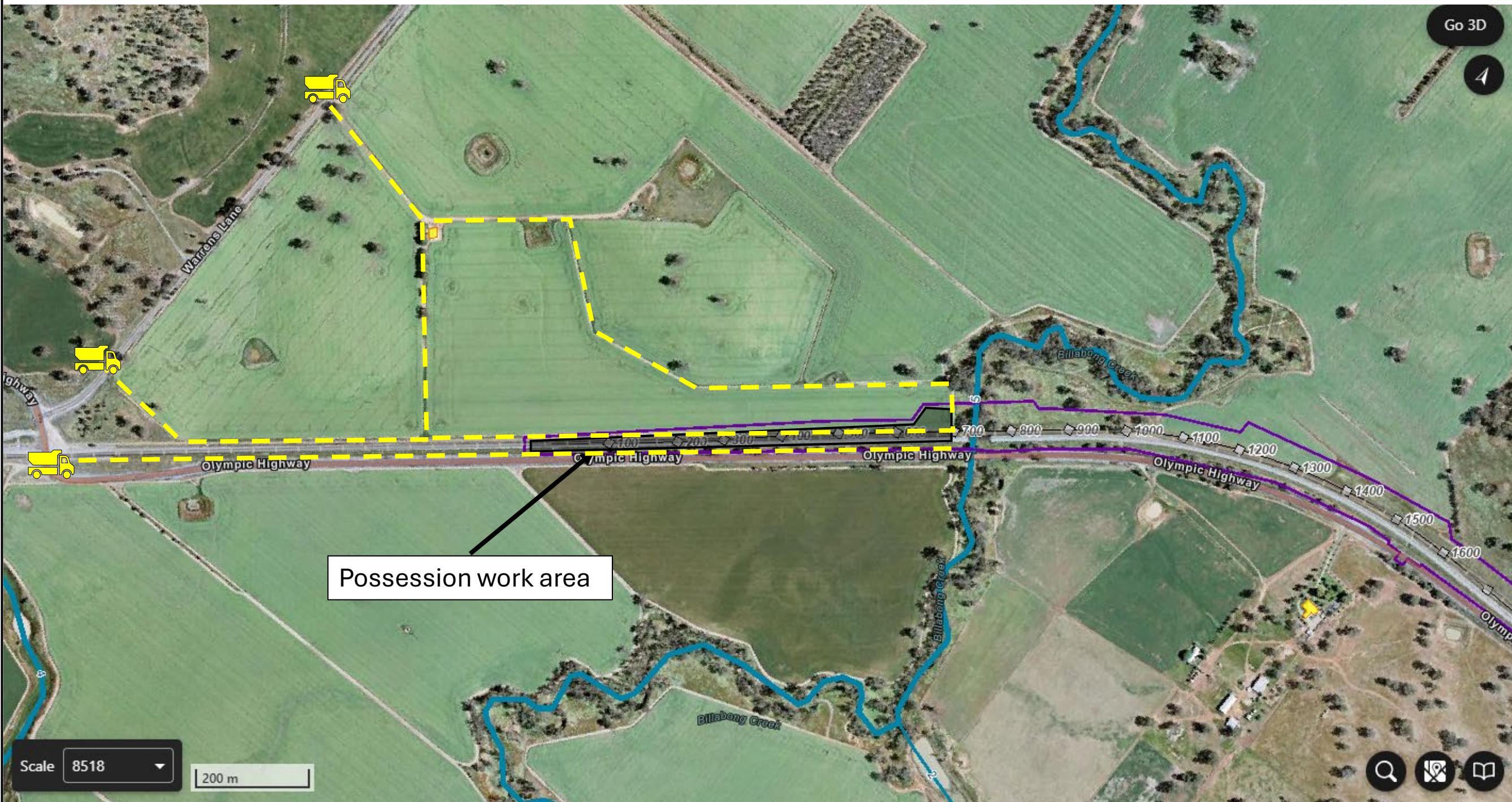
- Periodic monitoring of the effectiveness of the ESC to be undertaken as part of environmental inspections, prior to unfavourable weather conditions and after heavy rainfall events (>20mm in 24-hour period).

INDIGENOUS HERITAGE

- Works will not impact heritage items as identified in this SEP and in the LIWA.
- All applicable indigenous heritage items are to be appropriately demarcated including a 5m buffer zone.

FLORA AND FAUNA:

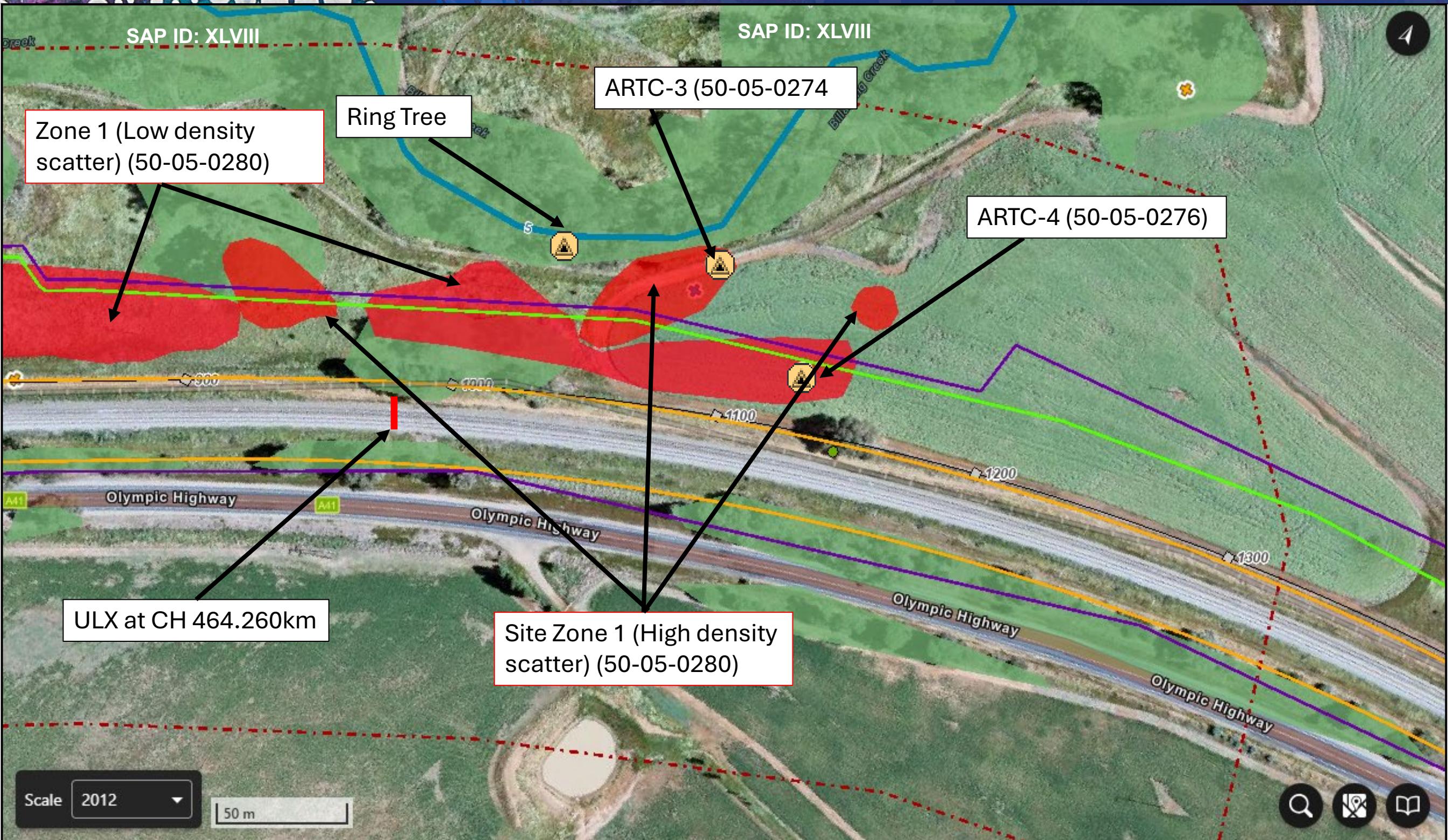
- No works to occur in areas mapped as native vegetation or TEC prior to an ecologist making an assessment through the process provided in the LIWA.



