BE .....

APPLICATION NO:
DATE RECEIVED:
RECEIPT NO:

CLAUSE 9.1.1

SHIRE OF DANDARAGAN

**LOCAL PLANNING SCHEME NO.7**
**DISTRICT ZONING SCHEME**
**APPLICATION FOR DEVELOPMENT APPROVAL**

| | | |
|---|---|---|
| **Owner details**: | | |
| Name: GENOCANNA NOMINEES PTY LTD | | |
| ABN (if applicable) | | |
| Address: MILING WATHEROO ROAD, MILING WA | | Postcode: 6575 |
| Phone Home:<br>Work:<br>Mobile: 0427 084313 | Fax: | Email:<br>Gloria.brian@outlook.com |
| Contact person for correspondence: | | |
| Signature: B F White | | Date: |
| Signature: G A White | | Date: |
| *The signature of the owner(s) is required on all applications. This application will not proceed without that signature. For the purposes of signing this application an owner includes the persons referred to in the Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 Clause 62(2)* | | |
| **Applicant details:** | | |
| Name: Tecon Australia | | |
| Address: PO Box 1861, Bunbury | | Postcode: 6231 |
| Phone Home:<br>Work:<br>Mobile: 6109 0468 | Fax: | Email:<br>adminwa@teconaust.com.au |
| Contact person for correspondence: Kristy Richardson | | |
| The information and plans provided with this application may be made available by local government for public viewing in connection with the application. ☑ Yes ☐ No | | |
| Signature: K Richardson | | Date: 23.09.21 |
| **Property Details:** | | |
| Lot No: 4113 | House/Street No: 2269 | Location No: |
| Diagram or Plan No: | Certificate of Title Vol. No: 2125 | Folio: 58 |
| Title encumbrances (e.g. easements, restrictive covenants): | | |
| Street Name: Wongonderrah Road | Suburb: Nambung | |
| Nearest street intersection: Munbinea Rd | | |
| **Proposed development:** use not listed - workforce accomodation | | |
| Nature of development: ☐ Works<br>☐ Use<br>☑ Works and use | | |

| |
|---|
| Is an exemption from development claimed for part of the development? ☐ Yes ☑ No<br>If yes, is the exemption for: ☐ Works ☐ Use |
| Description of the proposed works and/ or land use:<br>work force accomodation assocaited with Atlas Mine |
| Description of exemption claimed (if relevant) |
| Nature of any existing buildings and/ or land use: |
| Approximate cost of proposed development: $3.5 million |
| Estimate time of completion: 2022 |

| **OFFICE USE ONLY** | |
|---|---|
| Acceptance Officer's initials: | Date received: |
| Local Government Reference No: | |

**THIS FORM IS TO BE SUBMITTED WITH TWO COPIES OF PLANS COMPRISING THE INFORMATION SPECIFIED IN THE PARTICULARS REQUIRED WITH APPLICATION AS SHOWN BELOW.**

**THIS IS NOT AN APPLICATION FOR A BUILDING LICENCE**

**Accompanying material**

Unless the local government waives any particular requirement every application for planning approval is to be accompanied by —

(a) a plan or plans to a scale of not less than 1:500 showing —

(i) the location of the site including street names, lot numbers, north point and the dimensions of the site;

(ii) the existing and proposed ground levels over the whole of the land the subject of the application and the location, height and type of all existing structures, and structures and vegetation proposed to be removed;

(iii) the existing and proposed use of the site, including proposed hours of operation, and buildings and structures to be erected on the site;

(iv) the existing and proposed means of access for pedestrians and vehicles to and from the site;

(v) the location, number, dimensions and layout of all car parking spaces intended to be provided;

(vi) the location and dimensions of any area proposed to be provided for the loading and unloading of vehicles carrying goods or commodities to and from the site and the means of access to and from those areas;

(vii) the location, dimensions and design of any open storage or trade display area and particulars of the manner in which it is proposed to develop the same; and

(viii) the nature and extent of any open space and landscaping proposed for the site;

(b) plans, elevations and sections of any building proposed to be erected or altered and of any building it is intended to retain;

(c) any specialist studies that local government may require the applicant to undertake in support of the application such as traffic, heritage, environmental, engineering or urban design studies; and

(d) any other plan or information that the local government may require to enable the application to be determined.

**The Council reserves the right to request an electronic version of the application to make a complete assessment of the development application.**

# Lot 4113 Wongonderrah Road, Nambung

## Application for Planning Approval
## October 2021


**Tecon Australia**

E: adminwa@teconaust.com.au

www.teconaust.com.au

Tel: (08) 6109 0468

4/29 Carey Street, Bunbury WA

## Introduction

Tecon Australia acts on behalf of the owner in relation to this Development Application.

The proposal relates to an application for planning approval for a 'use not listed – workforce accommodation'.

### Property Details

The following details are provided regarding the subject site and land ownership.

The site is located 22kms from the Brand Highway along Wongonderrah Road and is 44km from Cervantes via Cervantes Rd and Munbinea Road.

| Address | Lot No | CT (Volume/Folio) | Area | Owner |
|---|---|---|---|---|
| 2269 Wongonderrah Road, Nambung | 4113 | 2125/58 | 2312ha | Genocanna Nominees Pty Ltd |

### Existing Land Uses

Predominately, the site is an operating farm consistent with the zoning of the site.
Ancillary to farming, the site appears (anecdotally) to have a license issued by the Shire of Dandaragan Environmental Health team (which is renewed annually) consistent with the requirements of the WA Caravan Parks and Camping Grounds regulations. The Nambung Station Stay operates consistent with this license, providing both powered and unpowered sites and camp facilities including toilets, showers and a camp kitchen.

