# CHAPTER 08

# Proposal description—construction

**ILLABO TO STOCKINBINGAL** ENVIRONMENTAL IMPACT STATEMENT

ARTC | INLAND RAIL
An Australian Government Initiative

# Contents



## Figures



## Tables

# 8. Proposal description—construction

*This chapter provides an outline of the indicative construction activities likely to be used to construct the Inland Rail—Illabo to Stockinbingal project (the proposal). It includes a summary of the proposed timing, an indicative construction methodology, likely resources and proposed access arrangements. This information is preliminary only and is based on the current stage of the design. The construction methodology will be refined as the design of the proposal progresses, and once the construction contractor is engaged.*

## 8.1 Overview of construction scope and approach

An overview of the construction of the proposal is in Table 8-1.

**TABLE 8-1: CONSTRUCTION OVERVIEW**

| Element | Description | EIS reference |
|---|---|---|
| **Construction** | | |
| Timing | About 24 months, commencing in mid-2024, and concluding in mid-2026 (dependent on all necessary approvals being obtained). | Section 8.1 and Section 8.2.14 |
| Proposal site | Defined as the area that would be directly impacted by the construction and operation of the proposal.<br>Varies in width, approximately 40–130 metres (m), typically incorporating a buffer of up to 50 m around the permanent proposal footprint. | Section 8.1 |
| Methodology | Divided into six sections, construction at each section would involve: site establishment and enabling works; main construction works; testing and commissioning; and finishing works. | Section 8.2<br>Figure 8-1 |
| Rail possessions | Required where works would impact the operation of existing rail lines, at the southern and northern connections.<br>Proposed 60-hour rail possessions in March 2025 and March 2026. | Section 8.2.15 |
| Construction hours | General construction hours: Monday to Sunday: 6.00 am to 6.00 pm.<br>Blasting: within the blasting hours permitted under the Interim Construction Noise Guideline (ICNG).<br>Works in the existing rail corridor during scheduled rail corridor possession periods and out-of-hours construction activities: outside of hours above. | Section 8.2.16 |
| Compounds | Up to 29 primary compounds accommodating a range of indicative uses (accommodating offices, laydown areas, stockpiles, bunded refuelling areas, storage containers, mobile plant (such as concrete batching plant), equipment, and hazardous material storage).<br>Utility and service connections for compounds (either through relevant provider or via generators for electricity). | Section 8.3<br>Table 8-6 |
| Workforce | A peak workforce of around 425.<br>One workforce accommodation camp (with 450 beds allowed for surge capacity). | Section 8.4<br>Appendix I: Workforce accommodation camp assessment |
| Raw materials | Total of 1.6 million cubic metres ($m^3$) of construction material required.<br>Around 1.5 million $m^3$ of material would require excavation and placement with no net deficit predicted. | Section 8.2.10 and Section 8.5.1 |
| Borrow pits | A potential borrow pit at Stockinbingal. | Section 8.5.3 |

| Element | Description | EIS reference |
|---|---|---|
| Water requirements | Preliminary estimates of water requirements for the proposal indicate that a total of 675 megalitres (ML) of water would be required.<br>Goldenfields Water, who are responsible for water supply functions within the local government areas (LGAs) have indicated that they can supply water for construction from Stockinbingal and Cootamundra via its reticulated potable supply pipe network. Water would be accumulated and stored in water tanks in construction compounds to meet construction supply demands. | Section 8.5.4<br>Table 8-8 |
| Dewatering | No groundwater 'take' for use as construction water supply is proposed.<br>Dewatering of farm dams would be required within the proposal site.<br>Dewatering may occur during construction if excavations (cuts) or piling for bridge foundations intersect with the groundwater table. | Section 14.3.1 (Chapter 14: Groundwater)<br>Section 12.2.6 (Chapter 12: Hydrology and flooding) |
| Imported materials | Precast or pre-fabricated components (e.g. culverts), which would be manufactured offsite (with those facilities being outside the scope of the proposal). | Section 8.5.5 |
| Plant and equipment | Range of plant and equipment, including graders, excavators, road cranes, scrapers, dozers, blast hole drill rig, explosives truck, Hi-rail excavator with octopus attachment, concrete pump trucks, hydroseed trucks and watercarts. | Section 8.6<br>Table 8-9 |
| Mobile batch plants | Two proposed, within construction compounds 11 and 25. | Section 8.7 |
| Other construction elements | Demolition of a number of non-residential buildings and removal of existing road and rail infrastructure located within the proposal site is anticipated. For example, the new rail alignment at Stockinbingal would result in the removal of redundant sections of the Stockinbingal to Parkes Line.<br>Rehabilitation of site in accordance with the Rehabilitation and Reinstatement Plan.<br>Construction of temporary culverts across Isobel Creek and Powder Horn Creek. | Section 8.8<br>Figure 8-6 and Figure 8-7 |
| Transport, access and haulage | 11 access points to construction compounds and work areas from public roads.<br>Haulage between construction sections (including in relation to bulk earthworks) would be undertaken within the proposal site.<br>Vehicle movements would comprise both heavy vehicles and light vehicles (mainly construction workers).<br>Access for emergency vehicles would be maintained to all construction sites. | Section 8.9<br>Table 8-10<br>Figure 8-8 |
| Public utilities | Adjustment, relocation or replacement of existing utilities (electrical power lines, water and sewer mains and pipelines, overhead and buried telecommunications, buried high pressure gas pipelines).<br>Two key utilities within the proposal site require further development during detailed design:<br>▸ an NBN Tower (near chainage 38200)<br>▸ a high-pressure gas pipeline (around chainage 37280). | Section 8.10<br>Appendix F: Utilities management framework |

Construction of the proposal would be carried out having regard to the necessary approvals and detailed design process and outcomes.

The proposal site is defined as the area that would be directly impacted by the construction and operation of the proposal, and includes the location of construction worksites and operational infrastructure that form the construction footprint.

For the purposes of the EIS, the proposal site varies in width between about 40 and 130 metres (m) to cater for large embankments and cuttings, to respond to local topography and incorporate ancillary infrastructure such as a crossing loop and associated maintenance siding. The proposal site provides for all the required track and associated infrastructure, haul roads, culverts and level crossings. The proposal site also allows for the location of construction compounds and batch plants.

The proposal site incorporates a buffer around the permanent project footprint (as detailed in Chapter 7: Proposal description—operation) that allows for construction works, provides a worst-case impact and allows for design flexibility throughout design development and construction. The nominated buffer distances up to 50 m for key infrastructure such as bridges, haul roads, access tracks, drainage, large cuttings and embankments.

The work is planned to be undertaken in stages, commencing in the south and progressively working north. The description of the construction is subject to further design development following approval of the proposal.

### 8.1.1 Approach to avoiding or minimising impacts during construction

Areas where the proposal site would have impacted sensitive areas, construction planning and design refinements have been implemented to minimise and/or avoid these areas.

Mitigation and management measures applicable to the design, pre-construction and construction stages would be implemented to avoid or minimise the construction impacts described in Chapters 10 to 26. Mitigation measures provided in these chapters are summarised in Chapter 27: Approach to environmental management and mitigation. The measures include preparing and implementing a construction environmental management plan (CEMP) including detailed sub-plans.

The CEMP would be prepared for the construction phase of the proposal by the responsible construction contractor. The CEMP would provide a centralised strategy through which all potential environmental impacts would be managed during construction and would include detailed management measures to avoid or minimise potential impacts. The requirements for the CEMP are described in Chapter 27: Approach to environmental management and mitigation. An outline of the CEMP, including the required sub-plans, is provided in Appendix E.

## 8.2 Indicative construction methodology

Initial construction planning to identify key elements including potential construction methodologies, earthworks (cut and fill) requirements, workforce requirements, resource requirements (including water sources), material sources and construction impact zones has been undertaken as part of design development to date.

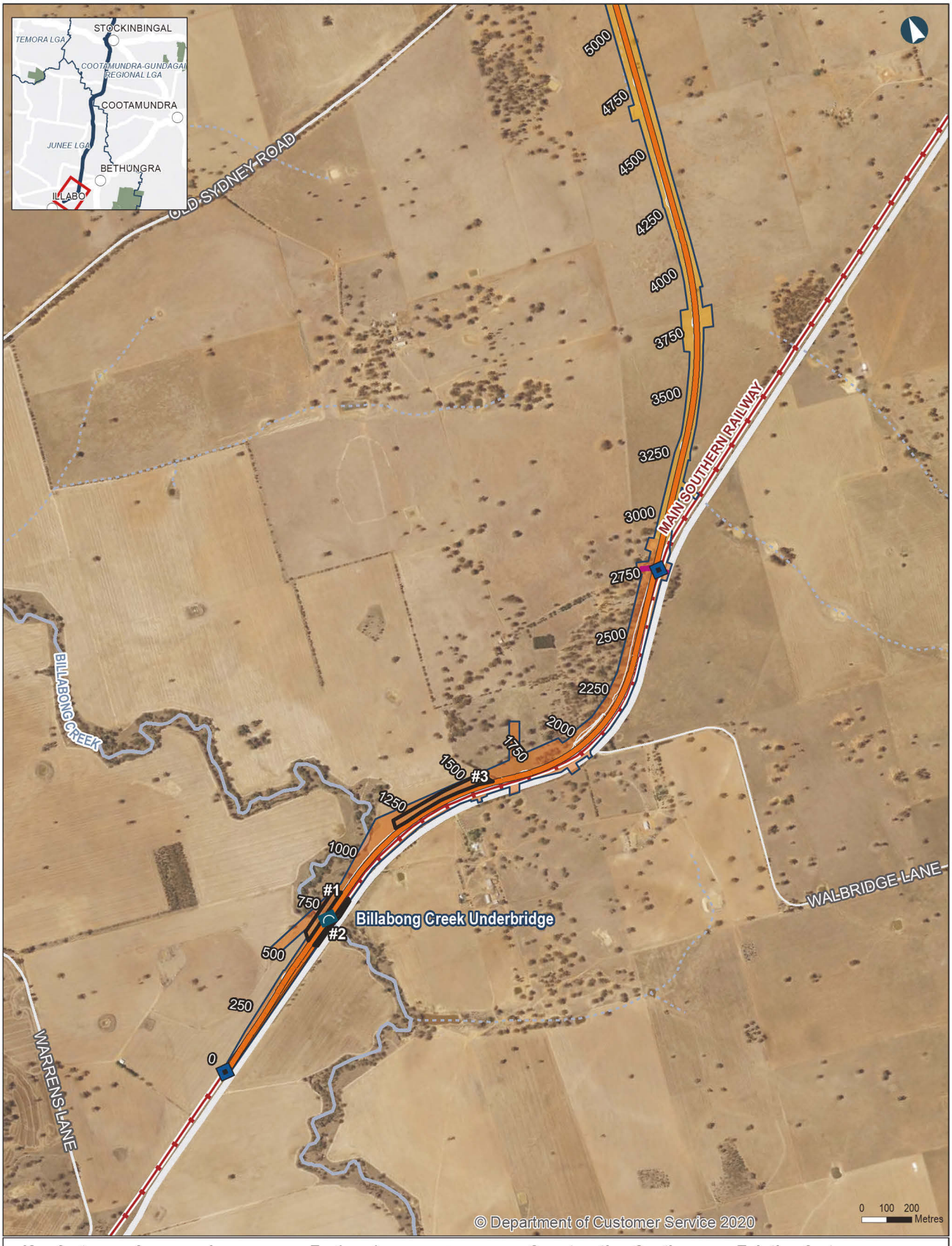
The proposal has been divided into six sections as shown in the overview of proposal construction in Figure 8-1:

- Section 1: Chainage 0 to 2900
- Section 2: Chainage 2901 to 8840
- Section 3: Chainage 8841 to 18500
- Section 4: Chainage 18501 to 28300
- Section 5: Chainage 28301 to 37300
- Section 6: Chainage 37300 to 42600.

For each section, construction would typically involve:

- site establishment and enabling works (described in section 8.2.1)
- main construction works (described in sections 8.2.2 to 8.2.11)
- testing and commissioning (described in section 8.2.12)
- finishing works (described in section 8.2.13).

The construction methodology would be confirmed following further design development and planning.




**Key features of proposal**
- Proposal alignment
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Access point
- Proposal Site
- Earthworks
- Bridge (watercourse crossing)
- Construction Compounds
- Road realignment

**Construction Section**
- Section 1 (0-2,900)
- Section 2 (2,901-8,840)

**Existing features**
- Local road
- Sub-arterial road
- Arterial road
- Existing Rail
- Minor watercourse
- Major watercourse

## 8.1 Overview of proposal construction

Coordinate System: GDA 1994 MGA Zone 55
Date: 8/12/2021 Paper size: A4 Scale: 1:22,000
MAP 1 of 10

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

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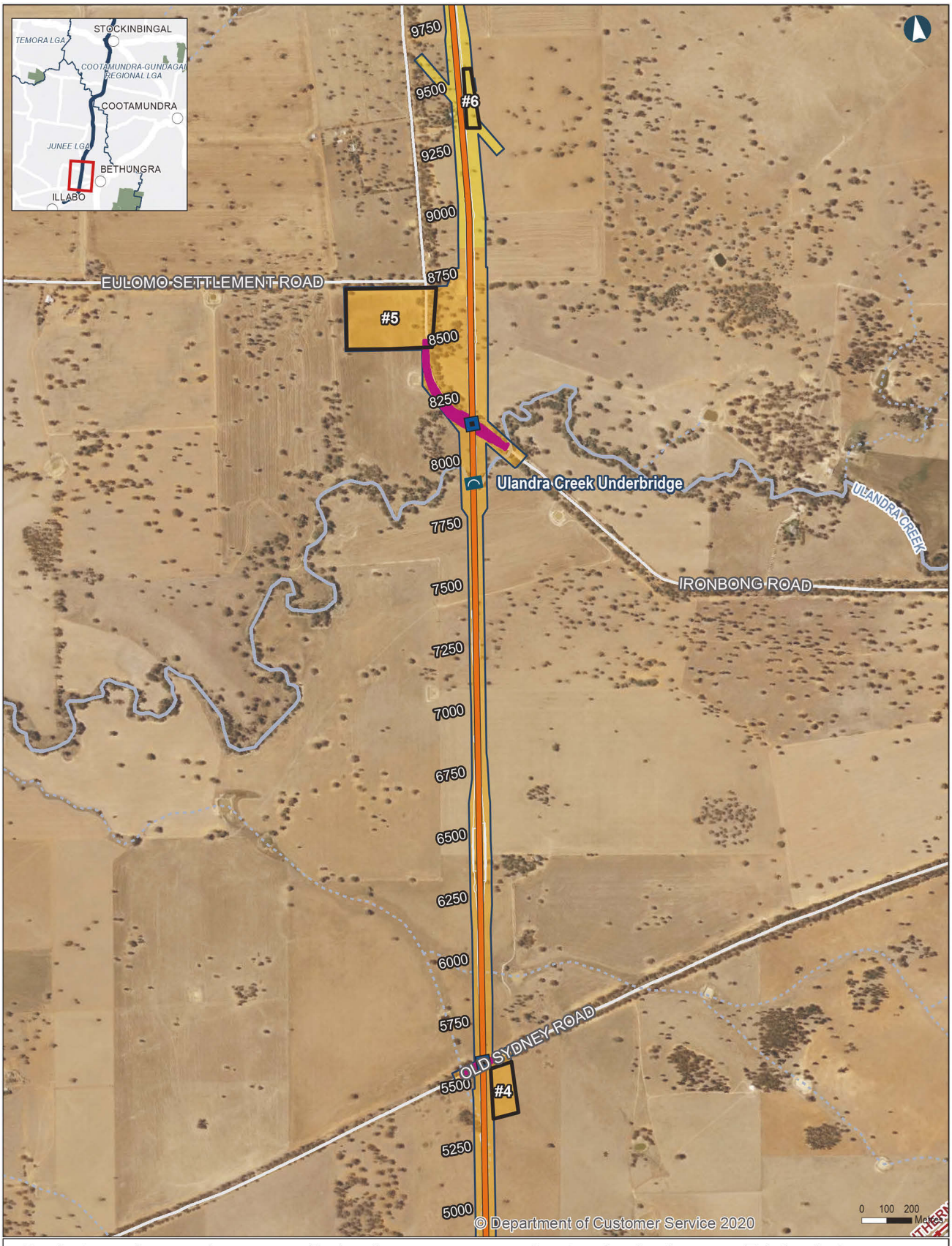