Possession work area

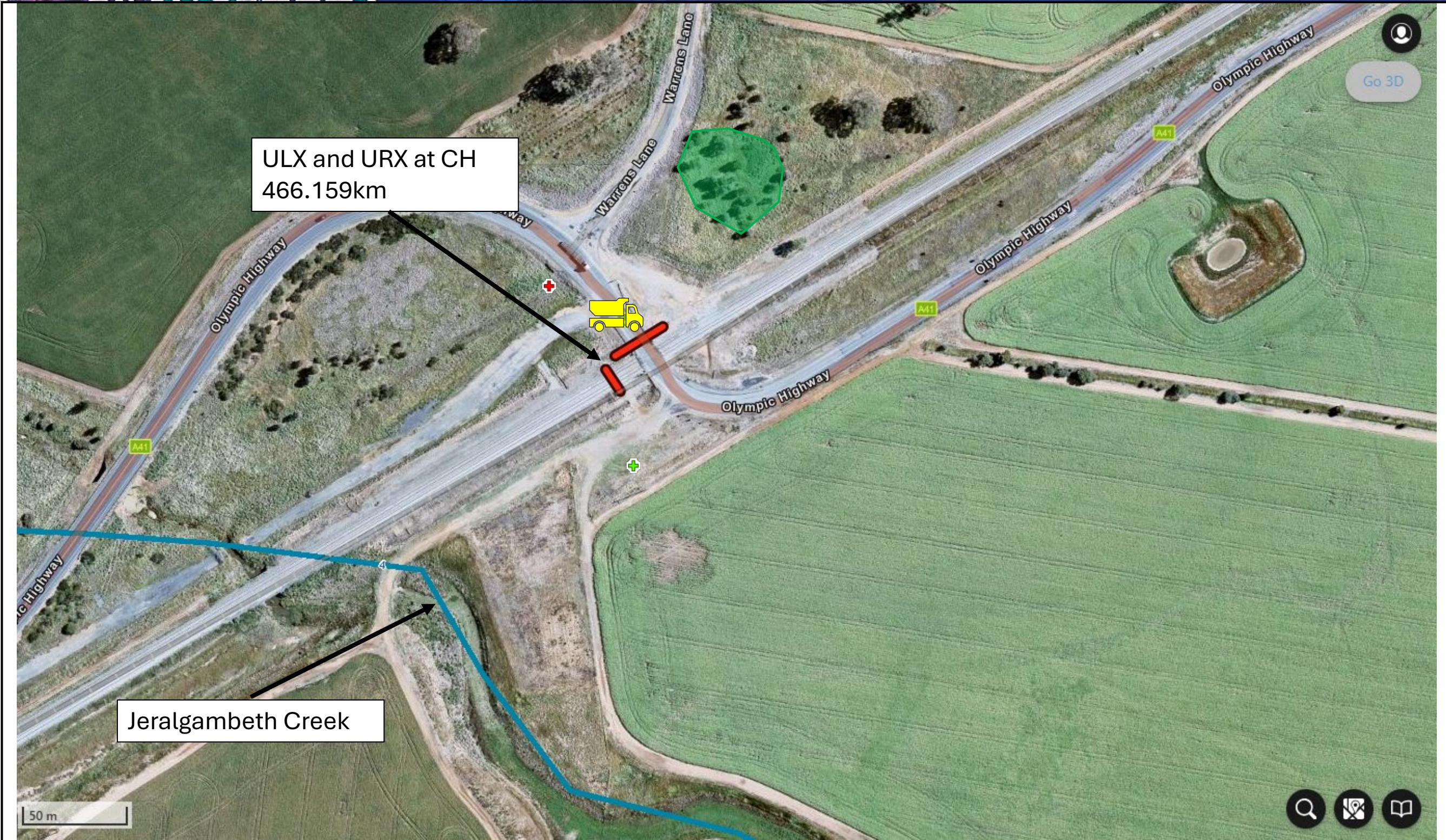
Scale 8518 200 m

-  CIZ boundary
-  Waterway and drainage line
-  Indigenous Survey Zones
-  Aboriginal Heritage artefact
-  TEC vegetation
-  AEC (Contamination)
-  Existing access gate
-  Sensitive Receivers
-  TEC vegetation
-  Scattered Paddock Tree
-  Possession work area
-  Little Eagle – Nest
-  Little Eagle
-  Dusk Woodswallow
-  Squirrel Glider
-  Access route



Scale 2012 50 m

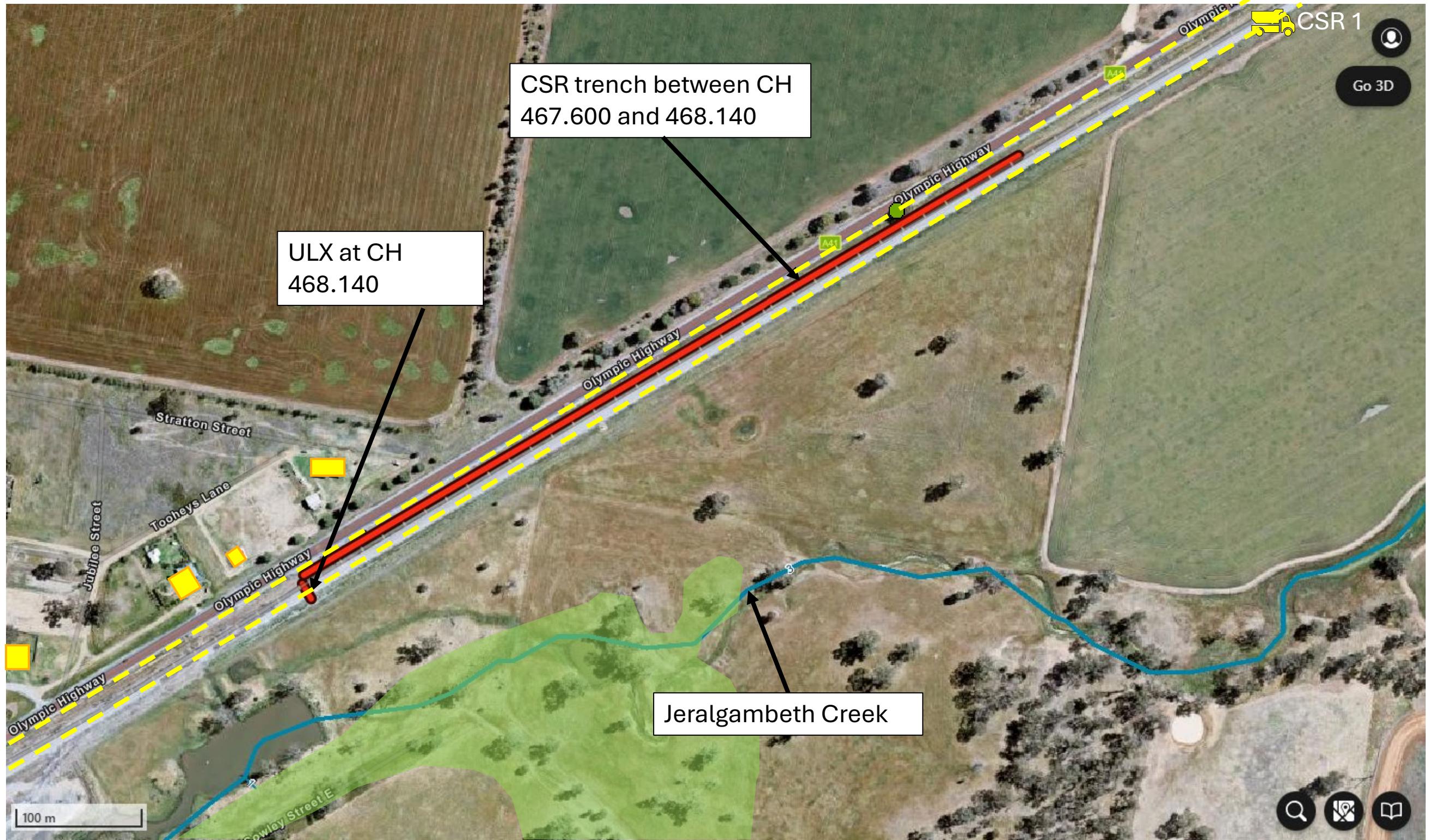
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|------------------------------|------------------------------|---------------|--------------------------|------------------------|-------------------------|---------------------|
| CIZ boundary | Aboriginal Heritage artefact | Pothole | Access gate to construct | TEC vegetation | Dusk Woodswallow | Spotted Harrier |
| Waterway and drainage line | Indigenous PAD (No-go Zone) | Test pit | AEC (Contamination) | Native vegetation | Flame Robin | Square-tailed Kite |
| Unsurveyed land (ecological) | Fencing | Bore hole | Existing access gate | Scattered Paddock Tree | Grey-crowned Babbler | Little Eagle – Nest |
| Indigenous Survey Zones | ULX | Pavement Core | Sensitive Receivers | Black Falcon | Superb Parrot | Little Eagle |
| | | | | Brown Treecreeper | Superb Parrot - Nesting | Little Eagle |
| | | | | Diamond Firetail | Spotted Harrier – Nest | Squirrel Glider |
| | | | | | White-fronted Chat | |



ULX and URX at CH 466.159km

Jeralgambeth Creek

- | | | | | |
|------------------------------|----------------------|------------------------|------------------|--------------------------------|
| CIZ boundary | TEC vegetation | Native vegetation | Dusk Woodswallow | ULX/URX |
| Waterway and drainage line | AEC (Contamination) | Scattered Paddock Tree | Squirrel Glider | Diamond Firetail |
| Indigenous Survey Zones | Existing access gate | Little Eagle – Nest | Access route | Indigenous Heritage No-Go Zone |
| Aboriginal Heritage artefact | Sensitive Receivers | Little Eagle | | |



- | | | | | |
|------------------------------|----------------------|------------------------|--------------------------------|------------------|
| CIZ boundary | TEC vegetation | Native vegetation | Dusk Woodswallow | ULX/CSR trench |
| Waterway and drainage line | AEC (Contamination) | Scattered Paddock Tree | Squirrel Glider | Diamond Firetail |
| Indigenous Survey Zones | Existing access gate | Little Eagle – Nest | Access route | |
| Aboriginal Heritage artefact | Sensitive Receivers | Little Eagle | Indigenous Heritage No-Go Zone | |



Appendix G – Noise assessments for potholing works in September 2025

Noise Assessment 1 – ULX and URX at chainage 466.159km Noise Assessment 2 – Olympic Highway ULX and URX.