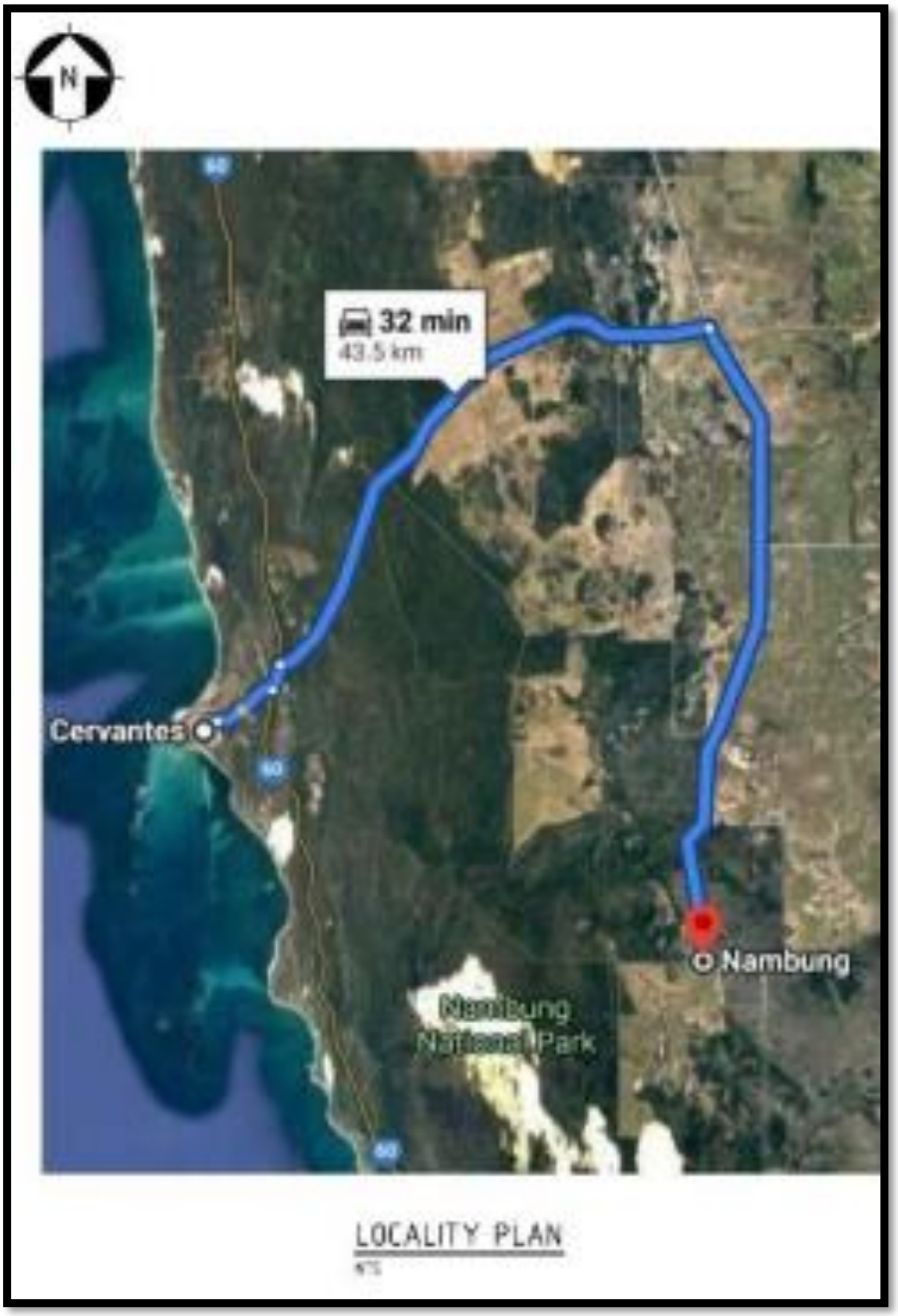



Figure 1: Site Location Context

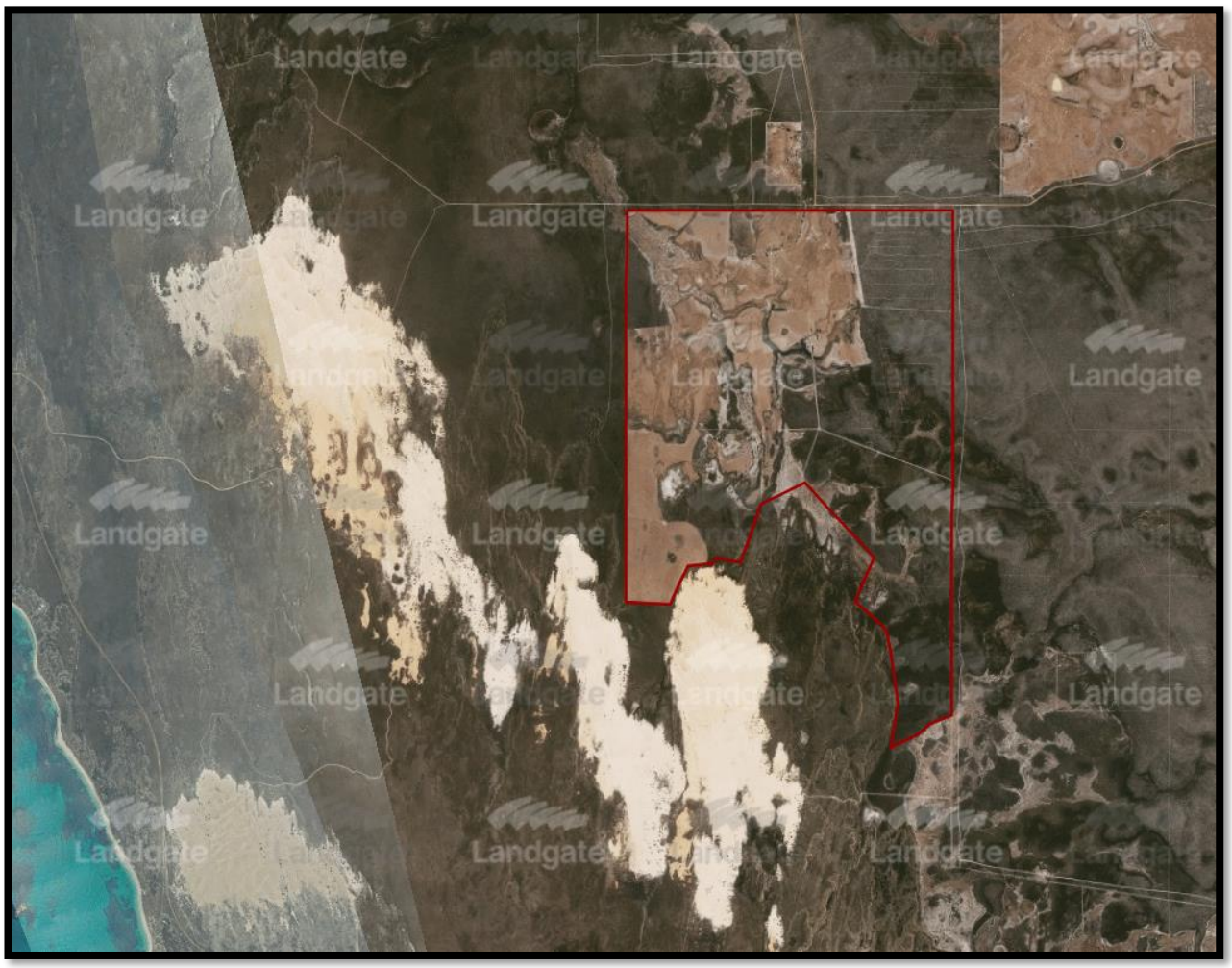



Figure 2: Lot 4113 Wongonderrah Road, Nambung


Figure 3: Lot 4113 Wongonderrah Road, Nambung

## Town Planning Background

The subject site is zoned 'Rural' under the Shire of Dandaragan Local Planning Scheme No.7.

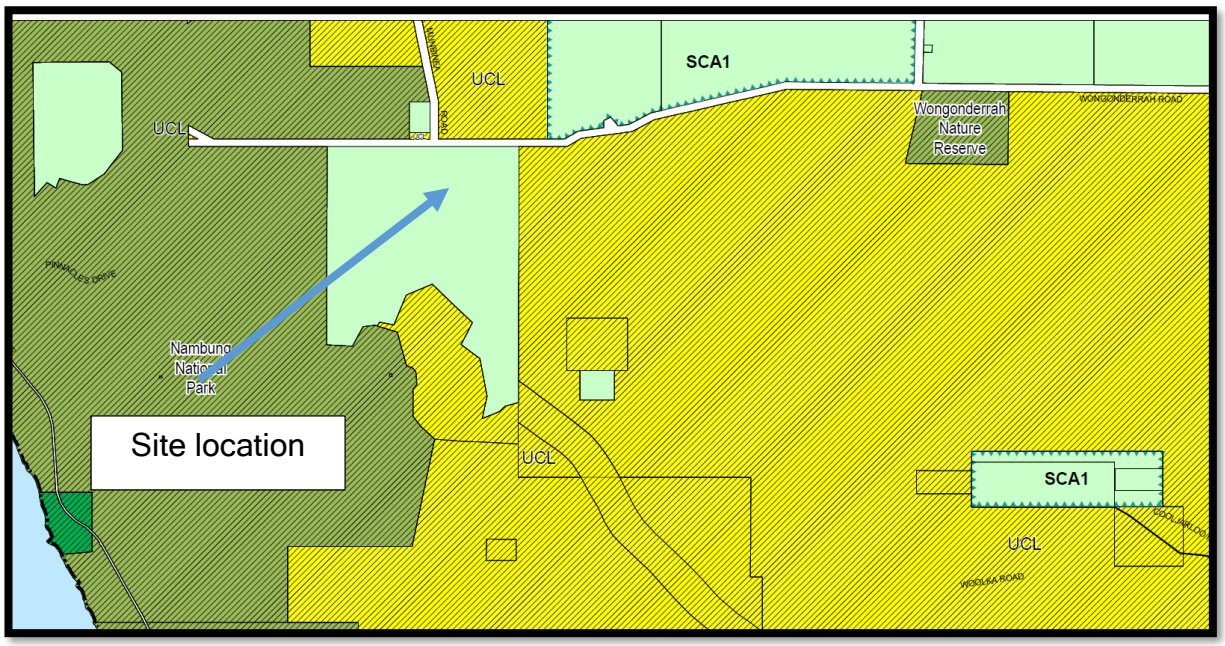



Figure 4: Excerpt from Shire of Dandaragan Local Planning Scheme No.7

Surrounding land is generally reserved 'Conservation', 'Public Purpose' or zoned 'Rural'.

The scheme lists at Table 1 uses that can be considered at various zones. The permissibility of uses permitted in various zones is determined by cross reference between the list of use classes and the list of zones.

The Shire's scheme does not define any land use (use class) that can appropriately define the proposed operations of workforce accommodation. As such, clause 3.4.2 of the scheme applies and development should be pursued within zoned land (not reserved land) as a 'use not listed'.

Generally, workforce accommodation is defined as:

| | |
|---|---|
| **workforce accommodation** | means premises, which may include modular or relocatable buildings, used -<br>(a) primarily for the accommodation of workers engaged in construction, resource, agricultural or other industries on a temporary basis; and<br>(b) for any associated catering, sporting and recreation facilities for the occupants and authorised visitors. |

The WAPC have additionally released a policy position on workforce accommodation. The purpose of the Position Statement is to provide guidance to local governments on the role of the planning framework in the planning and development of workforce accommodation.

The position statement states that where practicable, workforce accommodation should be provided in established towns.

Whilst the policy position is noted, the provision of workforce accommodation has not been recognised in the planning framework of the Shire of Dandaragan (i.e., not a defined use in the scheme nor is there any relevant local planning policy) and as such, understand that the use can be considered on a case-by-case basis as a 'use not listed', as has been the precedent with other examples of workers accommodation within the shire.

Importantly, whilst position paper states a preference for such accommodation within town sites, the preface is made on practicality. Practically, accommodating workers for the Atlas Project in towns some 40km away is not amenable to an operations perspective. Additionally, the small coastal towns of Cervantes and Jurien Bay are limited in their ability to accommodate the proposed workforce within existing facilities. These are tourist towns and accommodation facilities within these towns could be compromised from a tourism perspective if workers were to occupy existing hotels, motels, campgrounds etc.