**Key features of proposal**

- Proposal alignment
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Access point
- Proposal Site
- Earthworks
- Bridge (watercourse crossing)
- Construction Compounds
- Road realignment

**Construction Section**

- Section 2 (2,901-8,840)
- Section 3 (8,841-18,500)

**Existing features**

- Local road
- Sub-arterial road
- Arterial road
- Existing Rail
- Minor watercourse
- Major watercourse

## 8.1 Overview of proposal construction

Coordinate System: GDA 1994 MGA Zone 55
Date: 8/12/2021 Paper size: A4 Scale: 1:22,000
MAP 2 of 10

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

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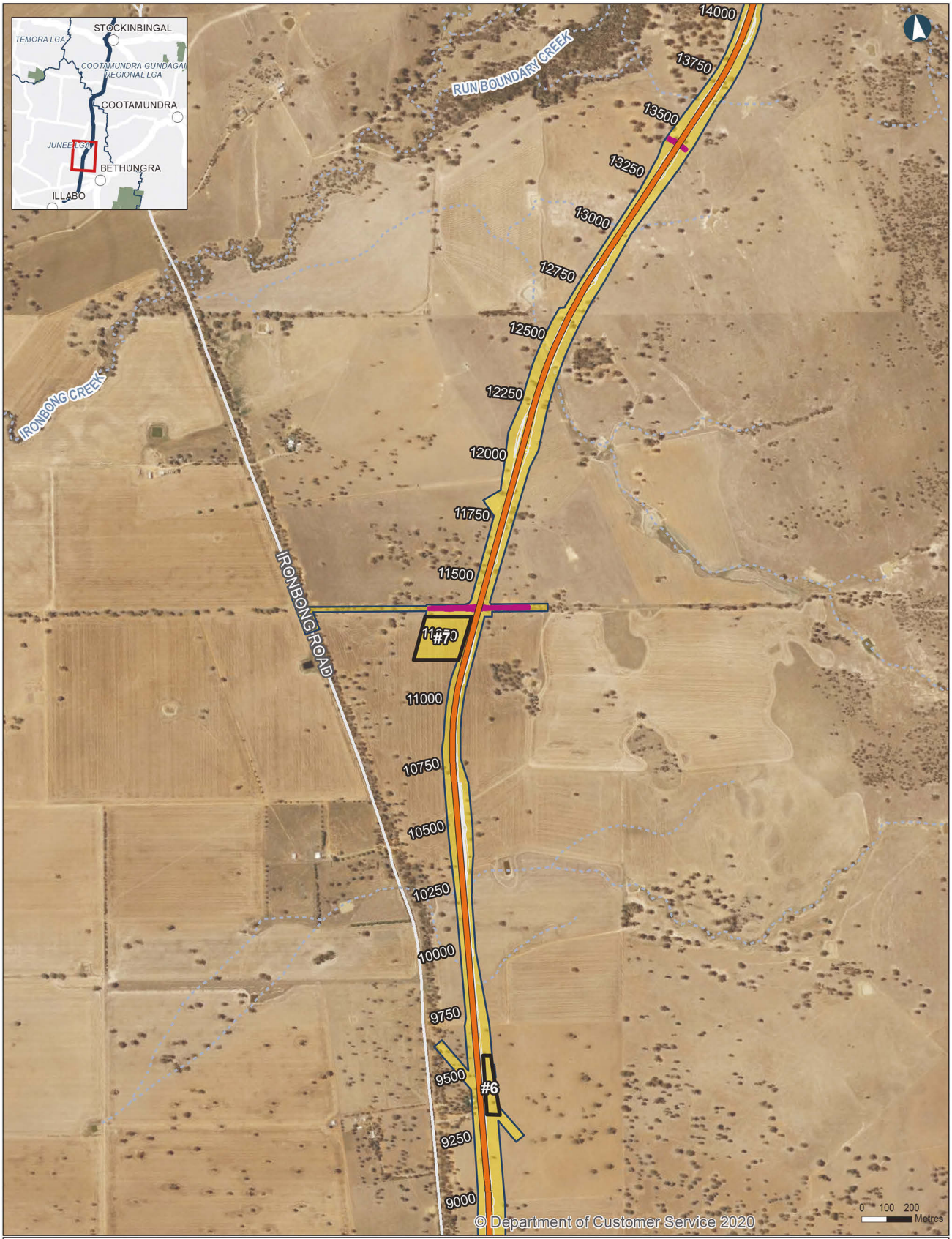


**Key features of proposal**
- Proposal alignment
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Proposal Site
- Earthworks
- Construction Compounds
- Road realignment

**Construction Section**
- Section 2 (2,901-8,840)
- Section 3 (8,841-18,500)

**Existing features**
- Local road
- Sub-arterial road
- Arterial road
- Minor watercourse

## 8.1 Overview of proposal construction

Coordinate System: GDA 1994 MGA Zone 55
Date: 8/12/2021 Paper size: A4 Scale: 1:22,000
MAP 3 of 10

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

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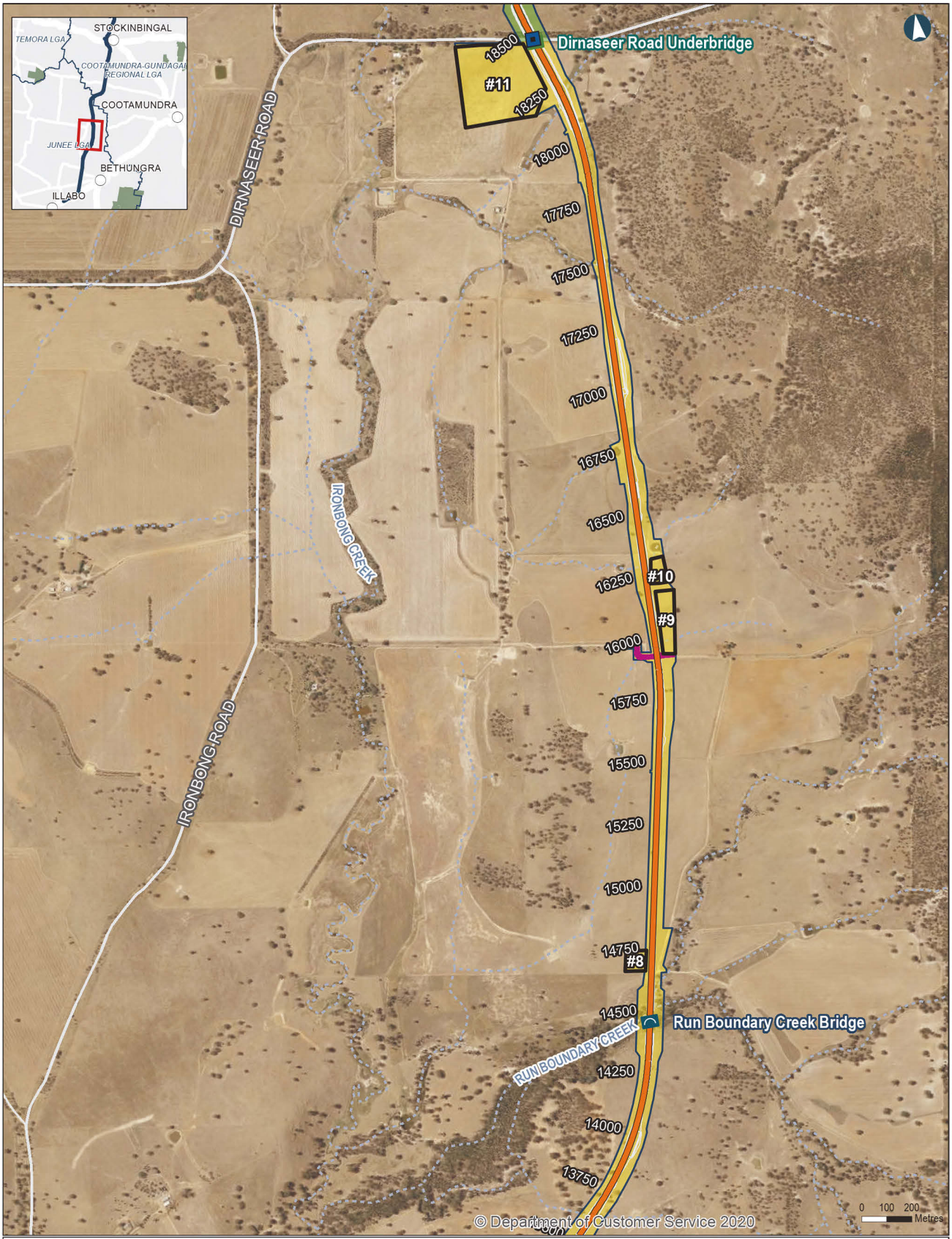


**Key features of proposal**
- Proposal alignment
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Access point
- Proposal Site
- Earthworks
- Bridge (watercourse crossing)
- Bridge (road crossing)
- Construction Compounds
- Road realignment

**Construction Section**
- Section 3 (8,841-18,500)
- Section 4 (18,501-28,300)

**Existing features**
- Local road
- Sub-arterial road
- Arterial road
- Minor watercourse

## 8.1 Overview of proposal construction

Coordinate System: GDA 1994 MGA Zone 55
Date: 8/12/2021 Paper size: A4 Scale: 1:22,000
MAP 4 of 10

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

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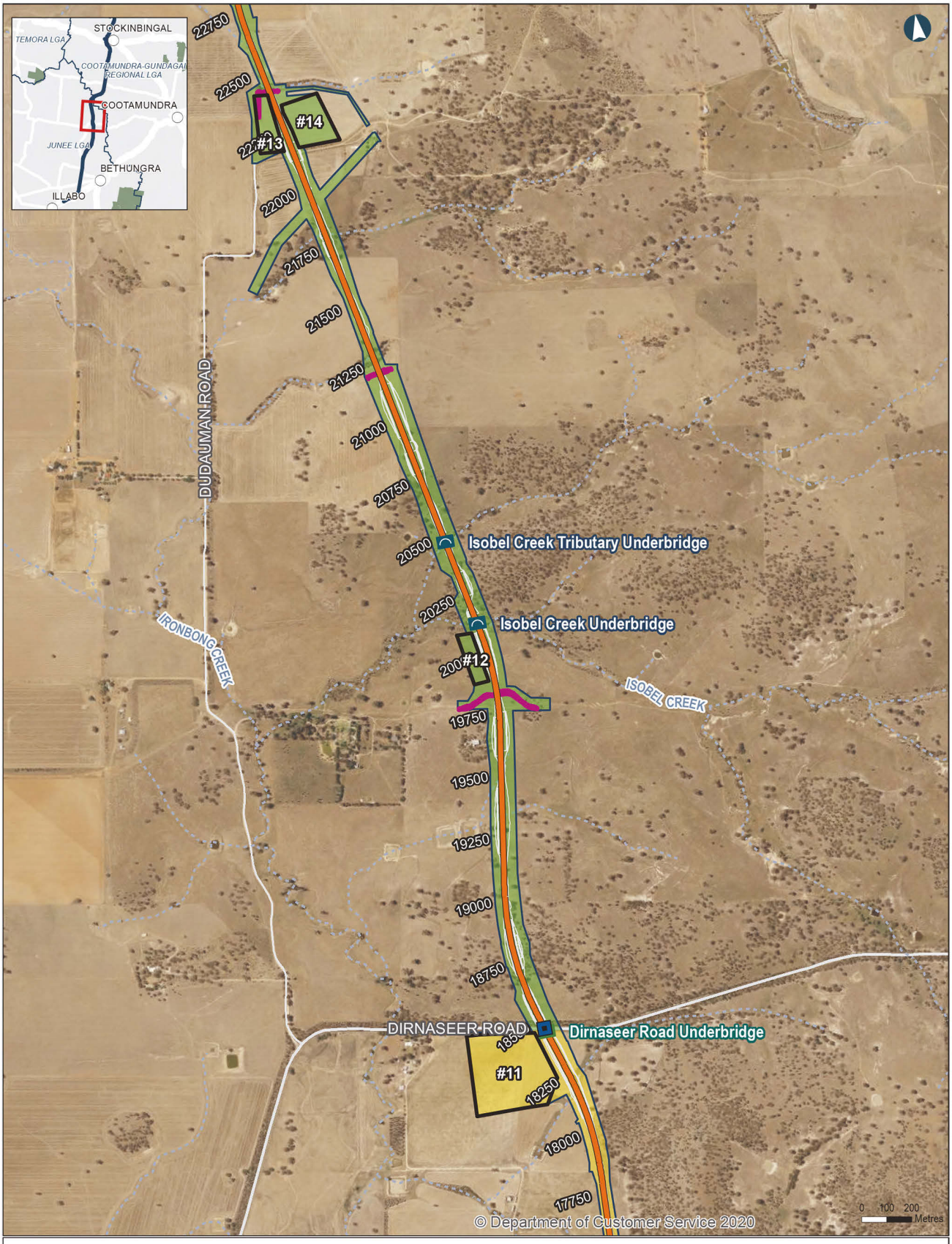


**Key features of proposal**
- Proposal alignment
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Access point
- Proposal Site
- Earthworks
- Bridge (watercourse crossing)
- Bridge (road crossing)
- Construction Compounds
- Road realignment

**Construction Section**
- Section 3 (8,841-18,500)
- Section 4 (18,501-28,300)

**Existing features**
- Local road
- Sub-arterial road
- Arterial road
- Minor watercourse

## 8.1 Overview of proposal construction

Coordinate System: GDA 1994 MGA Zone 55
Date: 8/12/2021 Paper size: A4 Scale: 1:22,000
MAP 5 of 10

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

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**Key features of proposal**

- Proposal alignment
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Proposal Site
- Earthworks
- Construction Compounds
- Road realignment

**Construction Section**

- Section 4 (18,501-28,300)

**Existing features**

- Local road
- Sub-arterial road
- Arterial road
- Minor watercourse

## 8.1 Overview of proposal construction

Coordinate System: GDA 1994 MGA Zone 55
Date: 8/12/2021 Paper size: A4 Scale: 1:22,000
MAP 6 of 10

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

220_0115_EIS_8_1_OverviewOfProposalConstruction_r1v2.mxd


**Key features of proposal**
- Proposal alignment
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Access point
- Proposal Site
- Earthworks
- Bridge (road crossing)
- Construction Compounds
- Road realignment

**Construction Section**
- Section 4 (18,501-28,300)
- Section 5 (28,301-37,300)

**Existing features**
- Local road
- Sub-arterial road
- Arterial road
- Minor watercourse

## 8.1 Overview of proposal construction

Coordinate System: GDA 1994 MGA Zone 55
Date: 8/12/2021 Paper size: A4 Scale: 1:22,000
MAP 7 of 10