Construction noise and vibration impact assessment

I2S September Possession v2

Proposed works	I2S September Possession v2		
Proponent	JHG I2S		
Assessment Date	08/08/2025		
Prepared by	Ryan Maxwell	Assessment Id	01

Introduction

This report has been prepared using the construction noise self-assessment platform KNOWnoise: *Minor Works* and presents an assessment of the likely noise impacts related to proposed works associated with the above project. Where possible, these works would be completed during standard construction hours; however, there may be a need to work outside these hours due to technical, community or access limitations. The location of the proposed works is illustrated in Appendix A.

Planned works

A description of the proposed works is as follows.

I2S September Possession v2

Proposed activities and equipment for the works are summarised in Appendix B.

Though subject to change, the works are expected to commence around 03/09/2025 and would be completed by 12/09/2025.

Assessment criteria and mitigation requirements

Noise

The Interim Construction Noise Guideline (ICNG) (DECC 2009) describes noise more than the background level as potentially having an adverse impact on sensitive receivers and increasing the likelihood of complaint. During standard construction hours, where construction noise is within 10 dB(A) of the RBL, impacts would be acceptable.

Where construction noise is more than 10 dB(A) above the RBL during standard construction hours, a residential receiver is considered noise affected and the proponent should undertake all reasonable and feasible steps necessary to manage the impact and consult with the affected community.

Above a LAeq, 15 minute noise level of 75 dB(A), a receiver is highly affected, requiring consideration of additional mitigation measures including alternative accommodation in the night period.

Outside standard construction hours, construction noise at a residential receiver more than 5 dB(A) above the RBL is taken to be noise affected.

In addition, annoying noise such as rock hammers, impact piling, or other impulsive noise sources usually result in greater annoyance than continuous construction noise. A 5 dB(A) penalty is applicable to such activities prior to comparison with the NMLs.

Other sensitive land uses, such as schools and offices, typically find noise from construction disruptive when the properties are being used (such as during work and school times). Table 2 presents NMLs from the ICNG for sensitive land uses based on the principle that the characteristic activities for each of these land uses should not be unduly disturbed.

Table 1 Non-residential sensitive land uses noise management levels

Land use	Noise assessment location	NML (L _{Aeq,15min})
Classrooms at schools and other educational institutions	Internal	45
Places of worship		
Active recreation areas (such as sporting activities and activities which generate their own noise or focus for participants)	External	65
Passive recreation areas (contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External	60
Industrial premises	External	75
Office, retail outlets	External	70

Vibration

Effects of vibration from construction may be segregated into:

- Human exposure – disturbance to building occupants: vibration in which the occupants or users of the building are inconvenienced or possibly disturbed.
- Effects on building contents – vibration where the building contents may be affected.
- Effects on building structures – vibration in which the integrity of the building or structure itself may be prejudiced.

Vibration criteria relating to human comfort applicable to this project are taken from the DEC (2006) document *Assessing Vibration – A Technical Guideline for intermittent vibration* – such as from drilling, compacting or activities that would result in continuous vibration if operated continuously. Intermittent vibration is assessed as a vibration dose value (VDV) and relates to the level of vibration over time (cumulative over the night or day period). VDV's that may result in adverse comment from receivers are summarised in Table 5.

Table 2 Summary of vibration dose values which might result in adverse comment

Time	Low probability of adverse comment (m/s ^{1.75})	Adverse comment possible (m/s ^{1.75})	Adverse comment probable (m/s ^{1.75})
Day (6am to 10pm)	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Night (10pm to 6am)	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8

Guidance for the consideration of potential building damage from construction vibration is in line with BS 7385-1 *Evaluation and measurement for vibration in buildings - Guide for measurement of vibration and evaluation of their effects on buildings*. These guideline values are presented in Table 3.

Table 3 Building damage vibration guidelines (BS 7385-1)

Type of building	Guideline values for vibration (PPV mm/s)		
	4Hz to 15Hz	15Hz to 40Hz	40Hz and above
Reinforced or framed structures / Industrial and heavy commercial buildings	50		
Un-reinforced or light framed structures / Residential or light commercial type buildings	15 - 20	20 - 50	50

For heritage structures, criteria are in line with the German Standard *DIN 4150-3: Structural Vibration- effects of vibration on structures*, as summarised in Table 4.

Table 4 Guideline values for vibration velocity to be used when evaluating the effects of short-term vibration on heritage structures (DIN 4150-3).

Type of building	Guideline values for vibration (PPV mm/s)			
	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz	Vibration at horizontal plane of highest floor at all frequencies
Structures that, because of their sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (e.g. listed buildings under preservation order)	3	3 to 8	8 to 10	8

The safe working distances presented in Table 5 are indicative and will vary depending on the item of plant and local geotechnical conditions. The cosmetic damage thresholds apply to typical buildings under typical geotechnical conditions and vibration monitoring is recommended at specific sites. Where structures are more sensitive, such as heritage items, more stringent conditions are applicable and should be considered individually.

In relation to human response, the safe working distances relate to continuous vibration. For most construction activities, vibration emissions are intermittent and higher vibration levels over shorter periods are acceptable. Additional assessment should be undertaken where the human response criteria are exceeded.

Table 5 Safe working distances for vibration intensive plant

Plant item	Rating/description	Safe working distance	
		Cosmetic damage (BS 7385-1)	Human response (DECCW)
Vibratory roller	<50 kN (typically 1-2 t)	5 m	15 m to 20 m
	<100 kN (typically 2-4 t)	6 m	20 m
	<200 kN (typically 4-6 t)	12 m	40 m
	<300 kN (typically 7-13 t)	15 m	100 m
	>300 kN (typically 13-18 t)	20 m	100 m
	>300 kN (> 18 t)	25 m	100 m
Small hydraulic hammer	300 kg – 5 to 12 t excavator	2 m	7 m
Medium hydraulic hammer	900 kg – 12 to 18t excavator	7 m	23 m
Large hydraulic hammer	1600 kg – 18 to 34 t excavator	22 m	73 m
Vibratory pile driver	Sheet piles	2 m to 20 m	20 m
Pile boring	≤800 mm	2 m	n/a
Jackhammer	Hand held	1 m	Avoid contact with structure

Existing environment and noise management levels

The proposed works would be undertaken in a predominantly Rural / Suburban, characterised as:

Areas with negligible transportation or very limited local traffic, typically light vehicles only.

100m or more from the road.

Background noise levels adopted for the project area and associated noise management levels (NMLs) are summarised in Table 6. NMLs have been established in line with the ICNG.

Table 6 Construction NMLs

Land use	Rural / Suburban			Using custom background noise data?		Yes
Criterion	Day	Weekend Day	Evening	Night	Sleep	
RBL	35	35	35	35		
NML	45	40	35	35	45	

Sleep disturbance

The ICNG recommends where construction works are planned to extend over more than two consecutive nights, the maximum noise level should be considered for the purposes of establishing the likelihood of sleep disturbance. The Road Noise Policy suggests that maximum internal noise levels below 50-55 dB(A) are unlikely to awaken people from sleep and one or two noise events per night, with maximum internal noise levels of 65-70 dB(A) are not likely to affect health and wellbeing significantly.

Based on this, a sleep awakening criterion of 55 dB(A) (internal) is typically adopted for works. Given that noise attenuation of 10 dB(A) is typically provided by an open window, a sleep awakening criterion of L_{Amax} 65 dB(A) (external) has been applied to residential bedroom façades.

Assessment methodology

Based on the nominated works area (illustrated in Appendix A), proposed equipment and the minimum distance from the works to each sensitive receiver, noise levels were calculated based on ISO9613: 2 *Acoustics - Attenuation of sound during propagation outdoors*.

This method considers geometric spreading, atmospheric absorption, ground effects and is valid for meteorological conditions of a gentle breeze from source to receiver and stable atmosphere (temperature inversion).

KNOWnoise: Minor works is a 2-Dimensional assessment platform and does not consider terrain effects (e.g. hills, valleys) or the presence of solid structures such as homes or noise barriers. This will result in a conservative prediction, suitable for the project being assessed.

Considering the nature of the works and the type of surrounding land uses, sensitive receivers up to a radius of 2000 metres from the works have been included in the assessment.

Sound power levels and predicted noise levels depend on the number of plant items operating at any one time and their precise location relative to a sensitive receiver. Equipment was assumed to be working at the worst-case location relative to each receiver and represents a worst-case assessment. Where the activity is further away from receivers or less equipment is used the predicted levels will decrease.

Sound power levels for plant and equipment expected to be used for each activity has been estimated based on guidance in the following standards and guidelines as well as typical measured noise levels for specific equipment.