## Proposed Development

The proposed location is approximately 2 kilometers from the Atlas mine site however a 45-minute drive from the nearest town site being Cervantes.

For various reasons, it is understood that a camp near to the site has benefits over a camp 40 minutes away in the Cervantes Townsite, including:

- Proximity of workforce to mine site.
- Risk to personnel travelling daily to and from site after long shifts.
- Risks with daily travel on country roads, especially after long shifts or inclement weather.
- Risk of road closures during rain events preventing personnel to travel to and from work potentially for extended periods.
- Land is already cleared. Noting that surrounding land is largely Banksia Woodland, choosing a site that is already cleared limits further disturbance to native vegetation.

The proposal is for an 84-bed camp to accommodate workers from the Atlas Project. Peak personnel for the camp is during the construction phase of the project. Once the mine is operating, it is expected that a reduced number would occupy the facility (this however would be dependent on the operations at the mine and what method of mining is utilized). The expected life of the mine is 3 to 4 years with possibilities (subject to further studies) of an extension to the north. The proposed camp would be required for the life of the mining operations.

The development consists of twenty-one transportable dwellings located generally in the north-eastern corner of the property and accessed via the existing driveway which services the main farm stay and caravan park.

Each transportable dwelling caters for up to four workers, each with their own bedroom and bathroom facility. Communal kitchen, dining and laundry facilities are also provided.

The internal layouts are indicative and subject to supplier specifications and availability.

A dedicated onsite manager of the camp will oversee and be responsible for the daily running operations of the camp. The daily running of this camp, where feasible, will utilize the contractors and services of the nearby towns including provision of food, cleaning and maintenance.

Wastewater is to be dealt with via an onsite system, approved to the requirements of the Department of Health and the Shire of Dandaragan.

All stormwater will be contained onsite to the requirements of the Shire of Dandaragan.

Power supply to the camp is currently the subject of negotiation and further studies to be undertaken through Western Power.

The following matters have been specifically addressed in the context of the proposed development:

- Parking and Vehicle Movements

The development provides for approximately 56 car parking bays for occupants of the workforce accommodation and 3 long bays for service vehicles (i.e. small buss to transport occupants to site). Although the camp can occupy up to 80 persons, not every occupant has a vehicle on site and communal travel to the camp is encouraged. Parking areas and access tracks to be at a gravel/limestone standard, as per the current access standard.

Once on site, personnel will travel from the camp to their shift via daily bus services to limit private traffic movements.

Given the staggered shifts, shift times not being at standard "peak" travel times and workers being off site on rostered days off, the access/egress movements to the site is considered very low impact. It has been estimated between 30-60 cars per week in coming shifts and similar for outgoing shifts.

Estimated daily movements between the camp and the mine site include 8 return trips of a proposed 12 seater shuttle bus (indicatively 5:00am/pm, 5:30 am/pm, 6:00am/pm and 6:30am/pm).

- Transport Impact Statement

A Transport Impact Statement (TIS) has been prepared by Shawmac to support the subject development application and demonstrates the negligible impact of the proposal on the surrounding local road network.

The TIS has been undertaken in accordance with the Western Australian Planning Commission's (WAPC) Transport Impact Assessment Guidelines for Developments: Volume 4 – Individual Developments (2016) and is appended to the application (Appendix 1).

The TIS has confirmed that the proposed camp will result in a minor increase in light vehicle traffic and that it is considered the existing road formation in the vicinity of the camp is adequate. Some minor upgrades to roads and intersections may be required and will be monitored with measures implemented if required.

- Bushfire

The subject lot has been partially mapped as being bush fire prone. The proposed development has been sited so that it is not within the mapped zone and as such officers of the Shire of Dandaragan have advised that a BAL assessment is not required.

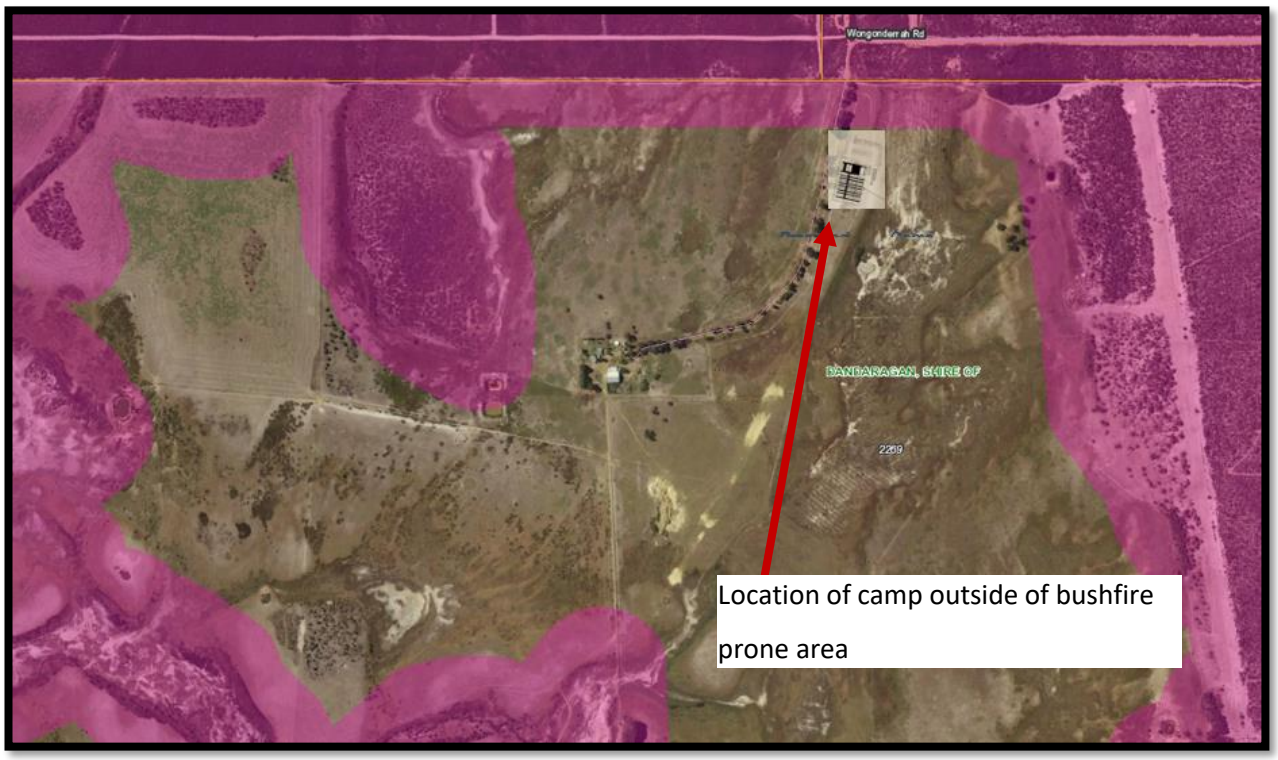



Figure 5: Bushfire prone mapping

As the camp will act as a place of residence for those not familiar with the area and terrain, Image Resources have prepared an internal document which addresses the prevention, preparedness, response and emergency evacuation arrangements required to manage bush fire risks associated with the operation of the camp. All personnel accommodated at the camp will be provided an induction that includes an overview of the management plan and procedures. A copy of this is provided at Appendix 2.

## Conclusion and Recommendations

We respectfully request the subject application be considered and that conditional Development Approval be issued for the proposed 'use class not listed – workforce accommodation'.

## Appendix 1 – Transport Impact Statement

Appendix 2 – Image Resources Bushfire Management Plan

# Traffic Impact Statement

| | |
|---|---|
| Project: | Atlas Project, Cooljarloo<br>Camp Facility<br>Traffic Assessment |
| Client: | Image Resources |
| Author: | James Bridge |
| Date: | 7th of October 2021 |
| Doc No: | 2109008-TIS-001 |

CONSULTING CIVIL AND TRAFFIC ENGINEERS
1 ST. FLOOR, 908 ALBANY HIGHWAY, EAST VICTORIA PARK WA 6101.
PHONE|+61 8 9355 1300
FACSIMILE| +61 8 9355 1922
EMAIL| admin@ shawmac.com.au

## Document Status

| Revision | Prepared By | Reviewed By | Approved By | Date |
|---|---|---|---|---|
| A | J. Bridge | R. Needham | J. Bridge | 14/09/21 |
| B | J. Bridge | - | J. Bridge | 07/10/21 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

## Disclaimer



File Reference: \\shaw-svr\NewData\Jobs Active 2021\CE - Roads and Drainage\Image Resources_Camp Facility_TIS_2109008\3. Documents\3.6 TIS\2109008-TIS-001 Rev B.docx

## Contents

## Figures

## Tables

# 1. Introduction

## 1.1. Background

Image Resources are intending to develop the Atlas Project in Cooljarloo as per **Figure 1**.

As part of the development, Image Resources is proposing to construct an accommodation/camp facility at the end of Wongonderrah Road at the existing Nambung Station.

Refer to **Figure 2** for the road network surrounding the camp facility and **Figure 3** for the specific camp location.