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

220_0115_EIS_8_1_OverviewOfProposalConstruction_r1v2.mxd


**Key features of proposal**

- Proposal alignment
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Proposal Site
- Earthworks
- Bridge (watercourse crossing)
- Construction Compounds
- Road realignment

**Construction Section**

- Section 5 (28,301-37,300)

**Existing features**

- Local road
- Sub-arterial road
- Arterial road
- Minor watercourse
- Major watercourse

## 8.1 Overview of proposal construction

Coordinate System: GDA 1994 MGA Zone 55
Date: 8/12/2021 Paper size: A4 Scale: 1:22,000
MAP 8 of 10

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

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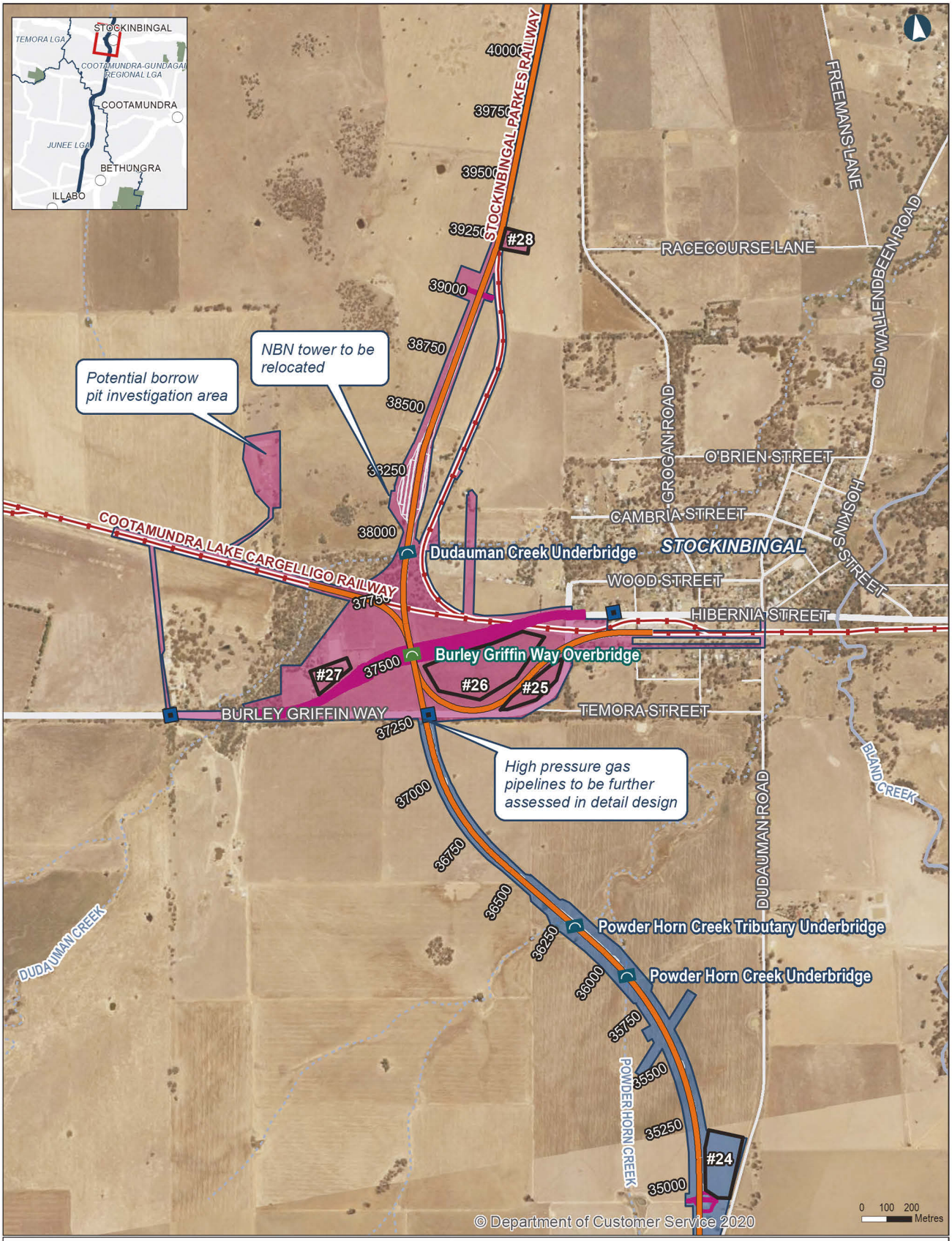


**Key features of proposal**
- Proposal alignment
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Access point
- Proposal Site

- Earthworks
- Bridge (watercourse crossing)
- Bridge (road crossing)
- Construction Compounds
- Road realignment

**Construction Section**
- Section 5 (28,301-37,300)
- Section 6 (37,300-42,600)

**Existing features**
- Local road
- Sub-arterial road
- Arterial road
- Existing Rail
- Minor watercourse
- Major watercourse

## 8.1 Overview of proposal construction

Coordinate System: GDA 1994 MGA Zone 55
Date: 8/12/2021 Paper size: A4 Scale: 1:22,000
MAP 9 of 10

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

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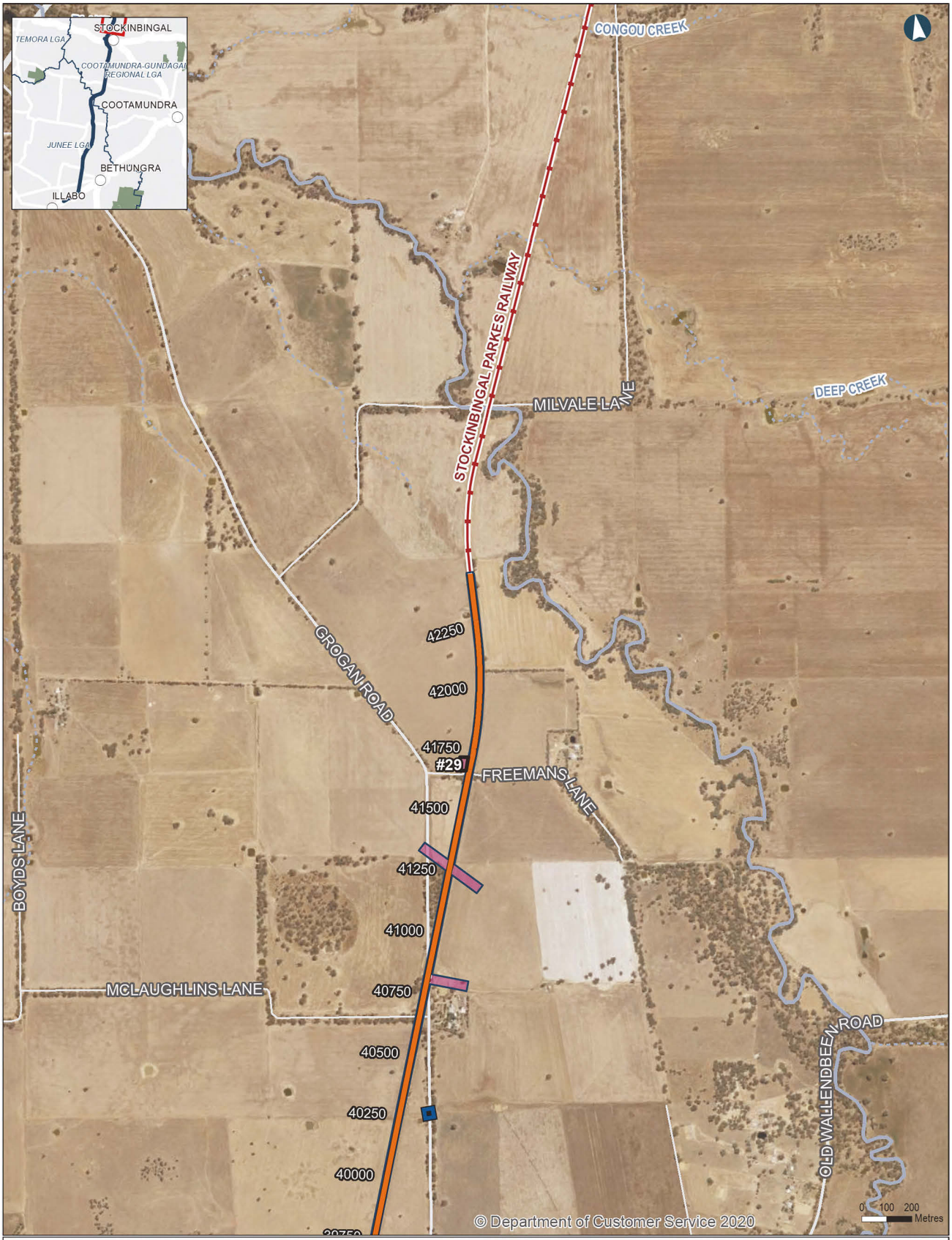


**Key features of proposal**

- Proposal alignment
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Access point
- Proposal Site
- Earthworks
- Construction Compounds

**Construction Section**

- Section 6 (37,300-42,600)

**Existing features**

- Local road
- Sub-arterial road
- Arterial road
- Existing Rail
- Minor watercourse
- Major watercourse

## 8.1 Overview of proposal construction

Coordinate System: GDA 1994 MGA Zone 55
Date: 8/12/2021 Paper size: A4 Scale: 1:22,000
MAP 10 of 10

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

220_0115_EIS_8_1_OverviewOfProposalConstruction_r1v2.mxd

### 8.2.1 Site establishment and enabling works

Site establishment and enabling works would generally involve:

- consulting landowners/occupants, where required
- identifying property access modifications along the alignment, including the relocation of existing facilities
- demolishing buildings and other structures
- installing environmental controls in accordance with the CEMP, including water and sedimentation control basins, diversion drains and other erosion and sedimentation control measures, and temporary exclusion fencing for sensitive areas
- implementing traffic controls in accordance with the CEMP
- establishing ancillary facilities and construction site compounds
- removing vegetation
- erecting temporary fencing
- establishing site access roads where required
- relocating utility as required
- delivering and stockpiling of materials including rail, sleepers, ballast, culverts and structural fill.

### 8.2.2 Track works

Indicative methodologies for track work components are outlined. These components are subject to further design development and specific work planning. Further details on the proposal's track infrastructure are provided in section 7.2.

A general methodology for the installation of new track is:

- clearing, grubbing, stripping and stockpiling topsoil
- excavating or blasting in areas of cut
- placing excavated material and compact in fill areas
- crushing excavated material and process into earthworks formation materials
- placing capping on top of earthworks formation and compact
- trimming batters of the formation and topsoil/landscape
- placing new ballast on top of the formation and compact
- placing concrete sleepers and rail on prepared ballast bed and weld up rails
- placing new ballast on top of or around the sleepers
- tamping and profiling the ballast around the sleepers and line to a smooth alignment
- undertaking a profile grind of the rails using a rail grinder.

#### 8.2.2.1 Track upgrades

A general methodology for the track upgrade works is provided below and would apply to the northern and southern ends of the proposal near the rail tie-ins (toward Illabo at chainage 0 and Stockinbingal at chainage 39200):

- cutting the existing track at location where the proposal would connect
- excavating and removing existing track and formation
- constructing new track as described above
- reinstating the existing track by welding and adjusting track to interface back into existing track alignment at the rail tie-ins.

#### 8.2.2.2 Track removal

Track removal would include the Stockinbingal to Parkes Line and Lake Cargelligo Line as shown in Figure 8-2. A general methodology for track removal would involve:

- removing rail-related infrastructure, including track, sleepers, signalling and signage
- flattening out ballast across top of formation to retain as a rail maintenance access road.

Decommissioned rail-related infrastructure will be reclaimed and reused in line with ARTC procedures, where appropriate.

#### 8.2.2.3 Turnouts

A general methodology for constructing turnouts is as follows:

- undertaking formation improvement works as required
- installing ballast, bearers, sleepers and rails/build turn out
- installing control mechanisms (points motor, power supply, etc.)
- testing and commissioning.


**Key features of proposal**

- New track/track upgrade
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Redundant sections of rail to be decommissioned

**Existing features**

- Local road
- Sub-arterial road
- Arterial road
- Major Watercourse
- Minor Watercourse
- Existing Rail

## 8.2 Decommissioning of redundant sections of rail at Stockinbingal

Coordinate System: GDA 1994 MGA Zone 55
Date: 5/17/2021 Paper size: A4 Scale: 1:12,000

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

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### 8.2.3 Culverts

Culverts would be pre-cast offsite and installed along the proposal site as the works progress. A general methodology for the installation of box culverts would involve:

- excavating to the required depth
- placing and compacting bedding, pouring and binding material
- installing the base slab, crown units or place pre-cast culvert and concrete pipes on the bedding material/matting
- installing pre-cast headwalls or cast headwalls in situ
- pouring inlet and outer aprons/cut off walls
- installing rip-rap and scour protection
- placing ballast, sleepers and rail on top of the culverts, and tamp and profile the ballast under and around the sleepers and weld up tracks.

A general methodology for the installation of pipe culverts would involve:

- excavating to the required depth
- placing and compacting bedding
- installing pipe culverts
- backfilling the pipes
- installing headwalls
- installing rip-rap and scour protection.

### 8.2.4 Drainage

A general methodology for open drainage construction is as follows:

- excavating earth material from the side of the existing track formation (further described in section 7.3.1)
- trimming base and sides of the drain
- shaping and lining the drain with the required lining material

### 8.2.5 Level crossings

A number of level crossings, as detailed in section 7.2, are required to be constructed. A general construction methodology for these works is as follows:

- establishing traffic controls and temporary diversion requirements to local roads, as further detailed in Chapter 11: Traffic, transport and access
- treating the foundation of fill zones
- establishing earthworks to the road to suit the new rail level height
- implementing road pavement construction
- installing wearing course
- installing signage and signals
- setting up interim crossing until signals are installed and activated
- modifying active protection systems to cover realignments and protection upgrades
- drawing line marking.

### 8.2.6 New bridges

Typically, bridge construction works for road and water crossings would involve the following activities:

- establishing the work site, temporary hoardings and laydown areas
- establishing of erosion and sedimentation controls
- removing/relocating of trees and vegetation (where required)
- establishing construction of site access for plant and materials
- implementing site preparation and levelling activities for site compounds
- piling pad construction for piling works
- installing of piled foundations (or bearing slabs/pad footings)
- removing existing track and bridge spans (where required)
- demolishing existing abutments (where required)
- constructing formwork, steel reinforcement and cast concrete for piers
- constructing formwork, steel reinforcement and cast concrete for headstocks
- constructing new abutments (where required)
- mobilising crane and install precast girders
- installing drainage behind abutments
- casting of the deck slab
- casting of edge barriers and install hand/guard rails
- placing ballast, sleepers and rail and landscaping and restoration of disturbed areas.

In addition to these general activities, for construction of road bridges, traffic controls and temporary diversion requirements to local roads would be established, as further detailed in Chapter 11: Traffic, transport, and access.

### 8.2.7 Rail maintenance access road

The rail maintenance access road (RMAR) would be constructed to provide vehicular access alongside the track to enable maintenance and emergency access during operation; however, the RMAR would be initially developed early in project construction to provide a construction haul route along the length of the alignment within the proposal site.

Generally, construction works to establish the RMAR (for the purposes of use as a haul road) would include:

- clearing and grubbing vegetation as required
- treating the foundation of the RMAR
- placing gravel layer (if required) to provide a firm and consistent surface
- installing temporary and permanent environmental controls if required.

As a final step (for operation), signage would be installed along the RMAR. The RMAR is detailed in section 7.3.2.