- “ AS2436-2010: Guide to noise and vibration control on construction, demolition and maintenance sites
- “ British Standard 5228-1:2009 Code of practice for noise and vibration control on construction and open sites
- “ United Kingdom Department for Environment, Food and Rural Affairs (DEFRA) Noise database for prediction of noise on construction and open sites

Construction noise sources and associated sound power levels are listed in Appendix B. The maximum predicted LAeq noise level within the work area was identified for each receiver.

Predicted noise levels

Detailed predicted noise levels for each potentially affected receiver are presented Appendix C.

A summary of predicted noise levels in comparison with ICNG assessment criteria for the Period0 period is presented in Table 4.

Table 7 Summary of predicted noise levels with comparison against ICNG criteria for the Period0 period.

Criterion	Predicted number of receivers
Maximum cumulative predicted LAeq, 15 minute noise level	39 dB(A)
Number of highly noise affected receivers (>75 dB)	0
1 – 10 dB above NML	0
10 – 20 dB above NML	0
20+ dB above NML	0

Predicted impact classes for the Period0 period are illustrated graphically in Appendix C. Each identified receiver in the study area has been coloured to highlight the predicted level of impact.

Sleep disturbance

In the event works are planned for more than two consecutive nights, sleep disturbance is considered. Table 8 summarises the number of residents predicted to exceed the sleep disturbance screening criterion. Further analysis is also provided to indicate the number of receivers expected to be woken, at Lmax noise levels greater than 65 dBA.

Where exceedances of the awakening criteria are predicted, additional care should be taken and mitigation measures implemented in the with the CNVG.

Table 8 Summary of predicted exceedances of sleep disturbance screening criterion and awakening criterion.

Criterion	Predicted number of receivers
Potentially Sleep Disturbed (exceed RBL + 15 screening criterion)	0
Sleep Disturbed (exceed 65 dBA awakening criterion)	0

Predicted vibration impacts

The level of vibration impact on sensitive receivers (buildings and human comfort) will largely depend on the type of machinery in use and the distance from source to receiver.

Based on the proposed work locations and selected equipment, the following level of vibration impact is expected. A summary of vibration impacts is provided for each sensitive receiver in Appendix C.

Impact classification	Number of potentially affected receivers
Human comfort	0
Cosmetic damage	0
Heritage structure	0

Proposed noise mitigation measures

The safeguards and controls listed in Table 6 will be implemented where reasonable and feasible with the intention of achieving the project noise criteria and to maintain noise impacts at a practical minimum.

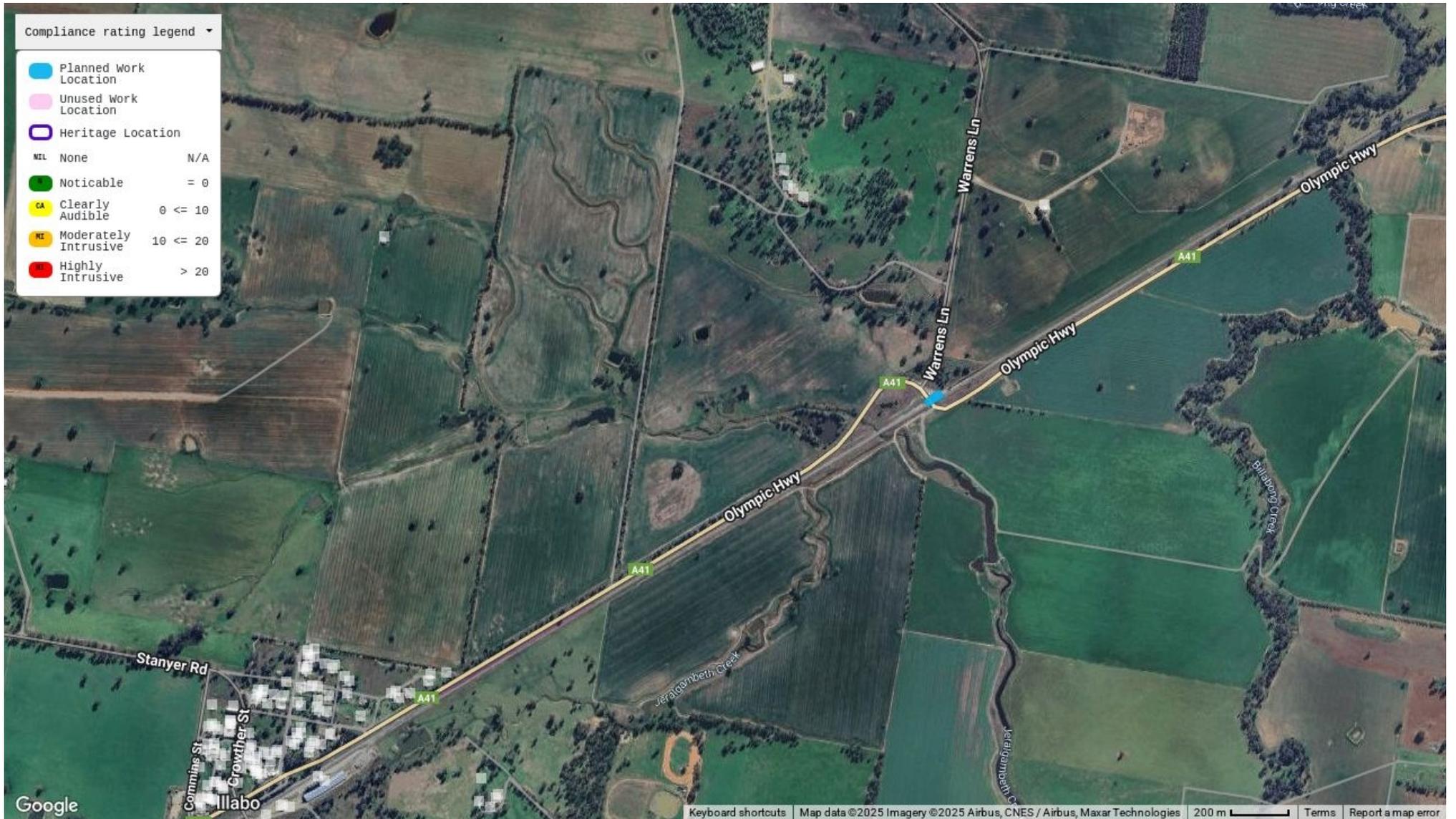
Table 9 Safeguards and controls

Action	Description
Community consultation or notification	<p>Notify the affected community.</p> <p>The notification will detail work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night time period, any operational noise benefits from the works (where applicable) and contact telephone number.</p> <p>Notification should be a minimum of 7 calendar days prior to the start of works. For projects other than maintenance works more advanced consultation or notification may be required.</p>
Site inductions	<p>All employees, contractors and subcontractors are to receive an environmental induction. The induction would at least include:</p> <ul style="list-style-type: none"> • all project specific and relevant standard noise and vibration mitigation measures • relevant licence and approval conditions • permissible hours of work • any limitations on high noise generating activities • location of nearest sensitive receivers • construction employee parking areas • designated loading/unloading areas and procedures <p>site opening/closing times (including deliveries) environmental incident procedures</p>
Behaviour	<p>No swearing or unnecessary shouting or loud stereos/radios on site.</p> <p>Limit compression braking at night in residential areas.</p> <p>No dropping of materials from height, throwing of metal items and slamming of doors.</p>
Verification	<p>Where indicated in Appendix C, a noise verification program would be undertaken for the duration of the works.</p>
Construction hours	<p>Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Work generating high noise and/or vibration levels should be scheduled during less sensitive time periods.</p>
Respite for out-of-hours works	<p>Respite would be scheduled as indicated in Appendix C and described in the CNVG.</p>
Equipment selection	<p>Use quieter construction methods where feasible and reasonable.</p> <p>Ensure plant including the silencer is well maintained.</p> <p>Plant noise levels will have an operating noise emission level compliant with Appendix F of the CNVG</p>
Use and siting of plant	<p>The offset distance between noisy plant and adjacent sensitive receivers is to be maximised.</p> <p>Plant used intermittently to be throttled down or shut down.</p> <p>Noise-emitting plant to be directed away from sensitive receivers.</p>

Construction noise and vibration impact statement

Action	Description
Plan worksites and activities to minimise noise and vibration.	<p>Locate compounds away from sensitive receivers and discourage access from local roads.</p> <p>Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site.</p> <p>Where additional activities or plant may only result in a marginal noise increase and speed up works, consider limiting duration of impact by concentrating noisy activities at one location and move to another as quickly as possible.</p> <p>Very noise activities should be scheduled for normal working hours. If the work can not be undertaken during the day, it should be completed before 11:00pm.</p> <p>Where practicable, work should be scheduled to avoid major student examination periods when students are studying for examinations such as before or during Higher School Certificate and at the end of higher education semesters.</p>
Non-tonal reverse alarms	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work.
Shield stationary noise sources such as pumps, generators, and compressors	These should be enclosed or shielded where reasonable and feasible.
Implement any project specific mitigation measures	
1	None

Appendix A Project location and predicted level of impact



Appendix B Proposed activities and equipment

Olympic Highway ULX and URX - Potholing works

Equipment	Quantity	Usage	Reduction	SWL
Light vehicle	1	40%	5	76
Excavator (10 tonne)	1	40%	5	90
Vacc truck	1	60%	0	110

Activity Sound Power Level: 110

Appendix C Detailed noise predicted for each receiver

Noise

Assessment: I25 September Possession v2				NML, LAeq, 15 minute				Sleep, LAmax		Predicted noise level, dBA		Exceedance summary										
NCA	Rec	Address	Land use	Day	O/day	Eve	Night	Screen	Awake	Cumulative LAeq, 15 minute	LMax	Highly Affected?	Exceed NML by (dB):				Exceed sleep disturbance by (dB):		Impact classification			
													Day	O/day	Eve	Night	Screen	Awake	Day	O/day	Eve	Night

Vibration

NCA	Receiver	Address	Vibration Impact
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Noise Assessment 2 – ULX at chainage 468.140km

Construction noise and vibration impact assessment

I2S September Possession v2

Proposed works	I2S September Possession v2		
Proponent	JHG I2S		
Assessment Date	08/08/2025		
Prepared by	Ryan Maxwell	Assessment Id	01

Introduction

This report has been prepared using the construction noise self-assessment platform KNOWnoise: *Minor Works* and presents an assessment of the likely noise impacts related to proposed works associated with the above project. Where possible, these works would be completed during standard construction hours; however, there may be a need to work outside these hours due to technical, community or access limitations. The location of the proposed works is illustrated in Appendix A.