As part of the Development Application, the Shire of Dandaragan have requested a Traffic Impact Statement (TIS) be prepared to address concerns with the local road network and the impacts that the workforce accommodation would have on the local roads.

The TIS is to address the impact on the road network from the camp facility traffic only.

Shawmac has been engaged by Image Resources to prepare the Traffic Impact Statement.


**Figure 1: Project Site**

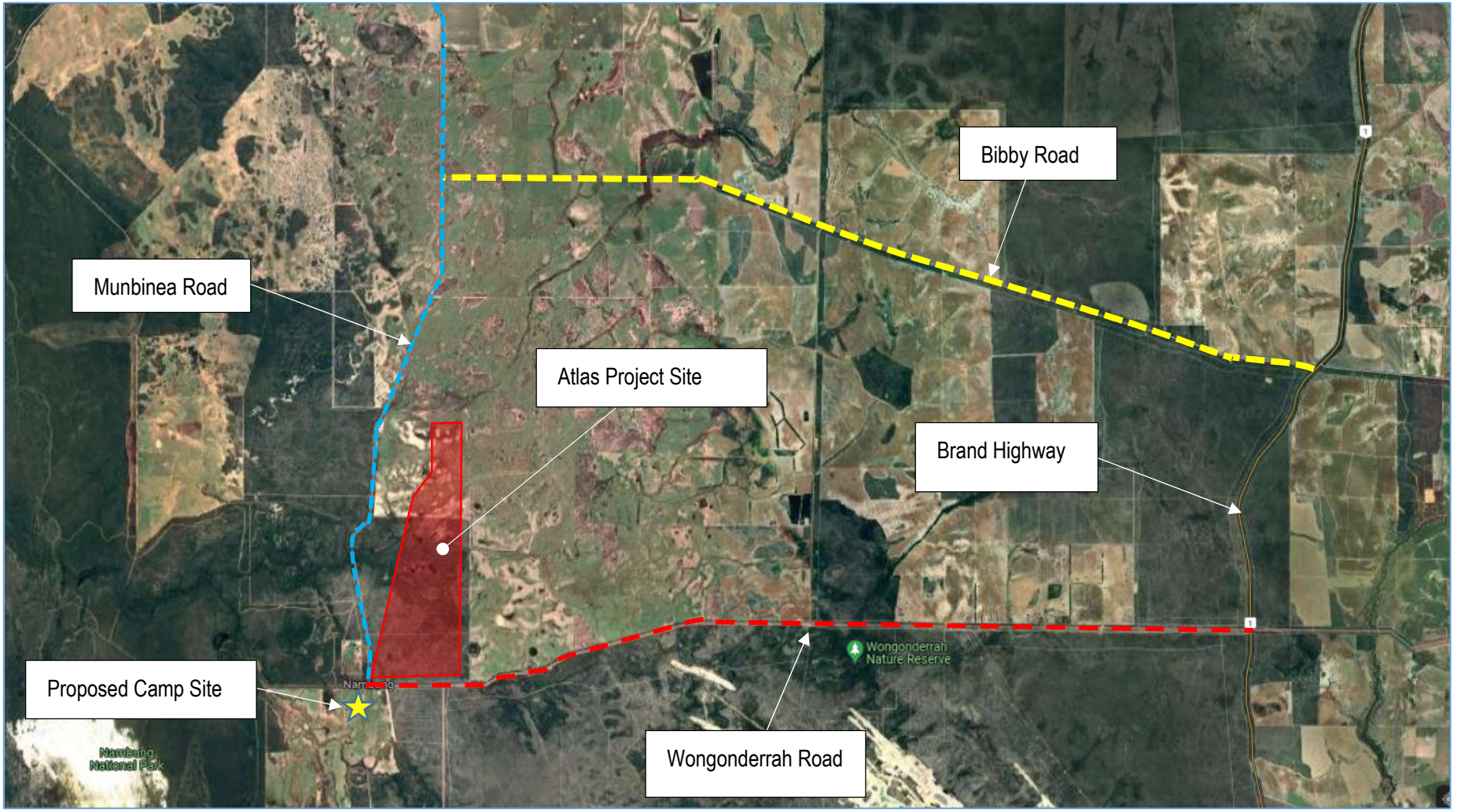



**Figure 2: Camp Site and Surrounding Road Network**

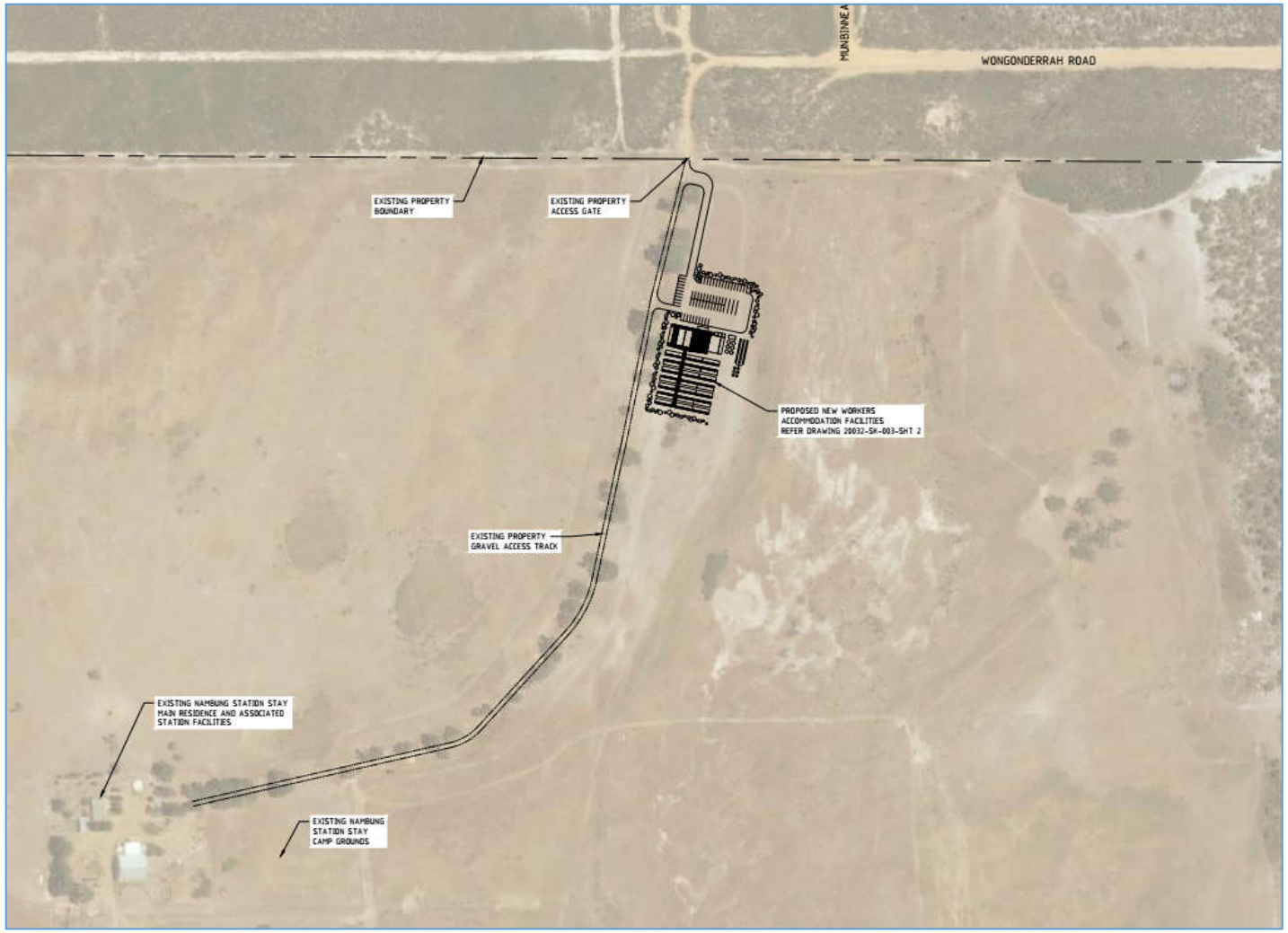



**Figure 3: Camp Site Location**

The Transport Impact Assessment has been undertaken in accordance with the Western Australian Planning Commission's (WAPC) Transport Impact Assessment Guidelines for Developments: Volume 4 – Individual Developments (2016). The assessment includes:

- Collection of background data including traffic counts and crash data;
- Details of the proposed operation as provided by the client;
- Assessment of traffic generation and distribution from the site;
- Assessment of the development impact on the adjacent road network including any relevant mid-block locations and at nearby intersections; and
- Identification of any required management measures to ensure acceptability of the proposal.

## 1.2. Purpose

The purpose of this Traffic Impact Statement is to assess the impact of the camp facility traffic on the existing road network.

This assessment is not to be considered a road safety audit of the surrounding road network. However, obvious potential safety concerns identified have been raised in this report.

# 2. Transport Logistics

## 2.1. Proposed Camp Traffic Generation Route and Volumes

Traffic generation from the mine site will be via Wongonderrah Road and Munbinea Road as per **Figure 4**.