### 8.2.8 Road modifications

The proposal alignment would interface with the public road network at Burley Griffin Way, Ironbong Road, Old Sydney Road, Dirnaseer Road, Old Cootamundra Road and Corbys Lane, as well as a number of unformed roads and private access tracks that the proposal interfaces with (refer to Figure 8-1). There would also be two locations where the road would be realigned where it interfaces with the proposal—at Ironbong Road and Burley Griffin Way.

Generally, works at these locations would include:

- establishing traffic management arrangements (e.g. identifying temporary diversion requirements to local roads as further detailed in Chapter 11: Traffic, transport and access
- relocating existing services
- placing fill and earthworks for foundation treatments
- installing the crossing structures (bridges, level crossings or realigned roads)

- paving the road
- placing line markings
- installing road signage and road furniture.

Further details on the proposed road modifications are provided in section 7.2.7 and 7.2.8.

### 8.2.8.1 Burley Griffin Way realignment

During construction, the proposed realignment of Burley Griffin Way would result in the temporary closure of a portion of the Burley Griffin Way west of Stockinbingal (refer to Figure 8-3). To manage traffic travelling through Stockinbingal, a traffic diversion would be required to detour traffic along Troy Street and Dudauman Street, to re-join Hibernia Street at the eastern end of Stockinbingal.

#### Indicative staging

Due to the interaction between the rail and road that would be required for the construction of the Burley Griffin Way realignment, construction has been split into six stages to minimise disruption to road and rail traffic. The stages are described in Table 8-2 and shown in Figure 8-3.

**TABLE 8-2: INDICATIVE STAGING OF BURLEY GRIFFIN WAY REALIGNMENT**

| Stage | Description |
|---|---|
| 1 | ▸ Installing temporary controlled level crossing on existing Lake Cargelligo Line<br>▸ Constructing new track and formation<br>▸ Installing signalling infrastructure<br>▸ Constructing Burley Griffin Way bridge approaches, abutments and girders/planks<br>▸ Undertaking all tie-in works to Burley Griffin Way under traffic control. |
| 2 | ▸ Building stub to the south of the realigned Lake Cargelligo Line. |
| 3 | ▸ Upgrading Troy Street suitable for all road traffic<br>▸ Diverting Burley Griffin Way onto Troy Street under traffic control and track protection using the existing Dudauman Street level crossing. |
| 4 | ▸ Constructing tie-ins (north, west and east)<br>▸ Implementing the possession of the Lake Cargelligo Line to install turnouts<br>▸ Switching Lake Cargelligo Line rail traffic onto new alignment<br>▸ Implementing safe working arrangements to avoid trains accessing southern connection towards Illabo (i.e. stop blocks). |
| 5 | ▸ Completing Burley Griffin Way fill, pavement and road furniture over Lake Cargelligo Line. |
| 6 | ▸ Switching traffic onto new Burley Griffin Way alignment<br>▸ Removing redundant sections of the Stockinbingal to Parkes Line (refer to section 8.8.3). |

### 8.2.8.2 Ironbong Road realignment

Realignment of Ironbong Road would be undertaken based on the following stages:

- establishing traffic management of including a temporary diversion route of using Old Sydney Road and Eulomo Settlement Road
- setting up boundaries and erosion and sedimentation controls
- establishing temporary diversion road to the north of existing alignment
- constructing new road alignment and level crossing
- connecting to the existing road.

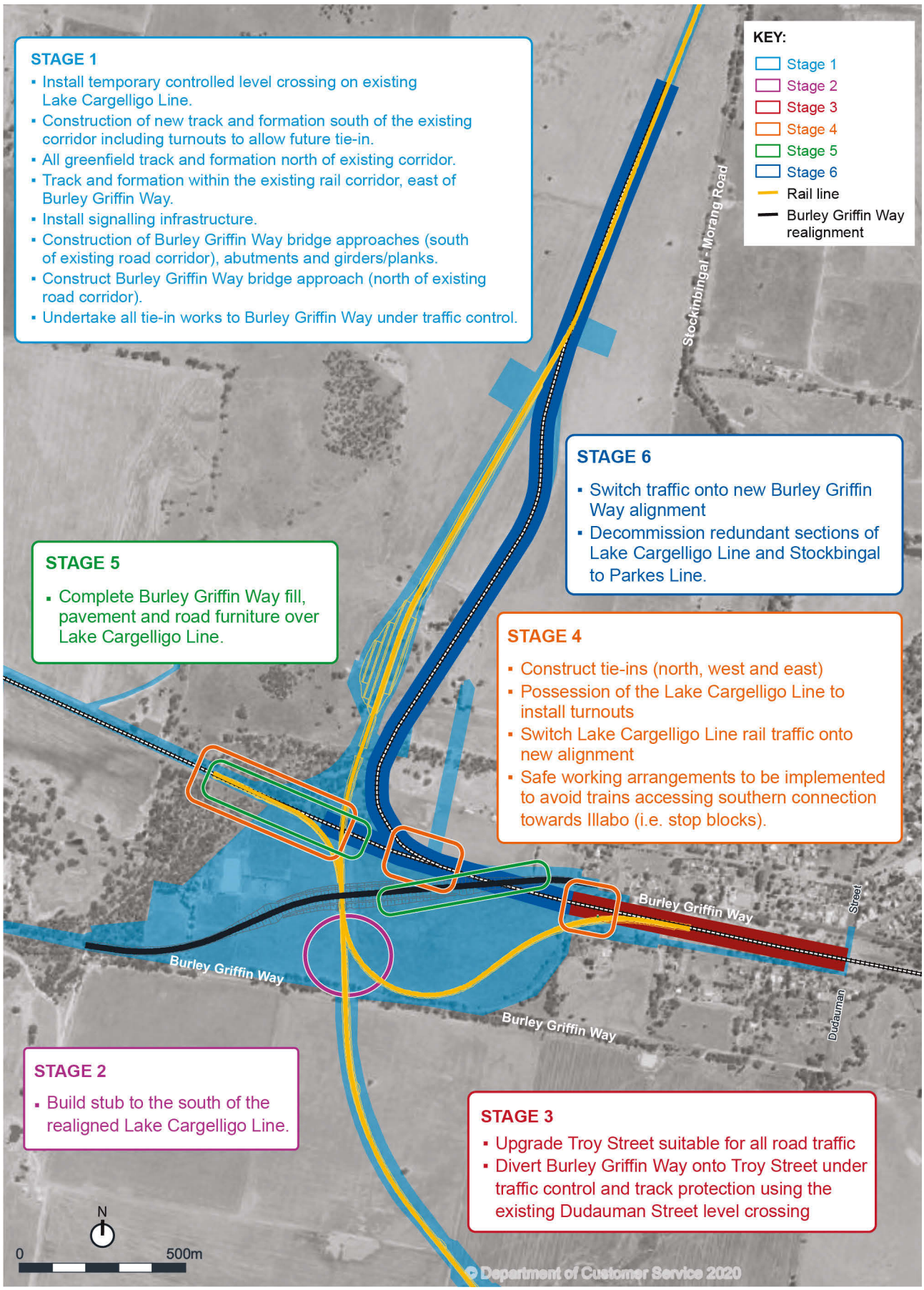



FIGURE 8-3: INDICATIVE BURLEY GRIFFIN WAY REALIGNMENT AND RELATED RAIL WORKS

### 8.2.9 Signalling and control works

There is a requirement for the installation of signalling and control works to facilitate the safe operation of the proposal. This would involve the use of signals, motors, boom gate and signalised level crossings. The signalling network would be installed to connect to the existing network. Generally, works would include:

- installing cabling routes and conduits
- placing earthworks to install the signalling infrastructure
- installing location huts with the control electronics, mast signals, level crossing signals and boom gates
- testing and commissioning the signals.

### 8.2.10 Earthworks

Earthworks would be required for:

- creating embankments and cuttings to maintain rail gradients in accordance with adopted design requirements
- constructing level crossings
- constructing the new crossing loop
- constructing culverts and bridges
- processing site material into formation materials with the following steps:
  - loading the crusher with collected excavated material
  - crushing excavated material
  - sorting crushed excavated material into different sizes through a mechanical screen to create formation material. Potentially may require a secondary crush dependent on the excavated material type.
  - testing of the formation material is performed and labelled stating type of material and usability
  - loading of usable formation material and placed through the proposal as needed.

Earthworks would also be required to construct the formation for the ancillary infrastructure associated with the proposal.

Around 1.5 million $m^3$ of material, including around 1.3 million $m^3$ of general fill (road and rail) would require excavation and placement as part of the earthworks required. General fill would be generally sourced from excavated material within the proposal and would be balanced across the proposal site. There is a net balance between material generated from excavation of cuts and material placement for construction of embankments and other landforms to achieve the necessary earthworks for the project, based on the movement of material, as detailed in Table 8-3. Further detail of bulk fill requirements is set out in section 8.5.

**TABLE 8-3: EARTHWORKS AND HAULAGE ASSESSMENT FOR GENERAL FILL REQUIREMENTS FOR THE PROPOSAL**

| Area | Surplus/deficit | Surplus destination |
|---|---|---|
| Section 1 | Surplus | Section 2 |
| Section 2 | Deficit | Not applicable |
| Section 3 | Surplus | Across the proposal |
| Section 4 | Surplus | Section 5 |
| Section 5 | Deficit | Not applicable |
| Section 6 | Surplus | Section 5 |

Where the excavated material is used to meet the fill material needs of the proposal, the material would be sampled and assessed for compliance and suitability before reuse. The final cut and fill balance for the proposal would be confirmed during further design development.

### 8.2.11 Blasting

Blasting would be required for some of the cuts to construct the proposal. In general, any excavation deeper than 2 m would potentially require blasting of the existing rock formation. Table 8-4 summarises the location and depth of cuts requiring blasting.

**TABLE 8-4: CUTS REQUIRING BLASTING**

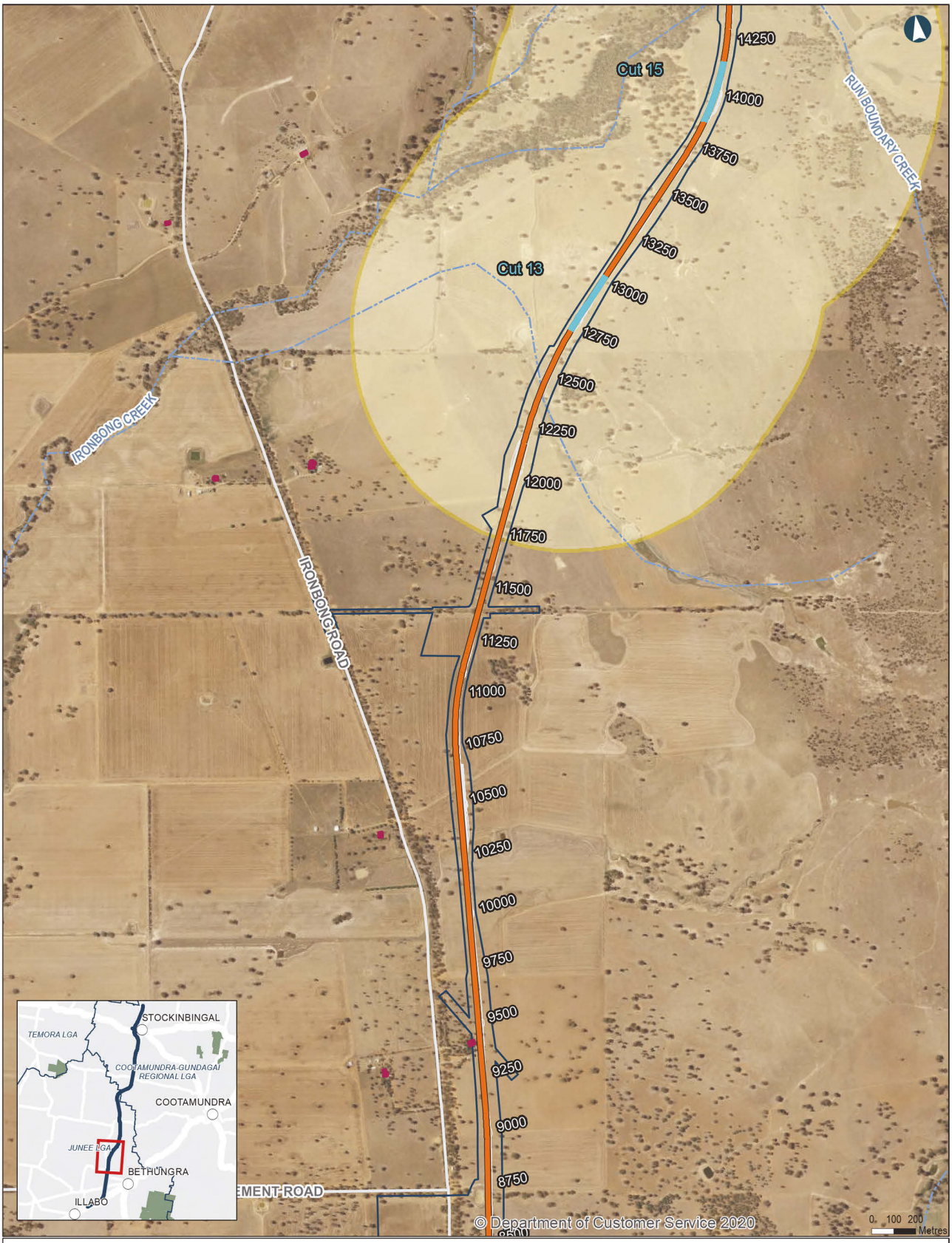
| Cut No. | Chainage (approximate) | Cut depth |
|---|---|---|
| Cut 13 | 12745–13040 | 7 |
| Cut 15 | 13875–14165 | 6.5 |
| Cut 18 | 16525–16825 | 5 |
| Cut 19 | 16950–17380 | 7 |
| Cut 20 | 18731–19170 | 13.3 |
| Cut 22 | 19585–19905 | 9.8 |
| Cut 23 | 20260–20450 | 6.1 |
| Cut 24 | 20740–21295 | 11.3 |
| Cut 29 | 25210–25740 | 10.9 |
| Cut 30 | 26475–26795 | 11 |
| Cut 40 | 38085–38500 | 13.7 |

While blasting can have impacts on sensitive receivers, often the alternatives involve protracted durations of very noisy work with rock hammers and drills. Blasting locations and potentially impacted sensitive (residential) receivers are identified in Figure 8-4.

Planning for blasting would consider the rock profile, earthworks design and construction requirements and would be subject to the following environmental management measures and other measures detailed in Chapter 27: Approach to environmental management and mitigation, including:

- blasting at these locations would be short-term and planned within the blasting hours specified by the Interim Construction Noise Guidelines (ICNG) (Department of Environment and Climate Change, 2009)—refer section 8.2.16.3
- blast monitoring would be undertaken at sensitive receivers (i.e. residences) within 1 km of the blast site (see Figure 8-4).

A preliminary blasting risk assessment has been undertaken and is provided in Chapter 16: Noise and vibration and Technical Paper 8: Construction Noise and Vibration Impact.