Planned works

A description of the proposed works is as follows.

I2S September Possession v2

Proposed activities and equipment for the works are summarised in Appendix B.

Though subject to change, the works are expected to commence around 03/09/2025 and would be completed by 12/09/2025.

Assessment criteria and mitigation requirements

Noise

The Interim Construction Noise Guideline (ICNG) (DECC 2009) describes noise more than the background level as potentially having an adverse impact on sensitive receivers and increasing the likelihood of complaint. During standard construction hours, where construction noise is within 10 dB(A) of the RBL, impacts would be acceptable.

Where construction noise is more than 10 dB(A) above the RBL during standard construction hours, a residential receiver is considered noise affected and the proponent should undertake all reasonable and feasible steps necessary to manage the impact and consult with the affected community.

Above a LAeq, 15 minute noise level of 75 dB(A), a receiver is highly affected, requiring consideration of additional mitigation measures including alternative accommodation in the night period.

Outside standard construction hours, construction noise at a residential receiver more than 5 dB(A) above the RBL is taken to be noise affected.

In addition, annoying noise such as rock hammers, impact piling, or other impulsive noise sources usually result in greater annoyance than continuous construction noise. A 5 dB(A) penalty is applicable to such activities prior to comparison with the NMLs.

Other sensitive land uses, such as schools and offices, typically find noise from construction disruptive when the properties are being used (such as during work and school times). Table 2 presents NMLs from the ICNG for sensitive land uses based on the principle that the characteristic activities for each of these land uses should not be unduly disturbed.

Table 1 Non-residential sensitive land uses noise management levels

Land use	Noise assessment location	NML (L _{Aeq,15min})
Classrooms at schools and other educational institutions	Internal	45
Places of worship		
Active recreation areas (such as sporting activities and activities which generate their own noise or focus for participants)	External	65
Passive recreation areas (contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External	60
Industrial premises	External	75
Office, retail outlets	External	70

Vibration

Effects of vibration from construction may be segregated into:

- Human exposure – disturbance to building occupants: vibration in which the occupants or users of the building are inconvenienced or possibly disturbed.
- Effects on building contents – vibration where the building contents may be affected.
- Effects on building structures – vibration in which the integrity of the building or structure itself may be prejudiced.

Vibration criteria relating to human comfort applicable to this project are taken from the DEC (2006) document *Assessing Vibration – A Technical Guideline for intermittent vibration* – such as from drilling, compacting or activities that would result in continuous vibration if operated continuously. Intermittent vibration is assessed as a vibration dose value (VDV) and relates to the level of vibration over time (cumulative over the night or day period). VDV's that may result in adverse comment from receivers are summarised in Table 5.

Table 2 Summary of vibration dose values which might result in adverse comment

Time	Low probability of adverse comment (m/s ^{1.75})	Adverse comment possible (m/s ^{1.75})	Adverse comment probable (m/s ^{1.75})
Day (6am to 10pm)	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Night (10pm to 6am)	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8

Guidance for the consideration of potential building damage from construction vibration is in line with BS 7385-1 *Evaluation and measurement for vibration in buildings - Guide for measurement of vibration and evaluation of their effects on buildings*. These guideline values are presented in Table 3.

Table 3 Building damage vibration guidelines (BS 7385-1)

Type of building	Guideline values for vibration (PPV mm/s)		
	4Hz to 15Hz	15Hz to 40Hz	40Hz and above
Reinforced or framed structures / Industrial and heavy commercial buildings	50		
Un-reinforced or light framed structures / Residential or light commercial type buildings	15 - 20	20 - 50	50

For heritage structures, criteria are in line with the German Standard *DIN 4150-3: Structural Vibration- effects of vibration on structures*, as summarised in Table 4.

Table 4 Guideline values for vibration velocity to be used when evaluating the effects of short-term vibration on heritage structures (DIN 4150-3).

Type of building	Guideline values for vibration (PPV mm/s)			
	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz	Vibration at horizontal plane of highest floor at all frequencies
Structures that, because of their sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (e.g. listed buildings under preservation order)	3	3 to 8	8 to 10	8

The safe working distances presented in Table 5 are indicative and will vary depending on the item of plant and local geotechnical conditions. The cosmetic damage thresholds apply to typical buildings under typical geotechnical conditions and vibration monitoring is recommended at specific sites. Where structures are more sensitive, such as heritage items, more stringent conditions are applicable and should be considered individually.

In relation to human response, the safe working distances relate to continuous vibration. For most construction activities, vibration emissions are intermittent and higher vibration levels over shorter periods are acceptable. Additional assessment should be undertaken where the human response criteria are exceeded.

Table 5 Safe working distances for vibration intensive plant

Plant item	Rating/description	Safe working distance	
		Cosmetic damage (BS 7385-1)	Human response (DECCW)
Vibratory roller	<50 kN (typically 1-2 t)	5 m	15 m to 20 m
	<100 kN (typically 2-4 t)	6 m	20 m
	<200 kN (typically 4-6 t)	12 m	40 m
	<300 kN (typically 7-13 t)	15 m	100 m
	>300 kN (typically 13-18 t)	20 m	100 m
	>300 kN (> 18 t)	25 m	100 m
Small hydraulic hammer	300 kg – 5 to 12 t excavator	2 m	7 m
Medium hydraulic hammer	900 kg – 12 to 18t excavator	7 m	23 m
Large hydraulic hammer	1600 kg – 18 to 34 t excavator	22 m	73 m
Vibratory pile driver	Sheet piles	2 m to 20 m	20 m
Pile boring	≤800 mm	2 m	n/a
Jackhammer	Hand held	1 m	Avoid contact with structure

Existing environment and noise management levels

The proposed works would be undertaken in a predominantly Rural / Suburban, characterised as:

Areas with negligible transportation or very limited local traffic, typically light vehicles only.

100m or more from the road.

Background noise levels adopted for the project area and associated noise management levels (NMLs) are summarised in Table 6. NMLs have been established in line with the ICNG.

Table 6 Construction NMLs

Land use	Rural / Suburban			Using custom background noise data?		Yes
Criterion	Day	Weekend Day	Evening	Night	Sleep	
RBL	35	35	35	35		
NML	45	40	35	35	45	

Sleep disturbance

The ICNG recommends where construction works are planned to extend over more than two consecutive nights, the maximum noise level should be considered for the purposes of establishing the likelihood of sleep disturbance. The Road Noise Policy suggests that maximum internal noise levels below 50-55 dB(A) are unlikely to awaken people from sleep and one or two noise events per night, with maximum internal noise levels of 65-70 dB(A) are not likely to affect health and wellbeing significantly.

Based on this, a sleep awakening criterion of 55 dB(A) (internal) is typically adopted for works. Given that noise attenuation of 10 dB(A) is typically provided by an open window, a sleep awakening criterion of L_{Amax} 65 dB(A) (external) has been applied to residential bedroom façades.

Assessment methodology

Based on the nominated works area (illustrated in Appendix A), proposed equipment and the minimum distance from the works to each sensitive receiver, noise levels were calculated based on ISO9613: 2 *Acoustics - Attenuation of sound during propagation outdoors*.

This method considers geometric spreading, atmospheric absorption, ground effects and is valid for meteorological conditions of a gentle breeze from source to receiver and stable atmosphere (temperature inversion).

KNOWnoise: Minor works is a 2-Dimensional assessment platform and does not consider terrain effects (e.g. hills, valleys) or the presence of solid structures such as homes or noise barriers. This will result in a conservative prediction, suitable for the project being assessed.

Considering the nature of the works and the type of surrounding land uses, sensitive receivers up to a radius of 2000 metres from the works have been included in the assessment.

Sound power levels and predicted noise levels depend on the number of plant items operating at any one time and their precise location relative to a sensitive receiver. Equipment was assumed to be working at the worst-case location relative to each receiver and represents a worst-case assessment. Where the activity is further away from receivers or less equipment is used the predicted levels will decrease.