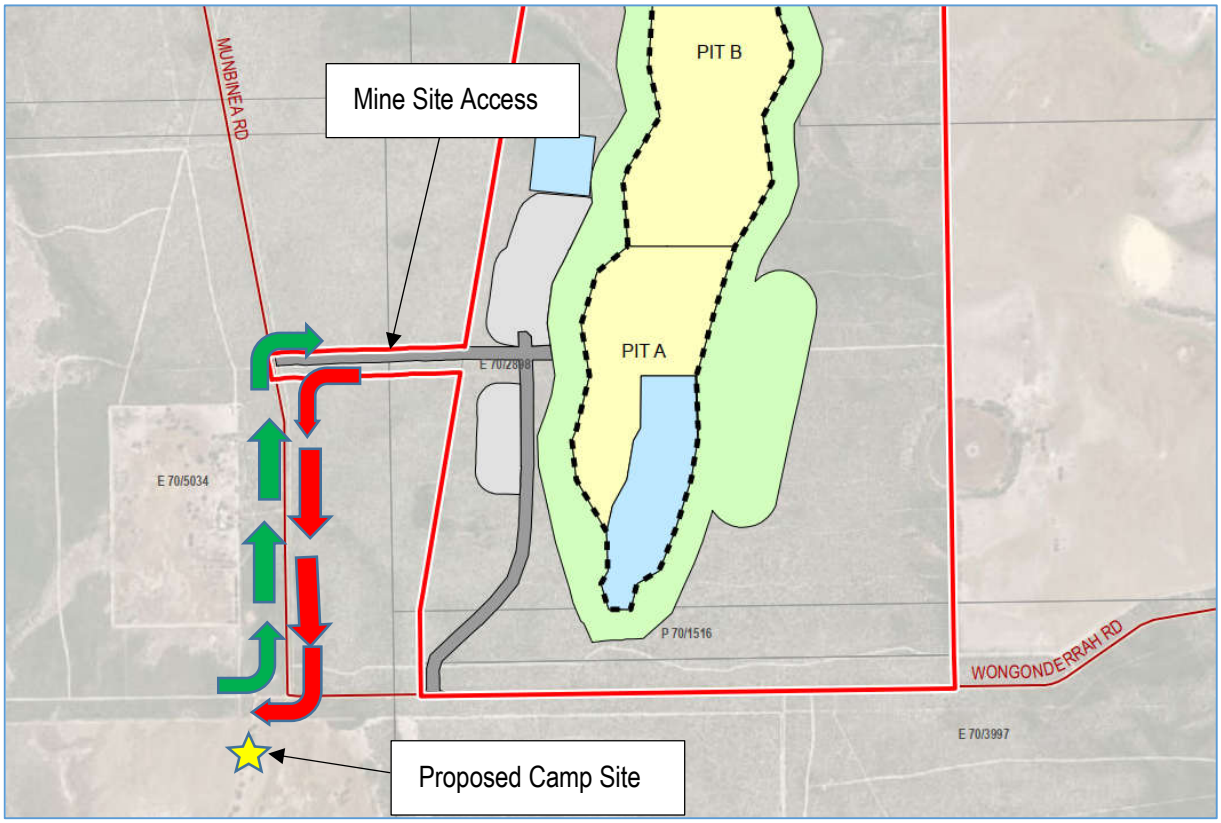



**Figure 4: Camp Facility and Mine Traffic Route**

Between the camp site and the mine site, there is anticipated to be total of 8 return trips (16 total) of a 12-seater shuttle bus in a day at the following approximate times:

- 5:00am/pm;
- 5:30am/pm;
- 6:00am/pm; and
- 6:30am/pm.

Traffic generation to/from the camp, other than between the mine site, is to be in the range of 30 to 60 light vehicles weekly for incoming shifts and similar for outgoing shifts.

It is assumed that shift changes are variable frequency and spread out over the working week based on current Image operations.

Therefore, daily traffic is estimated to be as follows:

- Approximately 10 light vehicles for incoming shift; and
- Approximately 10 light vehicles for outgoing shift.

For conservatism it is assumed that the above shift change traffic is occurring at the same time as the peak hour.

Image Resources have provided the following indicative split of traffic generation during shift changes based on current employee residence:

1. 50% from the south via Brand Highway/Bibby/Munbinea Roads or Wongonderrah Road;
2. 30% from the south via Indian Ocean Drive/ Cervantes Road/Munbinea Roads;
3. 10% from the north via Brand Highway/ Bibby/Munbinea Roads or Wongonderrah Road; and
4. 10% from the north (Jurien Bay) via Indian Ocean Road/Jurien Road/Munbinea Roads (which is the shortest/quickest route from Jurien Bay compared to the Indian Ocean Drive/ Cervantes Road/Munbinea Road route).

Therefore, the estimated daily traffic for shift changes is as per **Table 1**. The estimated values have been rounded up for conservatism.

**Table 1: Shift Change Traffic Generation**

| Item | Direction | Percentage of Traffic Generation | Incoming Shift | Outgoing Shift | Total |
|---|---|---|---|---|---|
| 1 | Traffic from SOUTH - EAST Side (Brand Hwy) | 50.0% | 5 | 5 | 10 |
| 2 | Traffic from SOUTH - WEST Side (Indian Ocean Drive) | 30.0% | 3 | 3 | 6 |
| 3 | Traffic from NORTH - EAST Side (Brand Hwy) | 10.0% | 1 | 1 | 2 |
| 4 | Traffic from NORTH - WEST Side (Indian Ocean Drive) | 10.0% | 1 | 1 | 2 |
| | **SUBTOTAL** | 100.0% | **10** | **10** | **20** |

In regard to traffic generation from the east side (Item 1&3), Image Resources have confirmed that they will be encouraging all personnel to utilise Bibby Road/Munbinea Road as the preferrable route, rather than Wongonderrah Road. As Munbinea Road is part of the nominated haulage route, it may be subject to a formalised maintenance regime and may possibly remain in better condition than Wongonderrah Road.

Image Resources have confirmed that they will encourage personnel to utilise the Bibby Road/ Munbinea Road route by the following:

- Direction of the preferred route during staff initial site inductions;
- Discussion of preferred route and reasoning during safety talks at morning start-ups and meetings;
- Continued reminders through general correspondence e.g., emails, poster boards etc.

However, it is possible that some of the traffic coming from the south and east via Brand Highway (Item 1) during dry conditions/weather may use Wongonderrah Road to access the camp facility rather than Bibby Road/Munbinea Road, as this is the shorter route by approximately 10 minutes/21km.

Therefore, for the purpose of this assessment, it has been assumed that 20% of the traffic from the south via Brand Hwy will use Wongonderrah Road and the remainder will utilise Bibby Road/Munbinea Road. However, it is expected that all traffic coming from the north via Brand Highway (Item 3) will use Bibby Road/Munbinea Road as it is only an additional 3 minutes/6.5km compared to Wongonderrah Road.

Refer to the **Figure 5** and **Figure 6** for the overall daily traffic movement generated from the camp facility, including the proposed haulage traffic.

In summary:

- 10% of the camp traffic will access the camp from the south via Brand Highway and Wongonderrah Road;
- 40% of the camp traffic will access the camp from the south via Brand Highway/Bibby Road/Munbinea Roads;
- 10% of the camp traffic will access the camp from the north via Brand Highway/Bibby Road/Munbinea Roads;
- 30% of the camp traffic will access the camp from the south via Indian Ocean Drive/ Cervantes Road/Munbinea Roads;
- 10% of the camp traffic will access the camp from the north (Jurien Bay) via Indian Ocean Road/Jurien Road/Munbinea Roads); and
- There is estimated to be 8 shuttle bus return trips between the camp and the site (16 in total).