**Key features of proposal**

- Proposal alignment
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Proposal site
- 1km from blasting location
- Blasting location
- Earthworks
- Sensitive receptor

**Existing features**

- Sub-arterial road
- Minor Watercourse

## 8.4 Indicative blasting locations

Coordinate System: GDA 1994 MGA Zone 55
Date: 11/12/2021 Paper size: A4 Scale: 1:25,000

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

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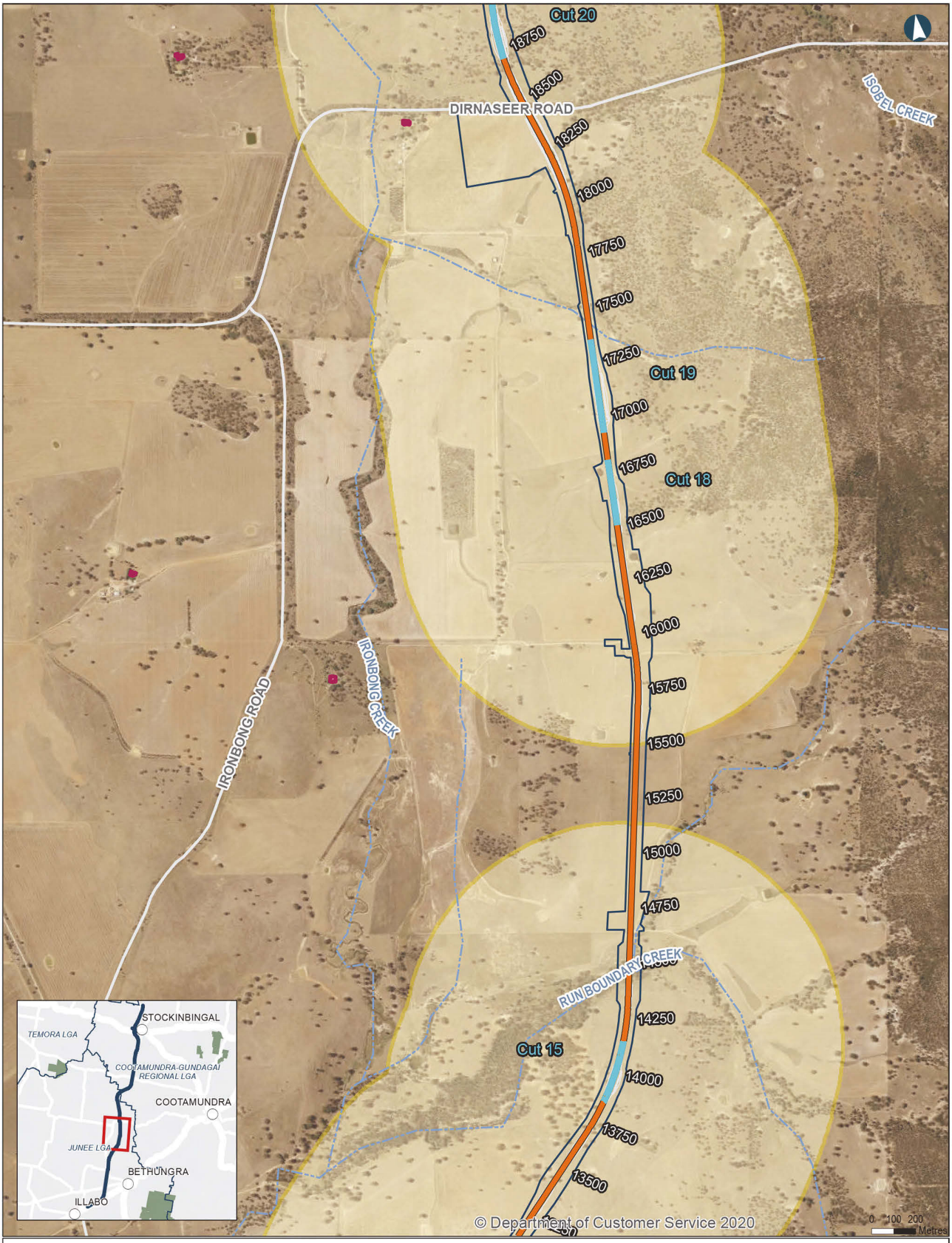


**Key features of proposal**

- Proposal alignment
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Proposal site
- 1km from blasting location
- Blasting location
- Earthworks
- Sensitive receptor

**Existing features**

- Sub-arterial road
- Minor Watercourse

## 8.4 Indicative blasting locations

Coordinate System: GDA 1994 MGA Zone 55
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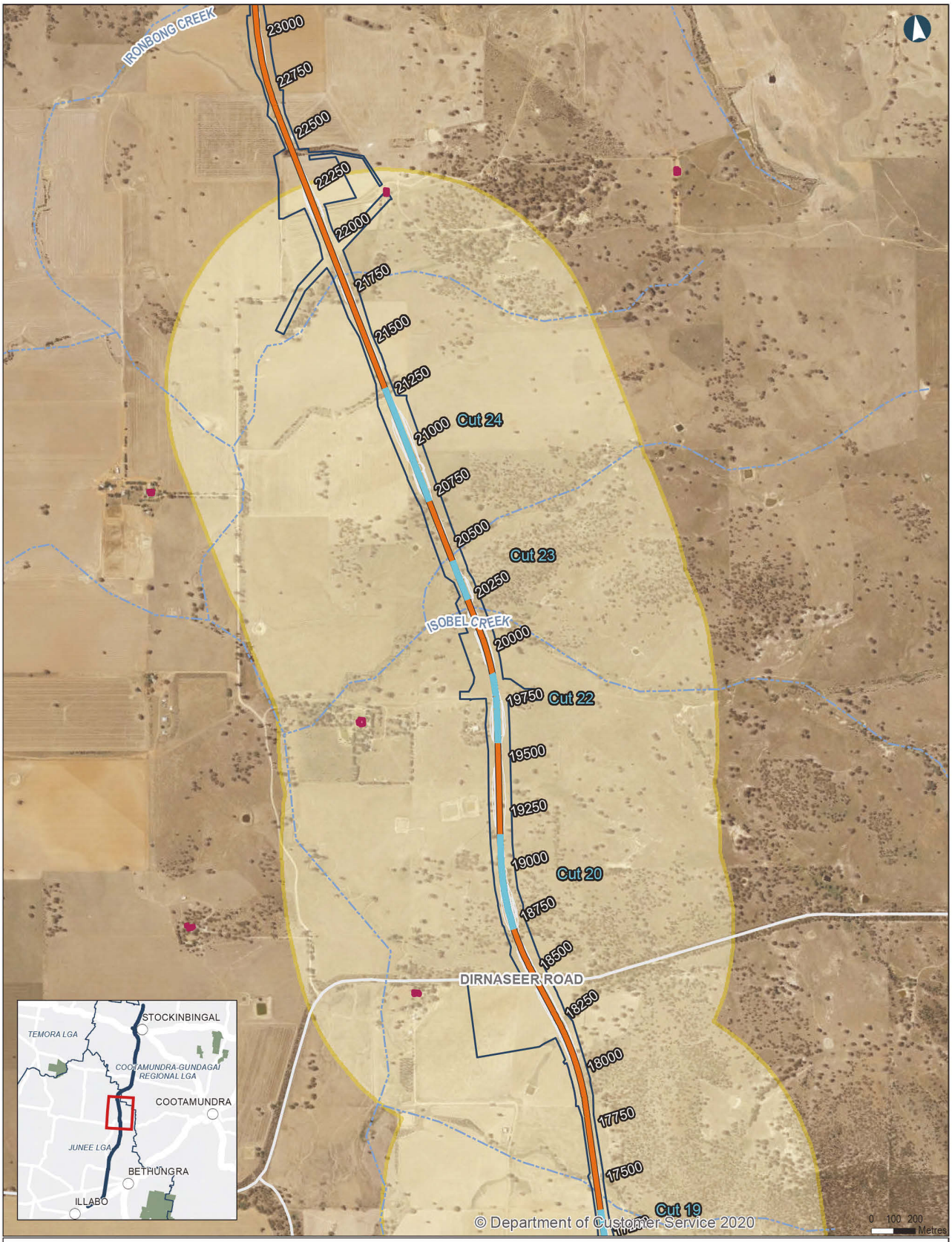


**Key features of proposal**

- Proposal alignment
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Proposal site
- 1km from blasting location
- Blasting location
- Earthworks
- Sensitive receptor

**Existing features**

- Sub-arterial road
- Minor Watercourse

## 8.4 Indicative blasting locations

Coordinate System: GDA 1994 MGA Zone 55
Date: 11/12/2021 Paper size: A4 Scale: 1:25,000

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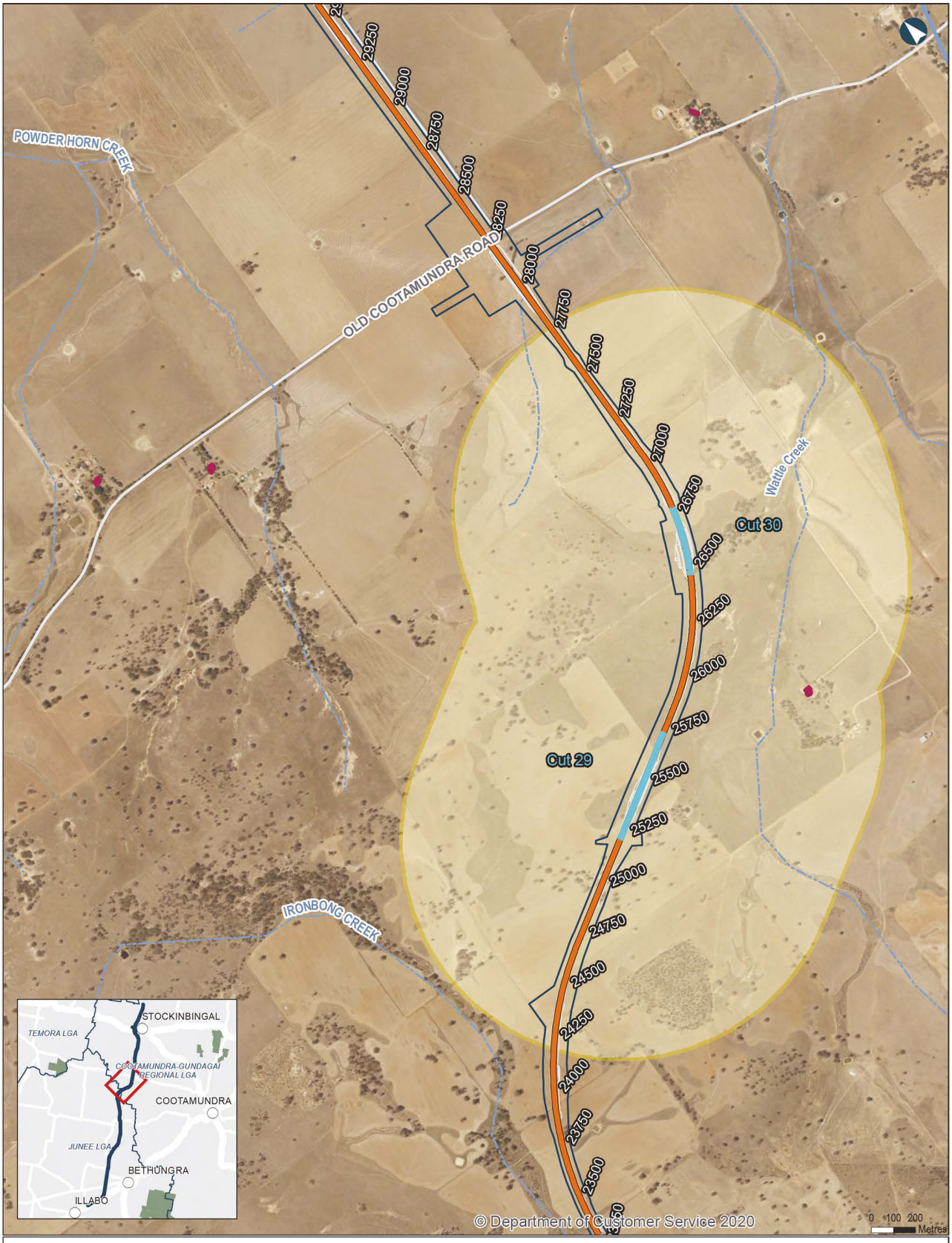


**Key features of proposal**

- Proposal alignment
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Proposal site
- 1km from blasting location
- Blasting location
- Earthworks
- Sensitive receptor

**Existing features**

- Sub-arterial road
- Major Watercourse
- Minor Watercourse

## 8.4 Indicative blasting locations

Coordinate System: GDA 1994 MGA Zone 55
Date: 11/12/2021 Paper size: A4 Scale: 1:25,000

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

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**Key features of proposal**

- Proposal alignment
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Proposal site
- Earthworks
- Sensitive receptor

**Existing features**

- Sub-arterial road
- Arterial road
- Major Watercourse
- Minor Watercourse

## 8.4 Indicative blasting locations

Coordinate System: GDA 1994 MGA Zone 55
Date: 11/12/2021 Paper size: A4 Scale: 1:25,000

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

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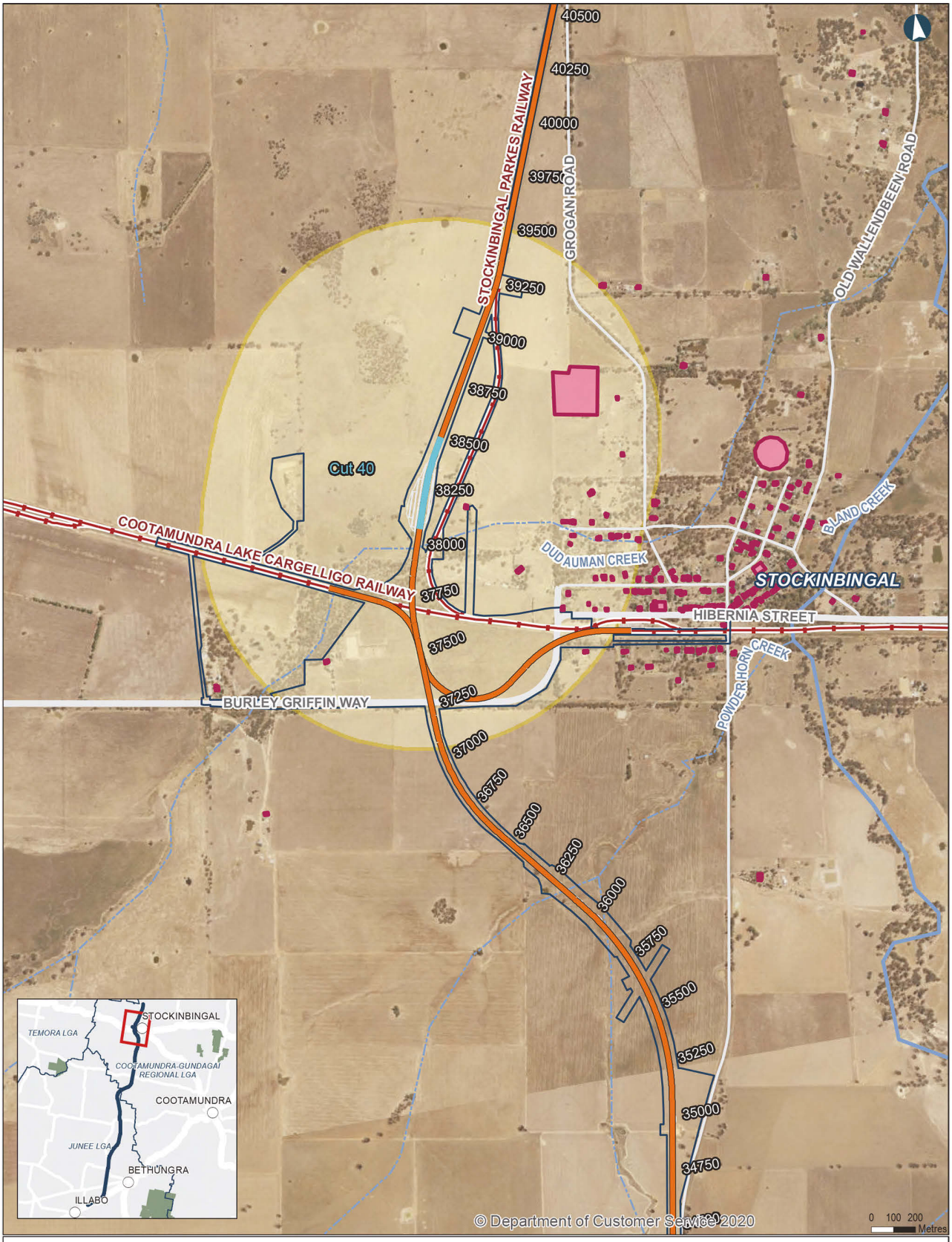