Sound power levels for plant and equipment expected to be used for each activity has been estimated based on guidance in the following standards and guidelines as well as typical measured noise levels for specific equipment.

- “ AS2436-2010: Guide to noise and vibration control on construction, demolition and maintenance sites
- “ British Standard 5228-1:2009 Code of practice for noise and vibration control on construction and open sites
- “ United Kingdom Department for Environment, Food and Rural Affairs (DEFRA) Noise database for prediction of noise on construction and open sites

Construction noise sources and associated sound power levels are listed in Appendix B. The maximum predicted LAeq noise level within the work area was identified for each receiver.

Predicted noise levels

Detailed predicted noise levels for each potentially affected receiver are presented Appendix C.

A summary of predicted noise levels in comparison with ICNG assessment criteria for the Period0 period is presented in Table 4.

Table 7 Summary of predicted noise levels with comparison against ICNG criteria for the Period0 period.

Criterion	Predicted number of receivers
Maximum cumulative predicted LAeq, 15 minute noise level	66 dB(A)
Number of highly noise affected receivers (>75 dB)	0
1 – 10 dB above NML	6
10 – 20 dB above NML	5
20+ dB above NML	1

Predicted impact classes for the Period0 period are illustrated graphically in Appendix C. Each identified receiver in the study area has been coloured to highlight the predicted level of impact.

Sleep disturbance

In the event works are planned for more than two consecutive nights, sleep disturbance is considered. Table 8 summarises the number of residents predicted to exceed the sleep disturbance screening criterion. Further analysis is also provided to indicate the number of receivers expected to be woken, at Lmax noise levels greater than 65 dBA.

Where exceedances of the awakening criteria are predicted, additional care should be taken and mitigation measures implemented in the with the CNVG.

Table 8 Summary of predicted exceedances of sleep disturbance screening criterion and awakening criterion.

Criterion	Predicted number of receivers
Potentially Sleep Disturbed (exceed RBL + 15 screening criterion)	0
Sleep Disturbed (exceed 65 dBA awakening criterion)	0

Predicted vibration impacts

The level of vibration impact on sensitive receivers (buildings and human comfort) will largely depend on the type of machinery in use and the distance from source to receiver.

Based on the proposed work locations and selected equipment, the following level of vibration impact is expected. A summary of vibration impacts is provided for each sensitive receiver in Appendix C.

Impact classification	Number of potentially affected receivers
Human comfort	0
Cosmetic damage	0
Heritage structure	0

Proposed noise mitigation measures

The safeguards and controls listed in Table 6 will be implemented where reasonable and feasible with the intention of achieving the project noise criteria and to maintain noise impacts at a practical minimum.

Table 9 Safeguards and controls

Action	Description
Community consultation or notification	<p>Notify the affected community.</p> <p>The notification will detail work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night time period, any operational noise benefits from the works (where applicable) and contact telephone number.</p> <p>Notification should be a minimum of 7 calendar days prior to the start of works. For projects other than maintenance works more advanced consultation or notification may be required.</p>
Site inductions	<p>All employees, contractors and subcontractors are to receive an environmental induction. The induction would at least include:</p> <ul style="list-style-type: none"> • all project specific and relevant standard noise and vibration mitigation measures • relevant licence and approval conditions • permissible hours of work • any limitations on high noise generating activities • location of nearest sensitive receivers • construction employee parking areas • designated loading/unloading areas and procedures <p>site opening/closing times (including deliveries) environmental incident procedures</p>
Behaviour	<p>No swearing or unnecessary shouting or loud stereos/radios on site.</p> <p>Limit compression braking at night in residential areas.</p> <p>No dropping of materials from height, throwing of metal items and slamming of doors.</p>
Verification	<p>Where indicated in Appendix C, a noise verification program would be undertaken for the duration of the works.</p>
Construction hours	<p>Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Work generating high noise and/or vibration levels should be scheduled during less sensitive time periods.</p>
Respite for out-of-hours works	<p>Respite would be scheduled as indicated in Appendix C and described in the CNVG.</p>
Equipment selection	<p>Use quieter construction methods where feasible and reasonable.</p> <p>Ensure plant including the silencer is well maintained.</p> <p>Plant noise levels will have an operating noise emission level compliant with Appendix F of the CNVG</p>
Use and siting of plant	<p>The offset distance between noisy plant and adjacent sensitive receivers is to be maximised.</p> <p>Plant used intermittently to be throttled down or shut down.</p> <p>Noise-emitting plant to be directed away from sensitive receivers.</p>

Construction noise and vibration impact statement

Action	Description
Plan worksites and activities to minimise noise and vibration.	<p>Locate compounds away from sensitive receivers and discourage access from local roads.</p> <p>Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site.</p> <p>Where additional activities or plant may only result in a marginal noise increase and speed up works, consider limiting duration of impact by concentrating noisy activities at one location and move to another as quickly as possible.</p> <p>Very noise activities should be scheduled for normal working hours. If the work can not be undertaken during the day, it should be completed before 11:00pm.</p> <p>Where practicable, work should be scheduled to avoid major student examination periods when students are studying for examinations such as before or during Higher School Certificate and at the end of higher education semesters.</p>
Non-tonal reverse alarms	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work.
Shield stationary noise sources such as pumps, generators, and compressors	These should be enclosed or shielded where reasonable and feasible.
Implement any project specific mitigation measures	
1	None

Appendix A Project location and predicted level of impact



Appendix B Proposed activities and equipment

01 - Illabo ULX - Potholing

Equipment	Quantity	Usage	Reduction	SWL
Light vehicle	1	40%	0	81
Excavator (10 tonne)	1	40%	0	95
Vacc truck	1	60%	0	110

Activity Sound Power Level: 110

Appendix C Detailed noise predicted for each receiver

Noise

Assessment: I25 September Possession v2				NML, LAeq, 15 minute				Sleep, LAmax		Predicted noise level, dBA		Exceedance summary											
NCA	Rec	Address	Land use	Day	O/day	Eve	Night	Screen	Awake	Cumulative LAeq, 15 minute	LMax	Highly Affected?	Exceed NML by (dB):				Exceed sleep disturbance by (dB):		Impact classification				
													Day	O/day	Eve	Night	Screen	Awake	Day	O/day	Eve	Night	
NCA 1	1676 894	17 TOOHEYS LANE ILLABO	RES	45	40	35	35			61.2	68.3		16.2	21.2	26.2	26.2	-	16.2	Moderately Intrusive	Moderately Intrusive	Highly Intrusive	Highly Intrusive	
NCA 1	1676 898	10 HOWELL STREET ILLABO	RES	45	40	35	35			45.1	52.1		0.1	5.1	10.1	10.1	-	0.1	Clearly Audible	Clearly Audible	Clearly Audible	Clearly Audible	
NCA 1	1676 899		RES	45	40	35	35			45.1	52.1		0.1	5.1	10.1	10.1	-	0.1	Clearly Audible	Clearly Audible	Clearly Audible	Clearly Audible	
NCA 1	1676 900	9-11 HOWELL STREET ILLABO	RES	45	40	35	35			46.9	53.9		1.9	6.9	11.9	11.9	-	1.9	Clearly Audible	Clearly Audible	Clearly Audible	Clearly Audible	
NCA 1	1676 903	7 TOOHEYS LANE ILLABO	RES	45	40	35	35			56.3	63.3		11.3	16.3	21.3	21.3	-	11.3	Moderately Intrusive	Moderately Intrusive	Moderately Intrusive	Moderately Intrusive	
NCA 1	1676 907		RES	45	40	35	35			46.4	53.4		1.4	6.4	11.4	11.4	-	1.4	Clearly Audible	Clearly Audible	Clearly Audible	Clearly Audible	
NCA 1	1676 909		RES	45	40	35	35			46.9	54		1.9	6.9	11.9	11.9	-	1.9	Clearly Audible	Clearly Audible	Clearly Audible	Clearly Audible	
NCA 1	1676 918	81 WOOD STREET ILLABO	RES	45	40	35	35			48	55.1		3	8	13	13	-	3	Clearly Audible	Clearly Audible	Clearly Audible	Clearly Audible	
NCA 1	1676 923	9 TOOHEYS LANE ILLABO	RES	45	40	35	35			61.8	68.8		16.8	21.8	26.8	26.8	-	16.8	Moderately Intrusive	Moderately Intrusive	Highly Intrusive	Highly Intrusive	
NCA 1	1676 928	17 TOOHEYS LANE ILLABO	RES	45	40	35	35			66.2	73.3		21.2	26.2	31.2	31.2	-	21.2	Highly Intrusive	Highly Intrusive	Highly Intrusive	Highly Intrusive	
NCA 1	1676 931	5 TOOHEYS LANE ILLABO	RES	45	40	35	35			53.9	61		8.9	13.9	18.9	18.9	-	8.9	Clearly Audible	Clearly Audible	Moderately Intrusive	Moderately Intrusive	
NCA 1	1676 937		RES	45	40	35	35			45.1	52.2		0.1	5.1	10.1	10.1	-	0.1	Clearly Audible	Clearly Audible	Clearly Audible	Clearly Audible	
NCA 1	1676 948	81 SHOWGROUND ROAD ILLABO	RES	45	40	35	35			46	53		1	6	11	11	-	1	Clearly Audible	Clearly Audible	Clearly Audible	Clearly Audible	
NCA 1	1676 953		RES	45	40	35	35			58.5	65.6		13.5	18.5	23.5	23.5	-	13.5	Moderately Intrusive	Moderately Intrusive	Moderately Intrusive	Moderately Intrusive	
NCA 1	1676 954	7 TOOHEYS LANE ILLABO	RES	45	40	35	35			55.3	62.3		10.3	15.3	20.3	20.3	-	10.3	Moderately Intrusive	Moderately Intrusive	Moderately Intrusive	Moderately Intrusive	

Vibration

NCA	Receiver	Address	Vibration Impact
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Noise Assessment 3 – CSR longitudinal trench between chainages 467.600km to 468.140km

Construction noise and vibration impact assessment

I2S September Possession v2

Proposed works	I2S September Possession v2		
Proponent	JHG I2S		
Assessment Date	08/08/2025		
Prepared by	Ryan Maxwell	Assessment Id	01

Introduction

This report has been prepared using the construction noise self-assessment platform KNOWnoise: *Minor Works* and presents an assessment of the likely noise impacts related to proposed works associated with the above project. Where possible, these works would be completed during standard construction hours; however, there may be a need to work outside these hours due to technical, community or access limitations. The location of the proposed works is illustrated in Appendix A.