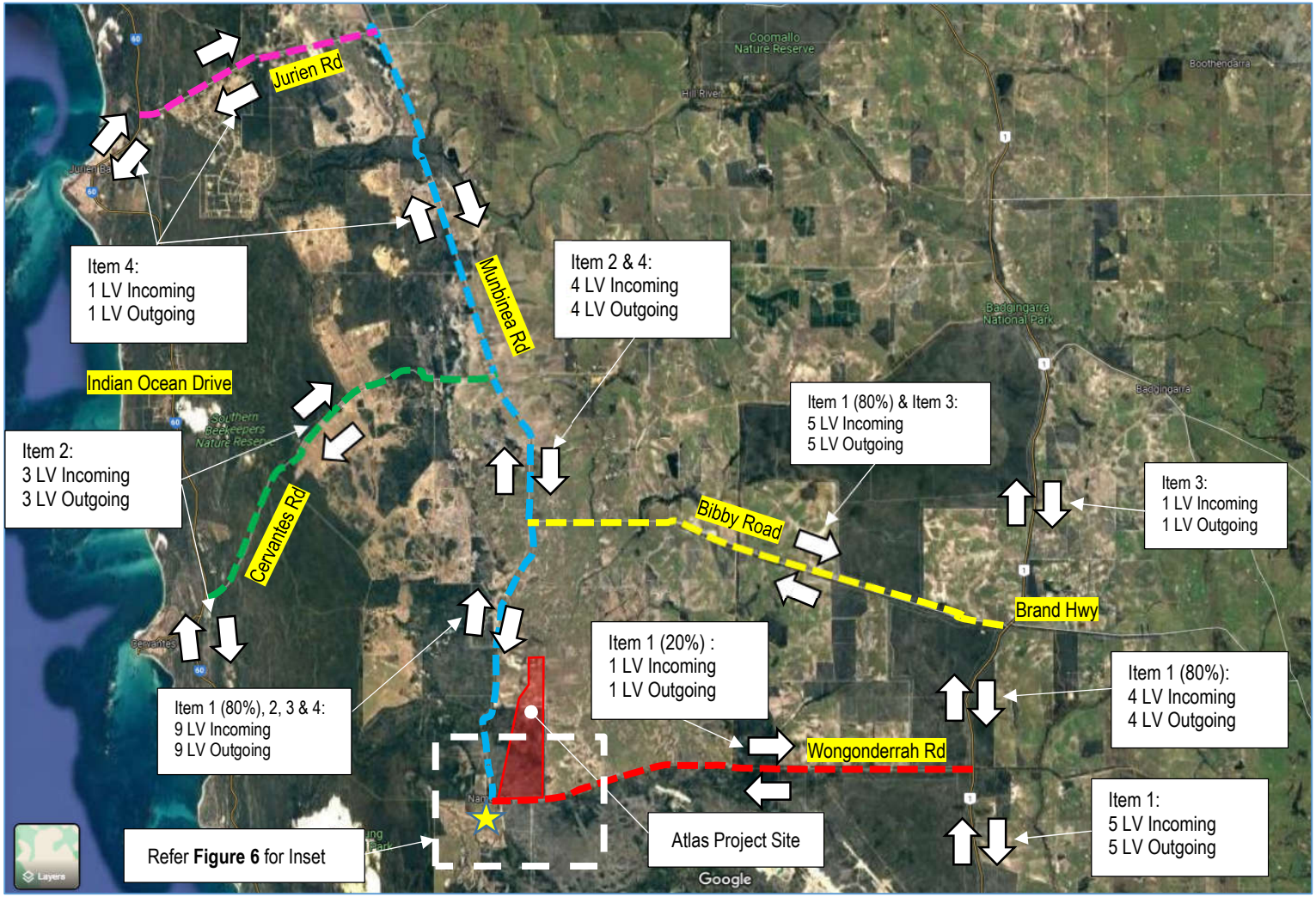



**Figure 5: Traffic Generation Daily Volumes – Road Network**

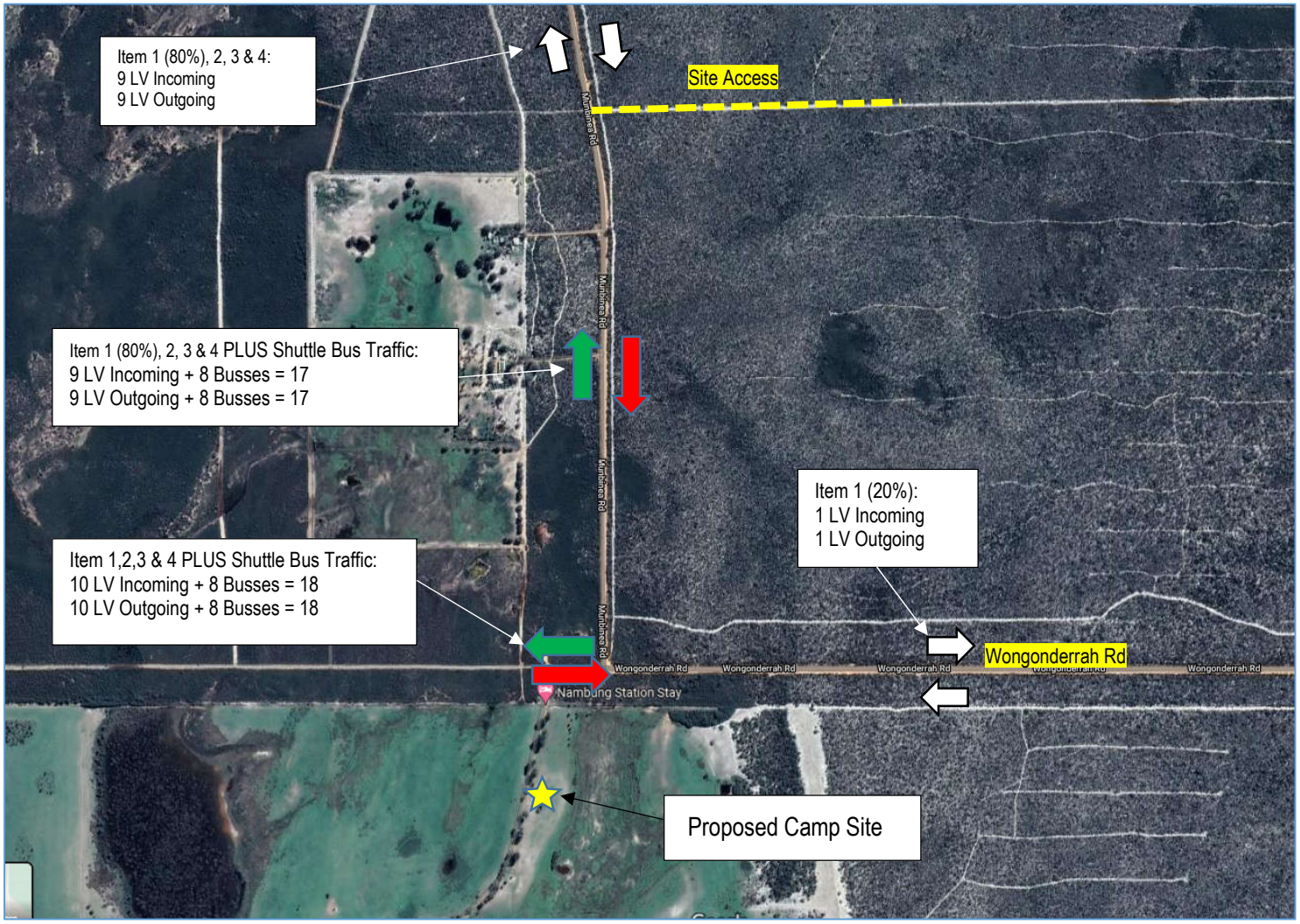



**Figure 6: Traffic Generation Camp Site – Daily Volumes**

As discussed previously, for conservatism, it is assumed that the total daily incoming and outgoing shift change traffic is occurring during the peak hour. Therefore, the peak hour traffic for the associated road network will be the same as the daily traffic volumes detailed within the previous **Figure 5**.

However, the shuttle buses to and from the mine site occurs over two 2-hour periods during the day (AM and PM). Therefore, for the peak hour assessment, the peak hour traffic volumes in the vicinity of the site is as per **Figure 7**.