## 8.4 Indicative blasting locations

Coordinate System: GDA 1994 MGA Zone 55
Date: 11/12/2021 Paper size: A4 Scale: 1:25,000

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

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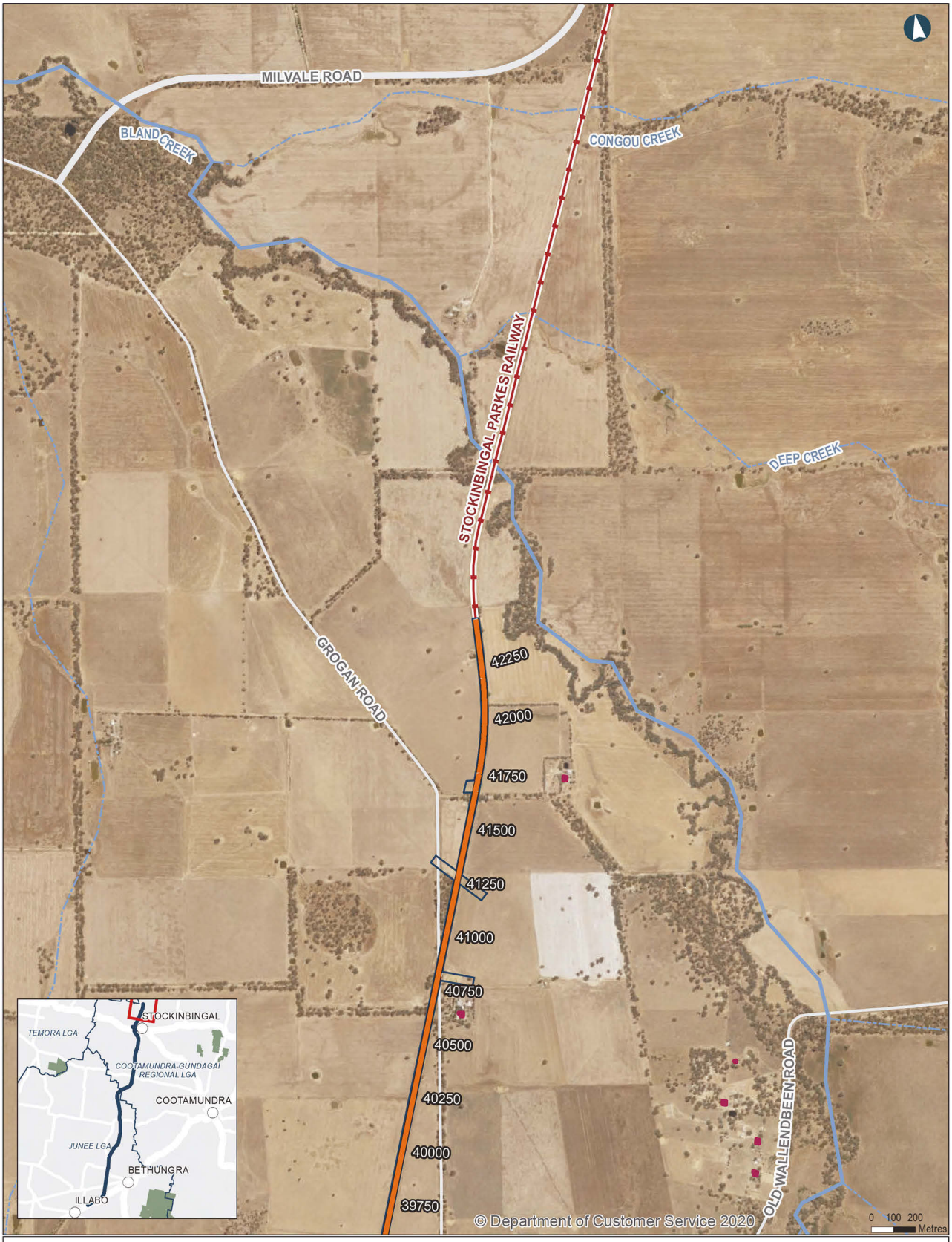


**Key features of proposal**

- Proposal alignment
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Proposal site
- Earthworks
- Sensitive receptor

**Existing features**

- Sub-arterial road
- Arterial road
- Existing Rail
- Major Watercourse
- Minor Watercourse

## 8.4 Indicative blasting locations

Coordinate System: GDA 1994 MGA Zone 55
Date: 11/12/2021 Paper size: A4 Scale: 1:25,000

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

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### 8.2.12 Testing and commissioning

Testing and commissioning of the rail line and communication and signalling systems would be undertaken to ensure that all systems and infrastructure are designed, installed and operating according to ARTC's operational requirements.

This will involve condition testing the signalling systems and other pre-operational checks.

### 8.2.13 Finishing works and reinstatement

Site reinstatement and rehabilitation would be undertaken progressively during the works and would include the following activities:

- demobilising site compounds and facilities
- removing all materials, waste and redundant structures from the works sites
- decommissioning all temporary work site signs
- removing temporary fencing
- establishing permanent fencing
- decommissioning site access roads that are no longer required
- restoring disturbed areas as required, including revegetation, where required.

Permanent spoil mounds are not anticipated to be required for the proposal as any surplus material would be reused or taken offsite for reuse or disposal as appropriate (refer to Chapter 21: Waste).

Site rehabilitation would be undertaken in accordance with the rehabilitation strategy, the requirements of which would be incorporated into the CEMP (described in Chapter 27: Approach to environmental management and mitigation).

Following completion of construction, any residual land not required for operational purposes would be returned to at least its former condition. Where land used for construction had been leased on a temporary basis from the landowner, land would be handed back in accordance with the terms of the lease.

In cases where residual land formed part of a landholding or lot acquired for construction of the proposal, subdivision and sale of the residual lot, in accordance with the provisions of local planning controls, would be investigated during detailed design (refer to Chapter 18: Land use and property).

### 8.2.14 Timing and staging

Table 8-5 below identifies the indicative, high-level staging for the construction of the proposal where the activities identified within section 8.2 would be undertaken, subject to agreement with the relevant stakeholders (including in relation to track possessions), and further design development.

**TABLE 8-5: STAGING FOR THE CONSTRUCTION OF THE PROPOSAL**

| Indicative stages | Chainage/element (refer to Figure 8-1) | Indicative duration (work days) | Indicative timing of works |
|---|---|---|---|
| Enabling works | Across proposal site | 40 | Mid-2024 (approximately 2 months) |
| Site establishment | Across proposal site | 70 | Mid-2024–late 2024 (approximately 3 months) |
| Main construction works—Section 1 | 0–2900 | 108 | Mid-2024–early 2025 (approximately 5 months) |
| Main construction works—Section 2 | 2901–8840 | 109 | Late-2024–early 2025 (approximately 5 months) |
| Main construction works—Section 3 | 8841–18500 | 157 | Late-2024–mid 2025 (approximately 7 months) |
| Main construction works—Section 4 | 18501–28300 | 196 | Late-2024–mid-2025 (approximately 9 months) |
| Main construction works—Section 5 | 28301–37300 | 171 | Late 2024–mid-2025 (approximately 8 months) |

| Indicative stages | Chainage/element (refer to Figure 8-1) | Indicative duration (work days) | Indicative timing of works |
|---|---|---|---|
| Main construction works—Section 6 | 37300–42600 | 331 | Late 2024–early-2026 (approximately 16 months) |
| Signalling, testing and commissioning | Across proposal site | 130 | Late 2025—mid-2026 (approximately 7 months) |
| Finishing works | Across proposal site | 50 | Mid-2026 (approximately 2 months) |

### 8.2.15 Rail possessions and associated impacts on current rail operations

The proposal would require possessions where works would impact the operation of existing rail lines. The timing and duration of the possessions would be agreed with affected train operators, track stakeholders and relevant government departments. A possession calendar beyond 2022 is not available for the proposal. As for a guide to what possessions may be available, consultation with ARTC (as operators of the existing rail lines at Illabo and Stockinbingal) has identified that there are two 60-hour possessions a year, one in March and one in September.

#### 8.2.15.1 Southern connection

There are two scheduled possessions available in September 2024 and March 2025. For this proposal, it has been planned to use the March 2025 possession for the southern connection works. The September 2024 possession is not suitable due to not allowing enough preparation time to complete preliminary works.

There would be no requirement for other (i.e. project-specific) possessions. Ongoing consultation with relevant stakeholders (including rollingstock operators, and rail asset owners and operators) would be required during further design development if it is subsequently determined that one or more project-specific possessions are required.

If this was to occur, services could be re-routed via Stockinbingal, Griffith and back to the Main South Line at Junee. The majority of the southern connection scope can be completed under Track Work Authority protection arrangements (or work in corridor).

#### 8.2.15.2 Northern connection

An indicative five-stage approach has been developed to connect to the existing Lake Cargelligo Line and Stockinbingal to Parkes Line as well as the realignment of the Burley Griffin Way. These stages are detailed in section 8.2.8.

There are two scheduled possessions available in September 2025 and March 2026. The scheduled possession planned to be utilised is the March 2026 possession. The proposal would require a minimum 60-hour possession to install new infrastructure at connection points and to complete tie-in works. There is an opportunity to explore the potential of using the September 2025 possession; however, this would create a tight timeframe.

### 8.2.16 Construction hours

#### 8.2.16.1 Standard hours under the ICNG

The Interim Construction Noise Guideline (ICNG) (DECC, 2009) recommends standard hours for construction work as:

- Monday to Friday: 7.00 am to 6.00 pm
- Saturday: 8.00 am to 1.00 pm
- no work on Sundays or public holidays.

#### 8.2.16.2 General construction hours for the proposal

The proposed construction hours have been developed to accommodate the remote location of worksites and to provide for efficient use of the workforce, as follows.

- Monday to Sunday: 6.00 am to 6.00 pm

Works outside of the ICNG standard hours would be minimised in the vicinity of sensitive receivers, where possible, as detailed in Chapter 16: Noise and vibration.

### 8.2.16.3 Hours proposed for blasting activities

Blasting (as detailed in section 8.2.11) would be undertaken within the blasting hours permitted under the ICNG, as follows:

- Monday to Friday: 9.00 am to 5.00 pm
- Saturday 9.00 am to 1.00 pm
- no blasting on Sundays or public holidays.

### 8.2.16.4 Works outside proposed construction hours

Some works may also be undertaken outside the hours described above, including works in the existing rail corridor during scheduled rail corridor possession periods (as detailed in section 8.2.15) and other out-of-hours construction activities, such as:

- installing precast bridge beams over existing public highways
- installing level crossings where road closures are not approved during normal hours
- relocating utilities that are required to be undertaken out of hours to avoid impact to local residents and businesses
- delivering oversized plant or structures as required by police or other authorities for safety reasons
- facilitating emergency work to avoid the loss of life or damage to property, or to prevent environmental harm
- implementing utility works (such as connections) to minimise disruption to customers.

Works during track possessions could be undertaken on a 24-hour, 7-day a week basis.

Measures to minimise noise for out-of-hours construction activities would include respite periods and landowner notification. Refer to Chapter 16: Noise and vibration for further measures.

### 8.2.16.5 Construction noise outside of standard working hours

As described in section 8.2.16.2, an alteration to working hours beyond the ICNG recommended standard hours is proposed to reduce the construction duration as far as practicable. The intent of the longer working hours is to minimise the overall time of associated disruptions to the community from construction activity, construction traffic and road diversions.

The ICNG proposes standard work hours as 7.00 am to 6.00 pm Mondays to Fridays and 7.00 am to 1.00 pm Saturdays, with all other times termed outside-of-hours-work (OOHW).

ARTC's construction contractor will establish a working roster consistent with the EIS approval and the construction Environmental Protection Licence, in association with the following working hours.

Ordinarily, construction is proposed to occur 6.00 am to 6.00 pm each day, provided that:

- construction noise levels during OOHW periods under the ICNG do not exceed the rating background level by more than 5 dB(A) at residential receivers and no more than the noise management levels specified in Table 3 of the ICNG would be experienced at non-residential sensitive receivers. This measure ensures that works do not result in sleep disturbance or impacts in the 'night' period of 6.00 am to 7.00 am
- longer duration respite periods are provided by limiting work hours to the ICNG standard hours for a three month period following each three month period of extended hours construction in the work areas between the southernmost creek crossing on 1/DP546133 (at chainage 35900) and the boundary between 1/DP1093937 and 188/DP1120849 (approximately at chainage 40290).

Where this cannot be achieved the ICNG standard hours would be adopted.

Despite this, work is proposed during OOHW periods under the ICNG where potentially affected sensitive receivers provide written agreement documenting hours and noise limits beyond the ICNG standard hours for which work can be undertaken.

Construction activities may also be undertaken outside the proposed construction hours as follows:

- where potentially affected sensitive receivers provide written agreement documenting construction hours and associated noise limits beyond the ICNG
- work where there are no sensitive receivers with the potential to be affected by noise and vibration impacts
- work during rail corridor possessions for tie-in to the existing rail network, which may need to be carried out on a 24-hour basis
- installing precast bridge beams over existing public roads
- installing level crossings where road closures are not approved during normal hours
- relocating utilities that are required to be undertaken out of hours to avoid impact to local residents and businesses
- delivering oversized plant or structures that police or other authorities for safety reasons
- facilitating emergency work to avoid the loss of life or damage to property, or to prevent environmental harm
- implementing utility works (such as connections) to minimise disruption to customers.

ARTC's community consultation has included discussion with landholder and community members regarding construction noise impacts and the proposed extension of working hours beyond the standard hours. The proposed construction hours are sought to balance feedback of impacts on amenity with a reduced construction duration and community specific management measures. The noise management measures applied through the limitations on hours and the inherent respite periods provides an effective control to impacts.

Work outside the ICNG recommended standard hours would be undertaken with appropriate noise management controls and management measures, in accordance with the conditions of approval and the proposed mitigation measures, implemented through the CEMP Construction Noise and Vibration sub-plan. The sub-plan will include preparation of an out-of-hours work protocol to define the process for considering, and managing out-of-hours work, along with measures to manage impacts on receivers very close to the construction area, including implementation of feasible and reasonable measures and communication requirements. Potential impacts from specific construction activities would be managed in accordance with location and activity-specific construction noise and vibration impact statements.

### 8.2.16.6 Construction roster

The construction schedule assumes a rotating construction working schedule, which may be modified through further development, within the limitation of the proposed construction hours detailed in section 8.2.16.2.

## 8.3 Construction compounds

Construction compounds are enclosed areas that are not open to the public and are used to support construction works in nearby areas. Construction compounds would generally accommodate offices, lunchrooms, toilet, first aid room, security, laydown area, stockpiles, bunded refuelling area, storage containers, mobile plant and equipment, and hazardous material storage. Where possible, noisy works and deliveries would be restricted to standard construction hours to minimise impacts on adjacent sensitive receivers.