Planned works

A description of the proposed works is as follows.

I2S September Possession v2

Proposed activities and equipment for the works are summarised in Appendix B.

Though subject to change, the works are expected to commence around 03/09/2025 and would be completed by 12/09/2025.

Assessment criteria and mitigation requirements

Noise

The Interim Construction Noise Guideline (ICNG) (DECC 2009) describes noise more than the background level as potentially having an adverse impact on sensitive receivers and increasing the likelihood of complaint. During standard construction hours, where construction noise is within 10 dB(A) of the RBL, impacts would be acceptable.

Where construction noise is more than 10 dB(A) above the RBL during standard construction hours, a residential receiver is considered noise affected and the proponent should undertake all reasonable and feasible steps necessary to manage the impact and consult with the affected community.

Above a LAeq, 15 minute noise level of 75 dB(A), a receiver is highly affected, requiring consideration of additional mitigation measures including alternative accommodation in the night period.

Outside standard construction hours, construction noise at a residential receiver more than 5 dB(A) above the RBL is taken to be noise affected.

In addition, annoying noise such as rock hammers, impact piling, or other impulsive noise sources usually result in greater annoyance than continuous construction noise. A 5 dB(A) penalty is applicable to such activities prior to comparison with the NMLs.

Other sensitive land uses, such as schools and offices, typically find noise from construction disruptive when the properties are being used (such as during work and school times). Table 2 presents NMLs from the ICNG for sensitive land uses based on the principle that the characteristic activities for each of these land uses should not be unduly disturbed.

Table 1 Non-residential sensitive land uses noise management levels

Land use	Noise assessment location	NML (L _{Aeq,15min})
Classrooms at schools and other educational institutions	Internal	45
Places of worship		
Active recreation areas (such as sporting activities and activities which generate their own noise or focus for participants)	External	65
Passive recreation areas (contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External	60
Industrial premises	External	75
Office, retail outlets	External	70

Vibration

Effects of vibration from construction may be segregated into:

- Human exposure – disturbance to building occupants: vibration in which the occupants or users of the building are inconvenienced or possibly disturbed.
- Effects on building contents – vibration where the building contents may be affected.
- Effects on building structures – vibration in which the integrity of the building or structure itself may be prejudiced.

Vibration criteria relating to human comfort applicable to this project are taken from the DEC (2006) document *Assessing Vibration – A Technical Guideline for intermittent vibration* – such as from drilling, compacting or activities that would result in continuous vibration if operated continuously. Intermittent vibration is assessed as a vibration dose value (VDV) and relates to the level of vibration over time (cumulative over the night or day period). VDV's that may result in adverse comment from receivers are summarised in Table 5.

Table 2 Summary of vibration dose values which might result in adverse comment

Time	Low probability of adverse comment (m/s ^{1.75})	Adverse comment possible (m/s ^{1.75})	Adverse comment probable (m/s ^{1.75})
Day (6am to 10pm)	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Night (10pm to 6am)	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8

Guidance for the consideration of potential building damage from construction vibration is in line with BS 7385-1 *Evaluation and measurement for vibration in buildings - Guide for measurement of vibration and evaluation of their effects on buildings*. These guideline values are presented in Table 3.

Table 3 Building damage vibration guidelines (BS 7385-1)

Type of building	Guideline values for vibration (PPV mm/s)		
	4Hz to 15Hz	15Hz to 40Hz	40Hz and above
Reinforced or framed structures / Industrial and heavy commercial buildings	50		
Un-reinforced or light framed structures / Residential or light commercial type buildings	15 - 20	20 - 50	50

For heritage structures, criteria are in line with the German Standard *DIN 4150-3: Structural Vibration- effects of vibration on structures*, as summarised in Table 4.

Table 4 Guideline values for vibration velocity to be used when evaluating the effects of short-term vibration on heritage structures (DIN 4150-3).

Type of building	Guideline values for vibration (PPV mm/s)			
	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz	Vibration at horizontal plane of highest floor at all frequencies
Structures that, because of their sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (e.g. listed buildings under preservation order)	3	3 to 8	8 to 10	8

The safe working distances presented in Table 5 are indicative and will vary depending on the item of plant and local geotechnical conditions. The cosmetic damage thresholds apply to typical buildings under typical geotechnical conditions and vibration monitoring is recommended at specific sites. Where structures are more sensitive, such as heritage items, more stringent conditions are applicable and should be considered individually.

In relation to human response, the safe working distances relate to continuous vibration. For most construction activities, vibration emissions are intermittent and higher vibration levels over shorter periods are acceptable. Additional assessment should be undertaken where the human response criteria are exceeded.

Table 5 Safe working distances for vibration intensive plant

Plant item	Rating/description	Safe working distance	
		Cosmetic damage (BS 7385-1)	Human response (DECCW)
Vibratory roller	<50 kN (typically 1-2 t)	5 m	15 m to 20 m
	<100 kN (typically 2-4 t)	6 m	20 m
	<200 kN (typically 4-6 t)	12 m	40 m
	<300 kN (typically 7-13 t)	15 m	100 m
	>300 kN (typically 13-18 t)	20 m	100 m
	>300 kN (> 18 t)	25 m	100 m
Small hydraulic hammer	300 kg – 5 to 12 t excavator	2 m	7 m
Medium hydraulic hammer	900 kg – 12 to 18t excavator	7 m	23 m
Large hydraulic hammer	1600 kg – 18 to 34 t excavator	22 m	73 m
Vibratory pile driver	Sheet piles	2 m to 20 m	20 m
Pile boring	≤800 mm	2 m	n/a
Jackhammer	Hand held	1 m	Avoid contact with structure

Existing environment and noise management levels

The proposed works would be undertaken in a predominantly Rural / Suburban, characterised as:

Areas with negligible transportation or very limited local traffic, typically light vehicles only.

100m or more from the road.

Background noise levels adopted for the project area and associated noise management levels (NMLs) are summarised in Table 6. NMLs have been established in line with the ICNG.

Table 6 Construction NMLs

Land use	Rural / Suburban		Using custom background noise data?		
Criterion	Day	Weekend Day	Evening	Night	Sleep
RBL	35	35	35	35	
NML	45	40	35	35	45

Sleep disturbance

The ICNG recommends where construction works are planned to extend over more than two consecutive nights, the maximum noise level should be considered for the purposes of establishing the likelihood of sleep disturbance. The Road Noise Policy suggests that maximum internal noise levels below 50-55 dB(A) are unlikely to awaken people from sleep and one or two noise events per night, with maximum internal noise levels of 65-70 dB(A) are not likely to affect health and wellbeing significantly.

Based on this, a sleep awakening criterion of 55 dB(A) (internal) is typically adopted for works. Given that noise attenuation of 10 dB(A) is typically provided by an open window, a sleep awakening criterion of L_{Amax} 65 dB(A) (external) has been applied to residential bedroom façades.

Assessment methodology

Based on the nominated works area (illustrated in Appendix A), proposed equipment and the minimum distance from the works to each sensitive receiver, noise levels were calculated based on ISO9613: 2 *Acoustics - Attenuation of sound during propagation outdoors*.

This method considers geometric spreading, atmospheric absorption, ground effects and is valid for meteorological conditions of a gentle breeze from source to receiver and stable atmosphere (temperature inversion).

KNOWnoise: Minor works is a 2-Dimensional assessment platform and does not consider terrain effects (e.g. hills, valleys) or the presence of solid structures such as homes or noise barriers. This will result in a conservative prediction, suitable for the project being assessed.

Considering the nature of the works and the type of surrounding land uses, sensitive receivers up to a radius of 2000 metres from the works have been included in the assessment.

Sound power levels and predicted noise levels depend on the number of plant items operating at any one time and their precise location relative to a sensitive receiver. Equipment was assumed to be working at the worst-case location relative to each receiver and represents a worst-case assessment. Where the activity is further away from receivers or less equipment is used the predicted levels will decrease.