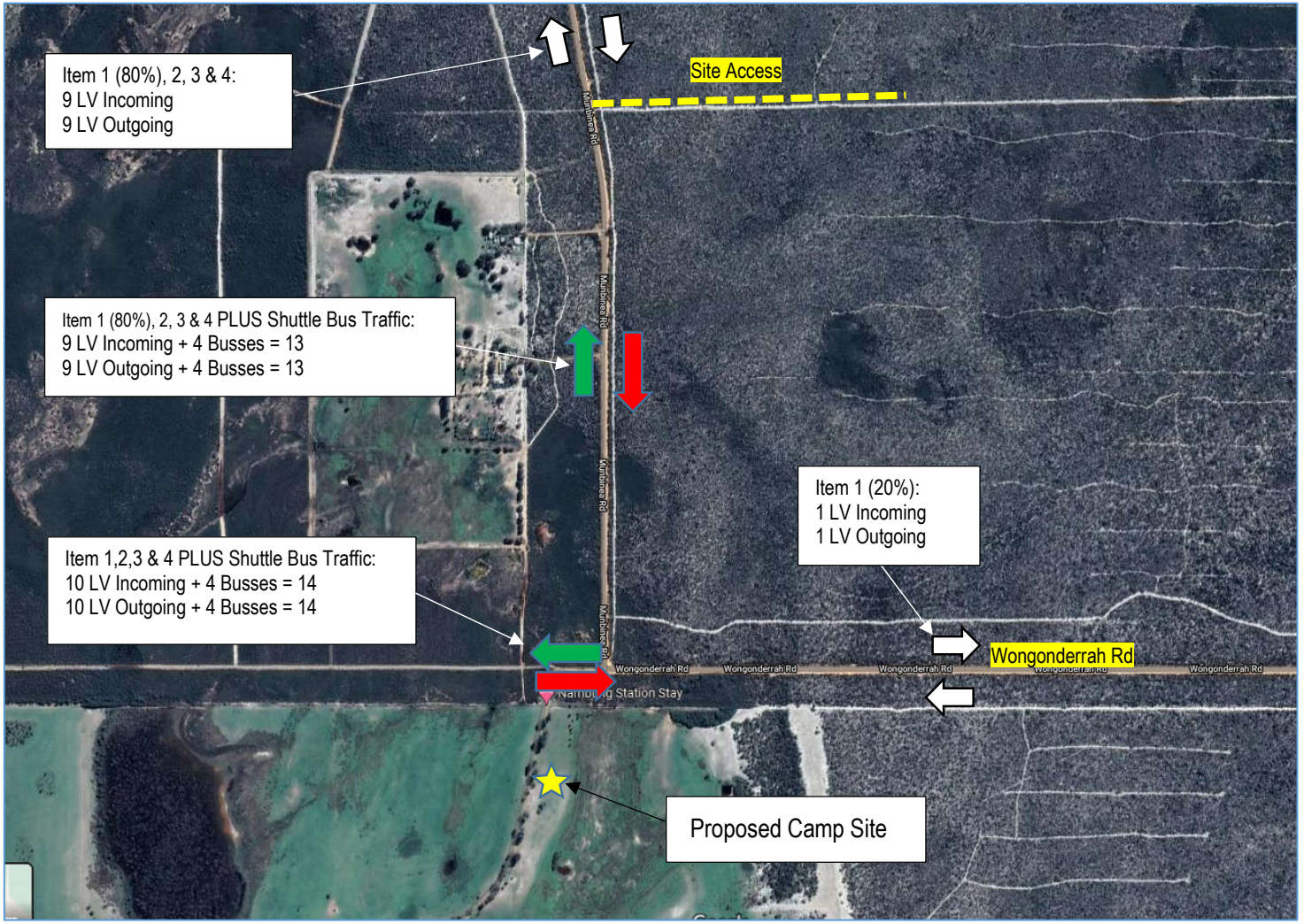



**Figure 7: Traffic Generation Camp Site – Peak Hour Volumes**

## 3. Key Sheet Diagram

Refer to **Figure 8** for the key sheet diagram for references to the relevant sections of this Traffic Impact Statement for assessment of the associated road/intersection.

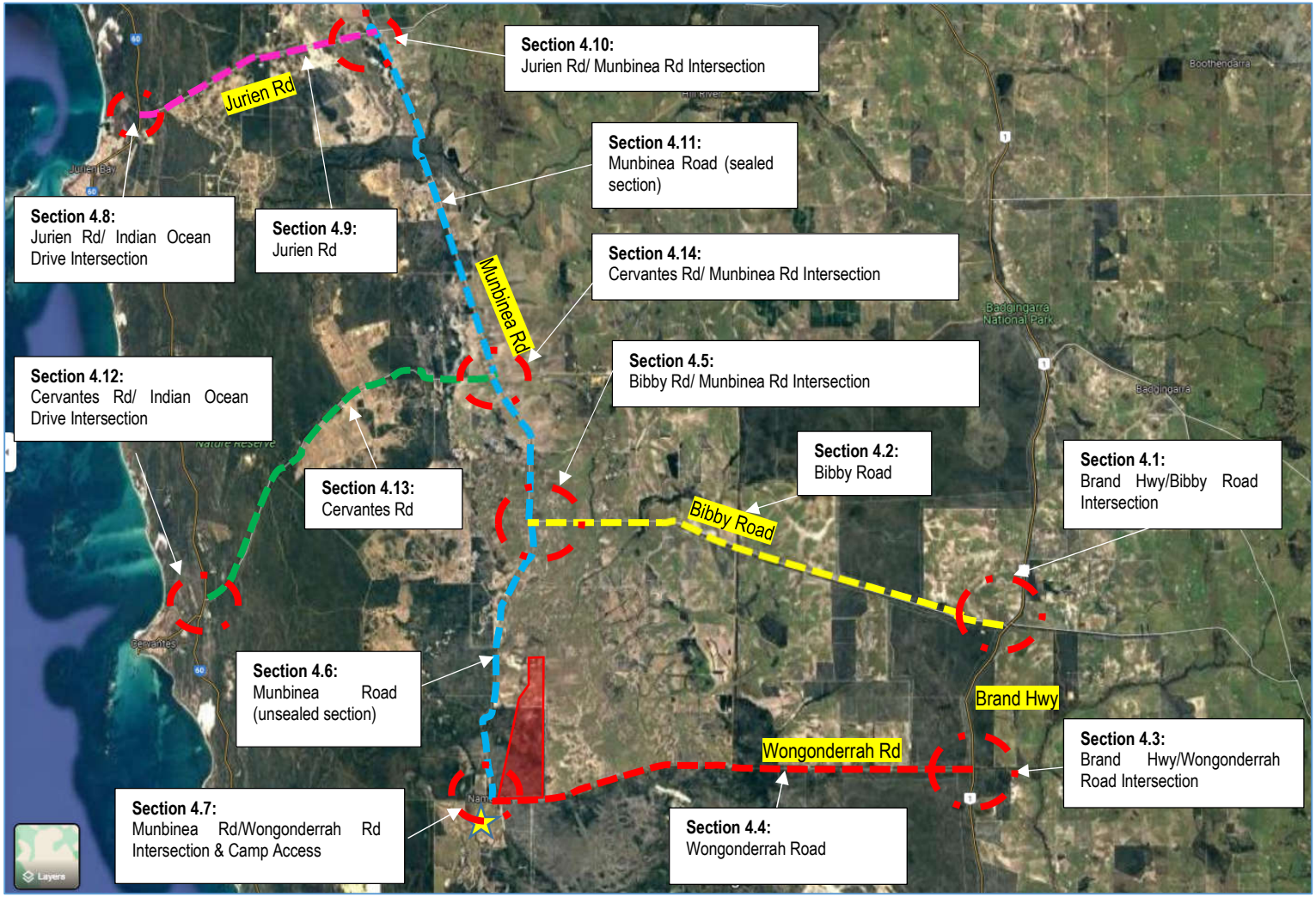



**Figure 8: Key Sheet Diagram**

# 4. Assessment

## 4.1. Bibby Road and Brand Highway Intersection

### 4.1.1. Existing Configuration

As per **Figure 9**, the existing intersection has an auxiliary left turn treatment, a southbound acceleration lane and southbound lane widening through the intersection that allows through vehicles to pass right turning vehicles.


**Figure 9: Brand Hwy & Bibby Road Intersection**

As per previous **Figure 5**, it is estimated that there will be an additional 10 light vehicles movements at this intersection during the peak hour.

Therefore, due to the minor increase in traffic, it is considered that additional auxiliary lanes will not be warranted and that the existing configuration is acceptable.

The intersection geometry is also considered appropriate for light vehicle movements and therefore no additional widening is required.

### 4.1.2. Road Safety

Crash data for Brand Highway between SLK 131.87 to 144.84, near the Bibby Road intersection (SLK 138.90), was sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 31/12/2019.

The report is summarised in **Table 2**.

**Table 2: Crash History**

| Location | Number of Crashes | MR Nature | Severity |
|---|---|---|---|
| Brand Highway<br>SLK 131.87 to SLK 138.91 (Bibby Rd) | 6 | 2 "Non-Collision"<br>4 "Hit Object" | 5 "Property Damage - Major"<br>1 "Hospital" |
| Brand Highway / Bibby Rd intersection<br>(Brand Highway SLK 138.91) | 2 | 1 "Non-Collision"<br>1 "Hit Object" | 2 "Property Damage - Major" |
| Brand Highway<br>SLK 138.91 (Bibby Rd) to SLK 139.19 (Koonah Rd) | 0 | N/A | N/A |
| Brand Highway / Koonah Rd intersection<br>(Brand Highway SLK 139.19) | 1 | 1 "Right Angle" | 1 "Medical" |
| Brand Highway<br>SLK 139.19 (Koonah Rd) to SLK 144.84 | 0 | N/A | N/A |

With the exception of the one crash at Koonah intersection, all the other crashes along Brand Highway did not involve other vehicles and were mostly Non-Collision or Hit Object.

Therefore, the crash history of the adjacent road network does not suggest any particular safety issues in the existing road network and therefore the volume of traffic movements generated by the camp facility is not considered to increase the likelihood of crashes to unacceptable levels.

### 4.1.3. Safe Intersection Sight Distance

The Safe Intersection Sight Distance (SISD) has been assessed in accordance with Austroads Guide to Road Design Part 4A Equation 2 and the results are summarised in **Table 3**. The line-of-sight photos at the intersection are shown below in **Figure 10** and **Figure 11**.


**Figure 10: Brand Highway / Bibby Road Intersection Looking South**

**Figure 11: Brand Highway / Bibby Road Intersection Looking North**

Table 3: SISD Estimate at Brand Highway / Bibby Road Intersection

| Vehicle Type | Design Speed (km/h) | Coefficient of Deceleration | Decision Time (s) | Longitudinal Grade (NB / SB) | Required SISD for NB / SB Traffic (m) | Available SISD (m) | |
|---|---|---|---|---|---|---|---|
| | | | | | | NB | SB |
| Trucks | 100 | 0.28 | 3+2.5 | -2% / -2% | 304 / 304 | +500 | 390 |
| Cars | 110 | 0.36 | 3+2.5 | -2% / -2% | 307 / 307 | +500 | 390 |

The SISD from both directions are sufficient to achieve minimum SISD in accordance with the Austroads minimum requirements.