The proposed locations for the primary construction compounds and proposed indicative uses are provided in Table 8-6 and shown in Figure 8-1. Proposed access routes and entry points to the proposal site are described in section 8.9 and shown in Figure 8-8.

**TABLE 8-6: PROPOSED CONSTRUCTION COMPOUNDS**

| Construction compound (refer to Figure 8-1) | Potential activities |
|---|---|
| 1 | Stockpile, laydown |
| 2 | Stockpile, laydown |
| 3 | Stockpile, laydown, rail welding location |
| 4 | Stockpile, laydown, water tank farm (up to 6 x 30,000 litres), rail welding location |
| 5 | Stockpile, laydown, site offices |
| 6 | Stockpile, laydown |

| Construction compound (refer to Figure 8-1) | Potential activities |
|---|---|
| 7 | Stockpile, laydown, site offices, water tank farm (up to 6 x 30,000 litres), fuel storage (50,000 litres) |
| 8 | Stockpile, laydown |
| 9 | Stockpile, laydown, site offices |
| 10 | Stockpile, laydown, rail welding location |
| 11 | Stockpile, laydown, site offices, batching plant, fuel storage (50,000 litres), water tank farm (up to 6 x 30,000 litres) |
| 12 | Stockpile, laydown |
| 13 | Stockpile, laydown |
| 14 | Stockpile, laydown |
| 15 | Stockpile, laydown, site offices |
| 16 | Stockpile, laydown, site offices |
| 17 | Stockpile, laydown |
| 18 | Stockpile, laydown, fuel storage (5–10,000 litres), site offices |
| 19 | Stockpile, laydown |
| 20 | Stockpile, laydown |
| 21 | Stockpile, laydown, rail welding location |
| 22 | Stockpile, laydown |
| 23 | Stockpile, laydown |
| 24 | Stockpile, laydown |
| 25 | Stockpile, laydown, site offices, batching plant, fuel storage (5–10,000 litres), water tank farm (up to 6 x 30,000 litres), rail welding location |
| 26 | Stockpile, laydown |
| 27 | Stockpile, laydown |
| 28 | Stockpile, laydown, water tank farm (up to 6 x 30,000 litres) |
| 29 | Stockpile, laydown |

Construction of the proposal would involve both onsite construction activities (e.g. welding of track) and use of pre-fabricated components (e.g. culverts) that would be manufactured offsite (with those facilities being outside the scope of the proposal).

As identified in Table 8-6, activities that may be undertaken at construction compound sites may involve:

- site office operations
- delivery and stockpiling of various construction materials including rail, sleepers, ballast, bridge components, culverts and structural fill
- laydown areas for the storage and operation of fuel, water, plant and equipment
- maintenance of site environmental management controls
- operation of mobile concrete batching plants (where present), further detailed in section 8.5.2.

The construction compounds identified in Table 8-6 are generally located with immediate access to the local road network to minimise the need for dedicated access tracks. As the number and locations of construction compounds may change during construction planning, any additional or relocated construction compounds would be subject to consistency with the following criteria to minimise impacts, where practicable:

- location on relatively level ground of sufficient size to accommodate the required facilities
- accessible for construction traffic and deliveries
- close to key construction activities to minimise transport of materials and equipment
- where acquisition of private property is likely to be required for the proposal

- located away from (or able to be managed in such a way so as to not significantly impact on) heritage items, native vegetation, watercourses, and areas prone to flooding (e.g. at least 50 m from watercourses and outside the 5% AEP flood zone) where little or no clearing would be required, and not within areas identified as threatened communities or species habitat
- no significant impacts to utilities
- minimise use of private land
- relatively flat land
- where safe access to the road network and existing rail corridor can be provided
- at least 1 km from the nearest residence or other noise sensitive receiver, where practicable.

### 8.3.1 Site servicing requirements

Utilities and services such as water, sewer, electricity and telecommunications would need to be supplied to each of the work and compound sites for use in site offices and amenities. Where these utilities are located close to the sites, opportunities to connect to existing sources would be explored with relevant providers, particularly for electricity. Where connections are not available, power would be provided by generators.

Portable toilet facilities would be used where existing infrastructure is unavailable and sewage pump out services used to remove waste offsite.

## 8.4 Construction workforce

### 8.4.1 Workforce numbers

The construction workforce peak is assumed to be around 425 people. The construction workforce over the duration of construction is shown in Figure 8-5. This workforce profile is indicative and would be refined during further design development.

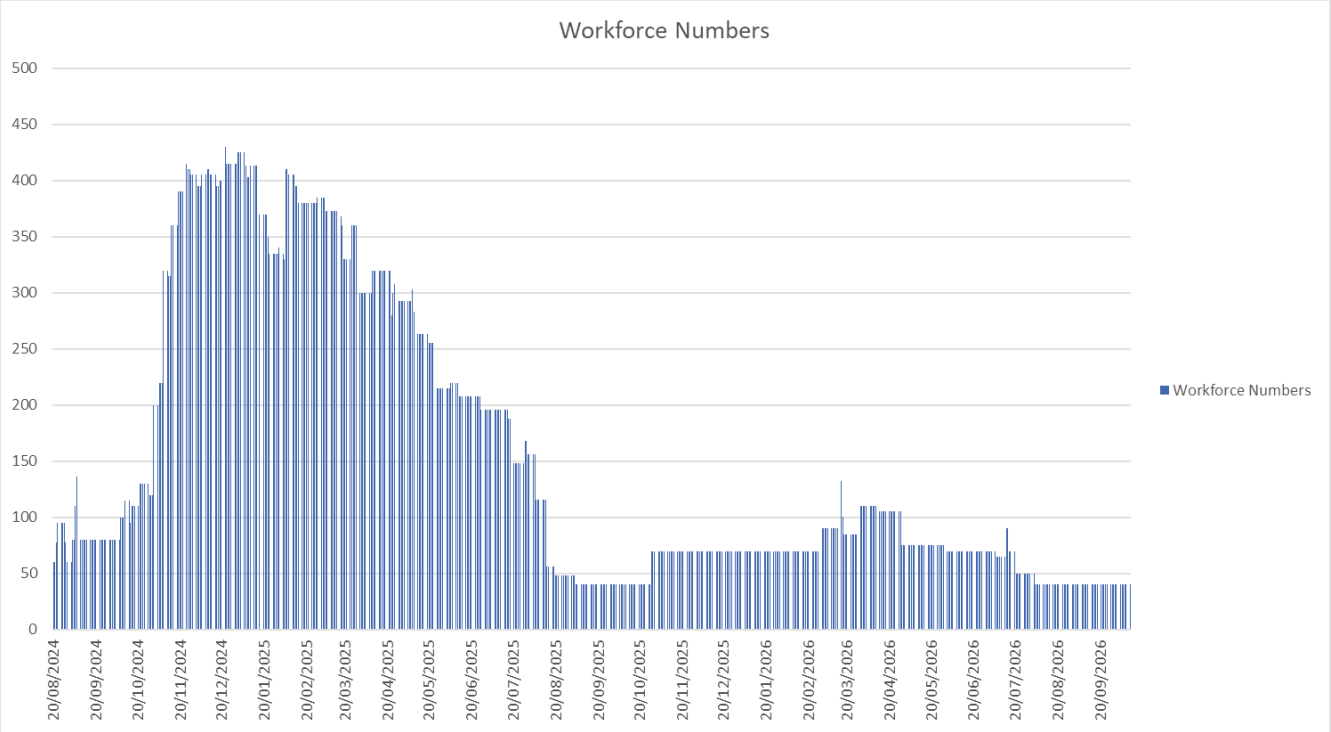


**FIGURE 8-5: CONSTRUCTION WORKFORCE NUMBERS**

### 8.4.2 Workforce accommodation camp requirements

During construction, the workforce required to complete the proposal is expected to peak at about 425 personnel, with the majority of the work being carried out in proximity to Stockinbingal. An allowance of 450 beds is recommended for surge capacity. Surge capacity relates to the ability to obtain (and house) adequate workers to meet any unforeseen requirements of the construction phase. The additional 25 bed allowance is a risk mitigation.

Due to the limited availability of accommodation in the local area, workforce accommodation demand is likely to extend to other nearby townships including Cootamundra, Junee Temora, Gundagai, Wagga Wagga and Young. Wagga and Young have a relatively long travel time to the proposal site, and so would be appropriate only for short-stay accommodation. Based on the limited capability of local accommodation, one workforce accommodation camp will be required for construction of the proposal.

A complete assessment for the workforce accommodation camp, including evidence of consultation, the location, layout and proposed services, and supporting environmental and social assessment is provided in Appendix I: Workforce accommodation camp assessment.

## 8.5 Construction resources required

### 8.5.1 Raw materials required

#### 8.5.1.1 Overview

As detailed in section 8.2.10, construction of the proposal would require about 1.3 million m³ of general fill. In addition to general fill, a range of other materials would be required to construct the proposal, totalling 1.6 million m³ of construction materials. Table 8-7 provides an overview of estimated materials required, including the amount sourced within the proposal and the amount to be imported. All volumes have been estimated based on preliminary geotechnical investigations and would be subject to further refinement during further design development.

**TABLE 8-7: CONSTRUCTION MATERIALS REQUIRED—OVERVIEW AND SOURCE**

| Material | Estimated volume ($m^3$) required for the proposal | Estimated volume ($m^3$) sourced within the proposal | Estimated volume ($m^3$) to be imported[1] |
|---|---|---|---|
| General fill (rail and road) | 1,353,977 | 1,353,977 | 0 |
| 200 mm capping | 62,370 | 31,185 | 31,185 |
| 250 mm structural fill | 75,294 | 52,706 | 22,588 |
| 200 mm RMAR | 28,763 | 28,763 | 0 |
| 250 mm drainage blanket | 3,605 | 0 | 3,605 |
| Rail ballast | 64,504 | 0 | 64,504 |
| Long drains | 33,682 | 33,682 | 0 |
| Level crossings | 18,718 | 18,718 | 0 |
| Pavements | 15,332 | 0 | 15,332 |
| Total | 1,656,245 | 1,519,031 | 137,214 |

1. Imported from potential quarries as discussed in section 8.5.2.

#### 8.5.1.2 Formation material

Formation material is the material required to construct the structural and capping layers in order to support the rail infrastructure. Approximately 217,500 m³ of formation material would be required for road pavement, structural fill, capping and ballast, as noted in Table 8-7.

Additional material that would be sourced from nearby quarries is identified in section 8.5.2. Opportunities for the beneficial reuse of material would be further explored during further design development.

### 8.5.2 Commercial quarry sources of imported material

The following local quarries may be used to satisfy the demand for materials identified in Table 8-7:

- Tegra Quarry—Young
- Milbrae quarries—west of Temora
- Millers metals—Wyalong

- Jackson's Hill Quarry—Coolamon
- Rocky Point Quarry—Euberta
- Coota Concrete—Cootamundra.

Preliminary investigations have identified the potential for use of rail haul for the transport of material from the Milbrae Quarry to use the rail connection between that location and the project. This would require the development of infrastructure for loading and unloading material both at the quarry and at Stockinbingal, at the existing grain silo. Development of any rail infrastructure at Stockinbingal to facilitate this option would be considered further during further design development, while the development of any infrastructure at the quarry site would be subject to a separate assessment and approval process.

### 8.5.3 Potential borrow pit at Stockinbingal

Based on the estimates of bulk fill requirements, as detailed in section 8.2.10, all requirements could be sourced from the proposal site through balancing cut and fill; however, the proposal identifies a potential borrow pit in the site of a disused (no longer licensed) quarry located west of Stockinbingal near chainage 38000 as indicated on Figure 8-1.

A typical borrow pit would include the following facilities:

- site offices
- staff and worker amenities
- diversion drains (for up-slope surface flow) and sedimentation basins
- a crushing plant (for oversized excavated material).

If, as a result of further design development, the borrow pit is determined to be required for construction of the proposal, confirmation of a concept for the proposal (including layout, extent, capacity, environmental management measures and access arrangements), landowner consultation and further assessment would be undertaken. The borrow pit would be rehabilitated following the completion of construction.

### 8.5.4 Construction water supply

Water would be required for a number of construction activities, including rail and road formation works, dust control, spoil compaction and reinstatement works. Preliminary estimates of water requirements for the proposal indicate that a total of 675 megalitres (ML) of water would be required (refer to Table 8-8) over the duration of construction.

**TABLE 8-8: CONSTRUCTION WATER REQUIREMENTS**

| Construction activity | Water demand (ML) |
|---|---|
| Earthworks | 585 |
| Site won formation | 42 |
| Dust suppression | 26 |
| Landscape establishment watering | 22 |
| **Total** | **675** |

Initial consultation with Goldenfields Water, who are responsible for water supply functions within the local government areas of Junee, Temora and parts of Cootamundra–Gundagai, has indicated that it can supply water at a rate of 15–20 L/s at Stockinbingal, adjacent to the rail alignment, and an additional 10 to 12 L/s at Cootamundra via its existing reticulated potable supply pipe network. Reliability of potable water supply at both locations is subject to restrictions at any time and at the discretion of Goldenfields Water.

Because the rate of consumption of construction water exceeds the available rate of supply from Goldenfields, accumulation of construction water prior to construction commencement would be required. This would be facilitated by provision of water storage tanks adjacent to the alignment, and a water tanker road haulage program to transport the reticulated supply availability at Cootamundra and Stockinbingal. A simple water supply model (no storage losses or rainfall gains considered) has been used to estimate the length of the pre-construction water accumulation period and the capacity of required water storages. For the construction duration of the proposal, 675 ML of water storage would be required (provision of a 40 ML minimum carrying capacity at any time was assumed as a factor-of-safety). Water tanks would be placed within construction compounds (refer to Figure 8-1 and Table 8-6).

Although extraction of groundwater exists as a potential supplementary water source, and groundwater quality sampling has identified highly variable groundwater recharge rates, the proposal would not extract groundwater due to high risks with this approach and potential additional licensing requirements.

In addition, use of treated effluent from sewage treatment plants (STPs) were considered in the development of the proposal. The local region has STPs in Junee, Gundagai, Temora, Borowra, Coolamon and Wagga Wagga. STPs were not recommended in the design or considered due to the large distances between the proposal and STPs.

### 8.5.5 Imported precast and steel components and other items

The following precast or pre-fabricated components would be required for construction of the proposal:

- precast box culverts
- precast pipe culverts
- precast headwalls
- reinforcing steel
- sleepers
- rail tracks
- precast bridge girders
- geotextiles
- stabilising agents for foundations (lime).

## 8.6 Plant and equipment

A range of plant and equipment would be used during construction. The final equipment and plant requirements would be identified by the construction contractor. An indicative list of plant and equipment that would be used for each construction stage is provided in Table 8-9.