Sound power levels for plant and equipment expected to be used for each activity has been estimated based on guidance in the following standards and guidelines as well as typical measured noise levels for specific equipment.

- “ AS2436-2010: Guide to noise and vibration control on construction, demolition and maintenance sites
- “ British Standard 5228-1:2009 Code of practice for noise and vibration control on construction and open sites
- “ United Kingdom Department for Environment, Food and Rural Affairs (DEFRA) Noise database for prediction of noise on construction and open sites

Construction noise sources and associated sound power levels are listed in Appendix B. The maximum predicted LAeq noise level within the work area was identified for each receiver.

Predicted noise levels

Detailed predicted noise levels for each potentially affected receiver are presented Appendix C.

A summary of predicted noise levels in comparison with ICNG assessment criteria for the Period0 period is presented in Table 4.

Table 7 Summary of predicted noise levels with comparison against ICNG criteria for the Period0 period.

Criterion	Predicted number of receivers
Maximum cumulative predicted LAeq, 15 minute noise level	70 dB(A)
Number of highly noise affected receivers (>75 dB)	0
1 – 10 dB above NML	6
10 – 20 dB above NML	2
20+ dB above NML	2

Predicted impact classes for the Period0 period are illustrated graphically in Appendix C. Each identified receiver in the study area has been coloured to highlight the predicted level of impact.

Sleep disturbance

In the event works are planned for more than two consecutive nights, sleep disturbance is considered. Table 8 summarises the number of residents predicted to exceed the sleep disturbance screening criterion. Further analysis is also provided to indicate the number of receivers expected to be woken, at Lmax noise levels greater than 65 dBA.

Where exceedances of the awakening criteria are predicted, additional care should be taken and mitigation measures implemented in the with the CNVG.

Table 8 Summary of predicted exceedances of sleep disturbance screening criterion and awakening criterion.

Criterion	Predicted number of receivers
Potentially Sleep Disturbed (exceed RBL + 15 screening criterion)	0
Sleep Disturbed (exceed 65 dBA awakening criterion)	0

Predicted vibration impacts

The level of vibration impact on sensitive receivers (buildings and human comfort) will largely depend on the type of machinery in use and the distance from source to receiver.

Based on the proposed work locations and selected equipment, the following level of vibration impact is expected. A summary of vibration impacts is provided for each sensitive receiver in Appendix C.

Impact classification	Number of potentially affected receivers
Human comfort	0
Cosmetic damage	0
Heritage structure	0

Proposed noise mitigation measures

The safeguards and controls listed in Table 6 will be implemented where reasonable and feasible with the intention of achieving the project noise criteria and to maintain noise impacts at a practical minimum.

Table 9 Safeguards and controls

Action	Description
Community consultation or notification	<p>Notify the affected community.</p> <p>The notification will detail work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night time period, any operational noise benefits from the works (where applicable) and contact telephone number.</p> <p>Notification should be a minimum of 7 calendar days prior to the start of works. For projects other than maintenance works more advanced consultation or notification may be required.</p>
Site inductions	<p>All employees, contractors and subcontractors are to receive an environmental induction. The induction would at least include:</p> <ul style="list-style-type: none"> • all project specific and relevant standard noise and vibration mitigation measures • relevant licence and approval conditions • permissible hours of work • any limitations on high noise generating activities • location of nearest sensitive receivers • construction employee parking areas • designated loading/unloading areas and procedures <p>site opening/closing times (including deliveries) environmental incident procedures</p>
Behaviour	<p>No swearing or unnecessary shouting or loud stereos/radios on site.</p> <p>Limit compression braking at night in residential areas.</p> <p>No dropping of materials from height, throwing of metal items and slamming of doors.</p>
Verification	<p>Where indicated in Appendix C, a noise verification program would be undertaken for the duration of the works.</p>
Construction hours	<p>Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Work generating high noise and/or vibration levels should be scheduled during less sensitive time periods.</p>
Respite for out-of-hours works	<p>Respite would be scheduled as indicated in Appendix C and described in the CNVG.</p>
Equipment selection	<p>Use quieter construction methods where feasible and reasonable.</p> <p>Ensure plant including the silencer is well maintained.</p> <p>Plant noise levels will have an operating noise emission level compliant with Appendix F of the CNVG</p>
Use and siting of plant	<p>The offset distance between noisy plant and adjacent sensitive receivers is to be maximised.</p> <p>Plant used intermittently to be throttled down or shut down.</p> <p>Noise-emitting plant to be directed away from sensitive receivers.</p>

Construction noise and vibration impact statement

Action	Description
Plan worksites and activities to minimise noise and vibration.	<p>Locate compounds away from sensitive receivers and discourage access from local roads.</p> <p>Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site.</p> <p>Where additional activities or plant may only result in a marginal noise increase and speed up works, consider limiting duration of impact by concentrating noisy activities at one location and move to another as quickly as possible.</p> <p>Very noise activities should be scheduled for normal working hours. If the work can not be undertaken during the day, it should be completed before 11:00pm.</p> <p>Where practicable, work should be scheduled to avoid major student examination periods when students are studying for examinations such as before or during Higher School Certificate and at the end of higher education semesters.</p>
Non-tonal reverse alarms	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work.
Shield stationary noise sources such as pumps, generators, and compressors	These should be enclosed or shielded where reasonable and feasible.
Implement any project specific mitigation measures	
1	None

Appendix A Project location and predicted level of impact



Appendix B Proposed activities and equipment

CSR Trench - Potholing

Equipment	Quantity	Usage	Reduction	SWL
Excavator (10 tonne)	1	40%	0	95
Light vehicle	1	40%	0	81
Vacc truck	1	60%	0	110

Activity Sound Power Level: 110

Appendix C Detailed noise predicted for each receiver

Noise

Assessment: I25 September Possession v2				NML, LAeq, 15 minute				Sleep, LAmax		Predicted noise level, dBA		Exceedance summary											
NCA	Rec	Address	Land use	Day	O/day	Eve	Night	Screen	Awake	Cumulative LAeq, 15 minute	LMax	Highly Affected?	Exceed NML by (dB):				Exceed sleep disturbance by (dB):		Impact classification				
													Day	O/day	Eve	Night	Screen	Awake	Day	O/day	Eve	Night	
NCA 1	1676 894	17 TOOHEYS LANE ILLABO	RES	45	40	35	35			63.2	70.3		18.2	23.2	28.2	28.2	-	18.2	Moderately Intrusive	Moderately Intrusive	Highly Intrusive	Highly Intrusive	
NCA 1	1676 900	9-11 HOWELL STREET ILLABO	RES	45	40	35	35			46.3	53.3		1.3	6.3	11.3	11.3	-	1.3	Clearly Audible	Clearly Audible	Clearly Audible	Clearly Audible	
NCA 1	1676 903	7 TOOHEYS LANE ILLABO	RES	45	40	35	35			54.3	61.4		9.3	14.3	19.3	19.3	-	9.3	Clearly Audible	Clearly Audible	Moderately Intrusive	Moderately Intrusive	
NCA 1	1676 907		RES	45	40	35	35			45.9	53		0.9	5.9	10.9	10.9	-	0.9	Clearly Audible	Clearly Audible	Clearly Audible	Clearly Audible	
NCA 1	1676 909		RES	45	40	35	35			46.4	53.5		1.4	6.4	11.4	11.4	-	1.4	Clearly Audible	Clearly Audible	Clearly Audible	Clearly Audible	
NCA 1	1676 918	81 WOOD STREET ILLABO	RES	45	40	35	35			47.2	54.2		2.2	7.2	12.2	12.2	-	2.2	Clearly Audible	Clearly Audible	Clearly Audible	Clearly Audible	
NCA 1	1676 923	9 TOOHEYS LANE ILLABO	RES	45	40	35	35			58.6	65.7		13.6	18.6	23.6	23.6	-	13.6	Moderately Intrusive	Moderately Intrusive	Moderately Intrusive	Moderately Intrusive	
NCA 1	1676 928	17 TOOHEYS LANE ILLABO	RES	45	40	35	35			67.4	74.4		22.4	27.4	32.4	32.4	-	22.4	Highly Intrusive	Highly Intrusive	Highly Intrusive	Highly Intrusive	
NCA 1	1676 931	5 TOOHEYS LANE ILLABO	RES	45	40	35	35			52.5	59.6		7.5	12.5	17.5	17.5	-	7.5	Clearly Audible	Clearly Audible	Moderately Intrusive	Moderately Intrusive	
NCA 1	1676 948	81 SHOWGROUND ROAD ILLABO	RES	45	40	35	35			45.6	52.7		0.6	5.6	10.6	10.6	-	0.6	Clearly Audible	Clearly Audible	Clearly Audible	Clearly Audible	
NCA 1	1676 953		RES	45	40	35	35			70.4	77.5		25.4	30.4	35.4	35.4	-	25.4	Highly Intrusive	Highly Intrusive	Highly Intrusive	Highly Intrusive	
NCA 1	1676 954	7 TOOHEYS LANE ILLABO	RES	45	40	35	35			53.7	60.8		8.7	13.7	18.7	18.7	-	8.7	Clearly Audible	Clearly Audible	Moderately Intrusive	Moderately Intrusive	

Vibration

NCA	Receiver	Address	Vibration Impact
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