**TABLE 8-9: INDICATIVE CONSTRUCTION PLANT AND EQUIPMENT**

| Construction stage | Construction works | Plant and equipment |
|---|---|---|
| Site establishment and enabling works | Establishment | ▸ 14G Grader<br>▸ 30 t ADT<br>▸ 30 t excavator<br>▸ Smooth drum roller<br>▸ Padfoot roller<br>▸ Watercarts<br>▸ Temporary fencing as required<br>▸ Temporary buildings for main and satellite compounds<br>▸ Portable generators as required |
| | Utility relocations and property adjustments | ▸ 20 t excavator<br>▸ 30 t excavator<br>▸ 30 t ADT<br>▸ Franna<br>▸ Road crane (varying lift capacity)<br>▸ Positrak<br>▸ Smooth drum roller<br>▸ Bucket trucks<br>▸ Crane borers |

| Construction stage | Construction works | Plant and equipment |
|---|---|---|
| Main construction works | Earthworks and drainage | ▸ 30 t excavators<br>▸ 30 t ADT<br>▸ 40 t ADT<br>▸ 627 scrapers<br>▸ 14H graders<br>▸ D8 dozers<br>▸ D10 dozers<br>▸ Watercarts<br>▸ Truck and dogs<br>▸ Stabiliser<br>▸ Spreader<br>▸ Smooth drum rollers<br>▸ Pad foot rollers |
| | Formation material processing | ▸ 30 t ADT<br>▸ 20 t excavator<br>▸ Jaw crusher<br>▸ Cone crusher<br>▸ D8 dozer<br>▸ 980 loader<br>▸ Blast hole drill rig<br>▸ Explosives truck<br>▸ Explosives magazine<br>▸ Watercart |
| | Track works | ▸ Front end loaders<br>▸ 14 t Hi-Rail Excavator with octopus attachment<br>▸ 5 t excavator<br>▸ 25 t–30 t ADT<br>▸ 14t Hydreema Dumpers<br>▸ Drott or ballast box<br>▸ Tamper<br>▸ Regulator<br>▸ Dynamic track stabiliser<br>▸ Flashbutt welder |
| | Bridges and pavement works | ▸ Piling rigs<br>▸ Concrete pump trucks<br>▸ Concrete trucks<br>▸ Road cranes (varying lift capacity)<br>▸ Frannas |
| | Drainage | ▸ 20 t excavator<br>▸ 30 t ADT<br>▸ Watercarts<br>▸ Smooth drum rollers<br>▸ Pad foot rollers |
| Finishing works | Finishing and landscaping | ▸ 30 t ADT<br>▸ 20 t excavator<br>▸ 5 t excavator<br>▸ 14M grader<br>▸ D8 dozer<br>▸ Hydroseed truck<br>▸ Watercart |

## 8.7 Mobile batch plants

The use of mobile concrete batching plants could be required to supplement supply from existing ready-mix plants for the following construction works:

- drainage
- bridges
- level crossings
- signalling works.

The size of the plant would be about 15 m by 10 m, and up to 8 m high. The plant and ancillary features would have a footprint of about 100 m by 150 m to account for a water tanker, concrete trailer and storage of materials including aggregate and sand. The location of the plant has nominally been identified within construction compounds 11 and 25 (refer to section 8.3). Where additional mobile batch plants are required they would be wholly located within the proposal site and would be subject to the location criteria identified for the construction compounds, described in section 8.3.

## 8.8 Other construction elements

### 8.8.1 Demolition

It is anticipated that construction of the proposal would require the demolition of a number of non-residential buildings and removal of existing road and rail infrastructure located within the proposal site.

### 8.8.2 Demobilisation, rehabilitation and landscaping

At the end of construction, all construction equipment would be removed from the proposal site. Where relevant, sites that were occupied temporarily and do not form part of the permanent infrastructure, such as temporary construction compound sites, would be rehabilitated in accordance with the Rehabilitation and Reinstatement Plan (refer to Chapter 27: Approach to environmental management and mitigation).

### 8.8.3 Removal of redundant sections of rail and rehabilitation

The new rail alignment at Stockinbingal would result in the removal of redundant sections of the Stockinbingal to Parkes Line (refer to Figure 8-2). This would involve the removal of track and other rail infrastructure such as signalling and signage. The existing ballast and formation would be retained to form a rail maintenance access road (refer to Chapter 12: Hydrology and flooding).

After the 1.4 km realignment of the Burley Griffin Way as a road-over-rail bridge at Stockinbingal, the CRN Line would be required to be rehabilitated back to its existing condition. Construction activities would occur in this active rail corridor and are expected to cause potential risk of train collision. Within the proposal, the CRN Line would be the only active rail corridor during construction of the proposal. Measures to mitigate risks of train collisions would be determined during further design development.

### 8.8.4 Rehabilitation of the Burley Griffin Way

Following completion of the realigned Burley Griffin Way, the vacated road corridor would remain under the ownership of Transport for NSW (TfNSW) and proposals for the future use of land would be developed by ARTC in consultation with TfNSW as part of further design development.

### 8.8.5 Temporary watercourse crossings

Construction access across watercourses would be established through the construction of temporary culverts across Isobel Creek and Powder Horn Creek (refer to Figure 8-6). The temporary culverts would typically consist of one or more sections of pipe covered or embedded in a suitable rock and aggregate embankment formed as a bridging structure across an open channel (refer to Figure 8-7). The establishment of temporary culvert crossings would also minimise the risk of direct contamination of stream flow by construction traffic. When the crossing is no longer required, all materials would be removed and the watercourse would be rehabilitated.


**Key features of proposal**

- Proposal alignment
- Proposal Site
- 40950 Chainage (distance in metres from southern limit of the proposal)
- Watercourse crossing location
- Earthworks

**Existing features**

- Sub-arterial road
- Arterial road
- Minor watercourse

## 8.6 Temporary watercourse crossing locations

Coordinate System: GDA 1994 MGA Zone 55
Date: 5/19/2021 Paper size: A4 Scale: 1:10,000
Map 1 of 2

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

220_0110_EIS_8_6_WatercourseCross_1_r1v1.mxd


**Key features of proposal**

- Proposal alignment
- Proposal Site
- 40850 Chainage (distance in metres from southern limit of the proposal)
- Watercourse crossing location
- Earthworks

**Existing features**

- Sub-arterial road
- Arterial road
- Existing Rail
- Minor watercourse

## 8.6 Temporary watercourse crossing locations

Coordinate System: GDA 1994 MGA Zone 55
Date: 5/19/2021 Paper size: A4 Scale: 1:10,000
Map 2 of 2

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

220_0110_EIS_8_6_WatercourseCross_2_r1v1.mxd

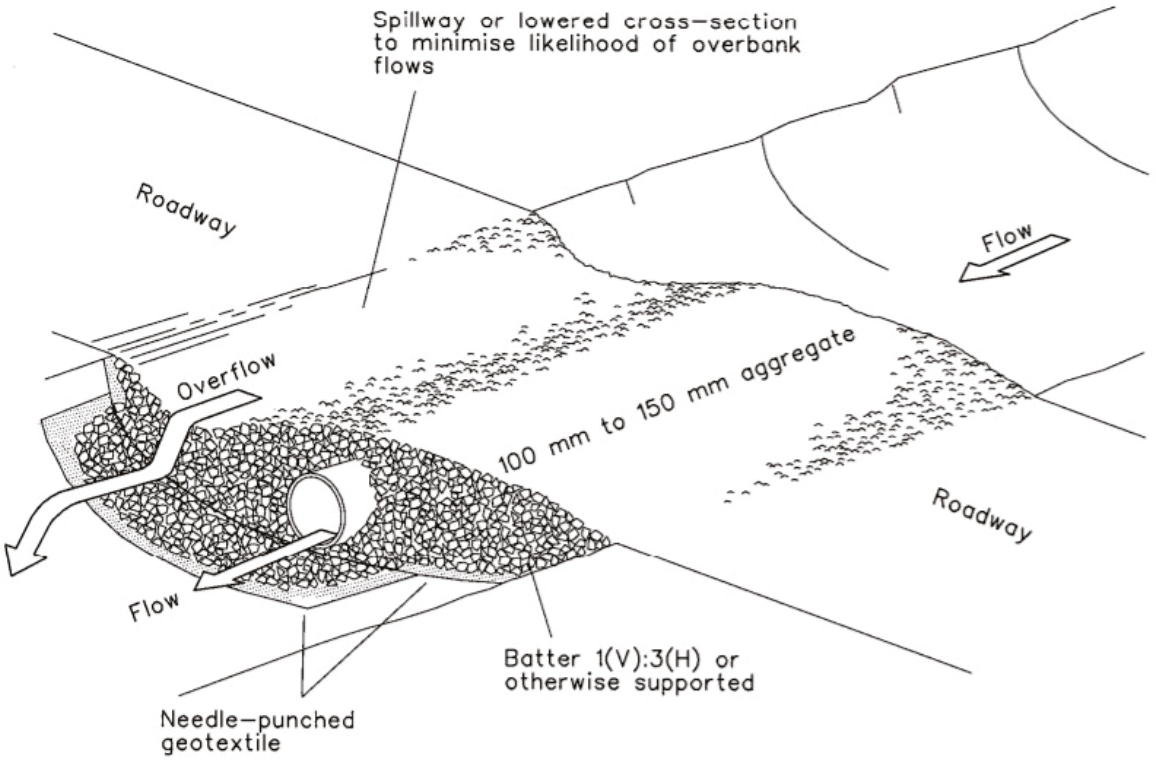


**FIGURE 8-7: INDICATIVE DESIGN OF A TEMPORARY CULVERT CROSSING**

## 8.9 Transport, access and haulage arrangements

### 8.9.1 Construction access

Access to construction compounds and the construction work areas would primarily be undertaken from public roads, as described below in Table 8-10 and shown in Figure 8-8. Access from public roads would be provided via a new temporary connection. All connections to public roads would be designed to the appropriate standard and in consultation with the road manager (i.e. council or TfNSW).

**TABLE 8-10: CONSTRUCTION ACCESS POINTS**

| Access point | Chainage | Road access (refer to Figure 8-8) |
|---|---|---|
| Billabong Creek | 0 | Olympic Highway |
| Paper road | 2750 | Olympic Highway |
| Old Sydney Road | 5500 | Old Sydney Road |
| Ulandra Creek | 8100 | Ironbong Road |
| Dirnaseer Road | 18500 | Dirnaseer Road |
| Old Cootamundra Road | 28250 | Old Cootamundra Road |
| Dudauman Road | 30800 | Dudauman Road |
| Burley Griffin Way (east) | 37250 | Burley Griffin Way |
| Burley Griffin Way (west) | 37250 | Burley Griffin Way |
| Hibernia Street | 37750 | Hibernia Street |
| Grogan Road | 40250 | Grogan Road |

### 8.9.2 Haul routes

To minimise construction traffic movements and associated impacts on the public road network, haulage between construction sections (including in relation to bulk earthworks) would be undertaken within the proposal site. This would primarily be facilitated through early establishment of the permanent rail maintenance access road (refer to section 7.3.2) for use as an internal haul road throughout construction of the project.

Internal haul roads would generally allow for:

- safe separation of light and heavy vehicles within the proposal site
- heavy vehicle haulage (i.e. cut/fill movements) within the proposal site
- plant and equipment deliveries, including equipment relocation between work areas and compounds
- personnel movements between work areas, using light vehicles.

Construction of dedicated haul routes outside the proposal site is not proposed; however, should the need for additional haul roads be identified during detailed design, these would be subject to further assessment of impacts.

Haulage of bulk earthworks for the proposal would be undertaken within the proposal site as far as possible, with use of local roads where necessary. While a detailed haulage program has not yet been developed, it is expected that transport would be undertaken by heavy vehicles using the Olympic Highway and Burley Griffin Way and then local roads. Local roads that would be used during construction include Old Sydney Road, Ironbong Road, Dirnaseer Road, Blackgate Road, Old Cootamundra Road and Dudauman Road (refer to Figure 8-8).

### 8.9.3 Construction traffic numbers

Construction vehicle movements would comprise both heavy and light vehicles. Current forecasts of construction vehicle movements are listed in Table 8-11 and would be reviewed during detailed design.

**TABLE 8-11: MAXIMUM DAILY VEHICLE MOVEMENTS DURING CONSTRUCTION**

| Vehicle type | | 2-way trips per day |
|---|---|---|
| Light vehicles | Cars and utilities | 80 |
| Heavy vehicles | Plant deliveries | 3 |
| | Quarry deliveries | 63 |
| | Concrete deliveries | 45 |
| | Inter-section formation haulage | 72 |
| | Earthworks general fill haulage | 136 |
| | Water tankers | 18 |
| | **Total vehicles** | **417** |

Light vehicle movements would largely be based on the amount of construction workers travelling to site each day. For assessing a worst-case scenario, the workforce trips to the site are assumed to be via private vehicles with car parking through the various compound sites, as noted in section 8.3. There would be no requirement for construction worker parking outside the construction compounds. The number of light vehicles assumes for partial carpooling and assumes, on average, two personnel per vehicle as assessed in Chapter 11: Traffic, transport and access. There is the opportunity to explore the use of buses and ride-share opportunities for construction workers during further design development. Planning for a temporary construction accommodation facility, as discussed in section 8.4.2, would require review of worker transport arrangements.

### 8.9.4 Emergency access

Access for emergency vehicles would be maintained to all construction sites. The construction contractor(s) would consult with emergency services (such as fire, police and ambulance) during the preparation of the site-specific traffic management plans, to obtain any specific requirements for the proposal. An Emergency Management Plan would coordinate these measures and provide a framework for input to the individual work site traffic management plans.


Access point
Haulage Route
Sub-arterial road
Arterial road

**Construction Section**

Section 1 (0-2,900)
Section 2 (2,901-8,840)
Section 3 (8,841-18,500)
Section 4 (18,501-28,300)
Section 5 (28,301-37,300)
Section 6 (37,300-42,600)

## 8.8 Haulage Routes

Coordinate System: GDA 1994 MGA Zone 55
Date: 5/16/2021 Paper size: A4 Scale: 1:200,000

Illabo to Stockinbingal Data Sources: LPI, IRDJV, ARTC

220_0110_EIS_8_8_HaulageRoutes_r1v2.mxd

## 8.10 Public utilities

Preliminary investigations have indicated that a number of utilities would need to be relocated or adjusted as part of the proposal. Utilities include those owned by Telstra, Optus, Essential Energy, Goldenfields Water, APA and NBN. Utilities generally identified include:

- high and low voltage electrical power lines
- water mains and pipelines
- sewer mains and pipelines
- overhead telecommunications
- buried telecommunications
- buried high pressure gas pipelines.

As part of the proposal, there are two key utilities requiring further development during detailed design and are shown in Figure 8-1:

- an NBN Tower (near chainage 38200) located within the proposal site. Impacts to the tower would be avoided through further design development, with the objective of minimising the proposal site such that the tower is unaffected
- a high-pressure gas pipeline (around chainage 37280): located within the proposal site and identified as part of construction work for the Burley Griffin Way realignment. Measures to protect the pipeline would be further explored in detailed design.

These utility relocations and adjustments would generally be contained with the proposal site; however, consultation with public utility authorities is ongoing and confirmation of the final treatment solution would occur during detailed design.

Depending on the interaction, the utilities may remain unaffected, require protection or relocation. Additional services investigations may be undertaken during detailed design in consultation with the relevant utility authorities.

### 8.10.1 Potential impacts and management framework

A utilities management framework (provided in Appendix F: Utilities management framework) has been prepared, adopting a risk-based approach to avoiding or minimising impacts associated with the relocation or adjustment of public utilities affected by the proposal. The framework provides a consistent approach to the assessment and management of public utilities relocation or adjustment across all proposal activities. An outline of the framework is provided below.

The utilities management framework comprises the following activities:

- confirm affected utilities
- design response to potential conflict with a public utility, including whether the utility can be avoided
- detailed assessment of requirements to meet utility owners' specifications
- ongoing consultation with asset owners and relevant stakeholders
- environmental assessment, particularly for relocation works outside the proposal site using a risk-based environmental assessment following the Australian Standard for risk management *AS/NZS ISO 31000:2009 Risk management—Principles and guidelines* (Standards Australia/Standards New Zealand, 2009)
- construction management, which identifies typical mitigation measures
- rehabilitation and re-instatement protocols following utility relocation/adjustment in roadways, footpaths and open space areas
- communications and notifications that can be expected and how these would be managed.