Sight distances have been estimated from dash cam video footage, site photos, Google Earth and Google Street View.

### 4.1.4. Approach Sight Distances

Approach sight distance is shown in **Figure 12** and **Figure 13**.

The required and available ASD at the intersection has been determined from Austroads Part 4A Equation 2 as summarised in **Table 4**.

Figure 12: Approach Sight Line to Brand Highway

**Figure 13: Approach Sight Line from Brand Highway**

**Table 4: ASD at Bibby Road towards Brand Highway Intersection**

| Vehicle Type | Design Speed (km/h) | Coefficient of Deceleration | Reaction Time (s) | Longitudinal Grade | Required ASD (m) | Available ASD (m) |
|---|---|---|---|---|---|---|
| Trucks | 100 | 0.28 | 2.5 | -2% | 221 | 205 |
| Cars | 110 | 0.362 | 2.5 | -2% | 216 | 205 |

The assessment indicates the ASD are below the requirements caused by the horizontal bend and existing vegetation.

There is a warning sign 520m prior to the intersection warning of the intersection after the bend as per **Figure 14**.

**Figure 14: Intersection Warning Signage to Approach to Brand Highway**

As there is warning signage prior to the intersection, which results in vehicles lowering their operating speed, and as the ASD is only marginally non-compliant, the existing ASD is deemed acceptable .

### 4.1.5. Road Condition

The intersection is sealed and is currently in good condition and deemed suitable for the minor increase in traffic in terms of safety.

## 4.2. Bibby Road

### 4.2.1. Existing Configuration

The existing road is a 6m sealed road with 1.2m unsealed shoulders between edge of seal and guideposts (8.4m total formation width).

The road does not have a posted speed limit and therefore is considered an open road in an unbuilt area with a 110km/hr speed restriction.

The road is considered to be in good condition and appears well maintained.

Refer **Figure 15** for a typical example of the existing formation of Bibby Rd.

**Figure 15: Typical Existing Bibby Road Formation**

As per previous **Figure 5**, it is estimated that there will be an additional 10 light vehicles movements along the road daily.

Therefore, due to the minor increase in traffic, it is considered that the existing road formation is adequate.

### 4.2.2. Road Safety

Crash data for Bibby Road was sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 11/11/2020.

There were no crashes reported.

Therefore, the crash history of the adjacent road network does not suggest any particular safety issues in the existing road network and therefore the volume of traffic movements generated by the camp facility is not considered to increase the likelihood of crashes to unacceptable levels.

### 4.2.3. Road Condition

The road is considered to be in good condition and appears well maintained and therefore deemed suitable for the minor increase in traffic in terms of safety.

## 4.3. Wongonderrah Road and Brand Highway Intersection

### 4.3.1. Existing Configuration

As per **Figure 16**, the existing intersection is a basic T intersection.

**Figure 16: Brand Hwy & Wongonderrah Road Intersection**

As per previous **Figure 5**, it is estimated that there will be an additional 2 light vehicles movements at this intersection during the peak hour.

Therefore, due to the minor increase in traffic, it is considered that additional auxiliary lanes will not be warranted and that the existing configuration is acceptable.

The current intersection is suitable for lane correct light vehicle movements as per **Figure 17**.


**Figure 17: Swept Path Assessment**

### 4.3.2. Road Safety

Crash data for the intersection was sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 11/12/2020. The report is summarised in **Table 5**.

**Table 5: Crash History**

| Location | Number of Crashes | MR Nature | Severity |
|---|---|---|---|
| Brand Hwy & Wongonderrah Rd SLK 131.69 | 1 | Rear End | PDO Major |

The crash history of the intersection is what can be expected for a rural/remote intersection and therefore does not suggest any particular safety issues in the existing road network. Therefore, the volume of traffic movements generated by the camp facility (additional 2 light vehicles movements during the peak hour/daily) is not considered to increase the likelihood of crashes to unacceptable levels.

### 4.3.3. Safe Intersection Sight Distance

The Safe Intersection Sight Distance (SISD) has been assessed in accordance with Austroads Guide to Road Design Part 4A Equation 2 and the results are summarised in **Table 6**. The line-of-sight photos at the intersection are shown below in **Figure 18** and **Figure 19**.

**Figure 18: Brand Highway / Wongonderrah Road Intersection Looking South**


**Figure 19: Brand Highway / Wongonderrah Road Intersection Looking North**

**Table 6: SISD Estimate at Brand Highway / Wongonderrah Road Intersection**

| Vehicle Type | Design Speed (km/h) | Coefficient of Deceleration | Decision Time (s) | Longitudinal Grade (NB / SB) | Required SISD for NB / SB Traffic (m) | Available SISD (m) | |
|---|---|---|---|---|---|---|---|
| | | | | | | NB | SB |
| Trucks | 100 | 0.28 | 3+2.5 | -2% / -2% | 304 / 304 | 485+ | 415+ |
| Cars | 110 | 0.362 | 3+2.5 | -2% / -2% | 307 / 307 | 485+ | 415+ |

The SISD from both directions are sufficient to achieve minimum SISD in accordance with the Austroads minimum requirements.

Sight distances have been estimated from car dashcam, sight photos and google imagery.

### 4.3.4. Approach Sight Distances

Approach sight distance is shown in **Figure 20**, **Figure 21** and **Figure 22**.

The required and available ASD at the intersection has been determined from Austroads Part 4A Equation 2 as summarised in **Table 7**. The estimated ASD has been calculated for both sealed and unsealed approaches for comparison as there is approximately 75m of seal at the intersection.

**Figure 20: Approach Sight Line to Brand Highway – Prior to Crest**

**Figure 21: Approach Sight Line to Brand Highway– After Crest**

**Figure 22: Sight Distance from Brand Highway**

**Table 7: ASD at Wongonderrah Rod & Brand Highway Intersection**

| Road Condition | Vehicle Type | Design Speed (km/h) | Coefficient of Deceleration | Decision Time (s) | Longitudinal Grade (NB / SB) | Required SISD (m) | Available SISD (m) |
|---|---|---|---|---|---|---|---|
| Unsealed | Trucks | 100 | 0.23 | 2.5 | +2% | 227 | 270 |
| | Cars | 110 | 0.22 | 2.5 | +2% | 275 | 180 |
| Sealed | Trucks | 100 | 0.28 | 2.5 | +2% | 201 | 270 |
| | Cars | 110 | 0.36 | 2.5 | +2% | 202 | 180 |

The assessment indicates the ASD are below the requirements for a car for both a sealed and unsealed road due to the sight obstruction caused by an existing crest. Therefore, to conform to the guidelines, consideration is to be made to regrading the approach to remove the crest obstruction and extending the extent of seal to improve sight distances.

However, consideration could be made to keeping the current intersection layout and installing a distance tag to the existing advance intersection warning sign as well as installing a crest warning sign subject to Shire approval, due to the following factors:

- There is extremely low camp traffic volumes approaching the intersection (1 per day);

- There is an expectation that vehicles would be travelling much slower than the allowed 110km/hr;
- Image Resources will be encouraging their personnel not to use this road; and
- There is already an existing advance warning sign prior to the intersection (refer **Figure 23** below).

**Figure 23: Wongonderrah/Brand Hwy Advance Intersection Warning Sign**

### 4.3.5. Road Condition

The existing intersection is sealed for approximately 75m. The seal has some minor defects (flushing) and has some dust, however, is generally in good condition. Therefore, the existing condition is deemed suitable for the minor increase in traffic in terms of safety.


**Figure 24: Existing Intersection Condition**

## 4.4. Wongonderrah Road

### 4.4.1. Existing Configuration

The existing road is an unsealed gravel graded road approximately 8m wide.

Refer Figure 25 for a typical example of the existing formation of Wongonderrah Rd (SLK 0.00 to 22.70).

**Figure 25: Typical Existing Wongonderrah Road Formation**

As per previous **Figure 5**, it is estimated that there will be an additional 2 light vehicles movements along the road daily.

Therefore, due to the minor increase in traffic, it is considered that the existing road formation is adequate.

### 4.4.2. Road Safety

Crash data for Wongonderrah Road were sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 11/11/2020.

There were no crashes reported.

Therefore, the crash history of the adjacent road network does not suggest any particular safety issues in the existing road network and therefore the volume of traffic movements generated by the camp facility is not considered to increase the likelihood of crashes to unacceptable levels.

### 4.4.3. Road Condition

The road is considered to be in good condition when dry and appears to be well maintained by the Shire. It is noted that during and after rainfall events the condition of the road surface may change where sections may become difficult to drive at speed.

As per previous **Section 2.1**, Image Resources have confirmed that they will encourage all personnel to travel to the camp site via Bibby Road/Munbinea Road rather than Wongonderrah Road.

It is recommended that the camp traffic volumes along this road and the road condition be monitored.

## 4.5. Bibby Road and Munbinea Intersection

### 4.5.1. Existing Configuration

As per **Figure 26**, the existing intersection is a basic T intersection.

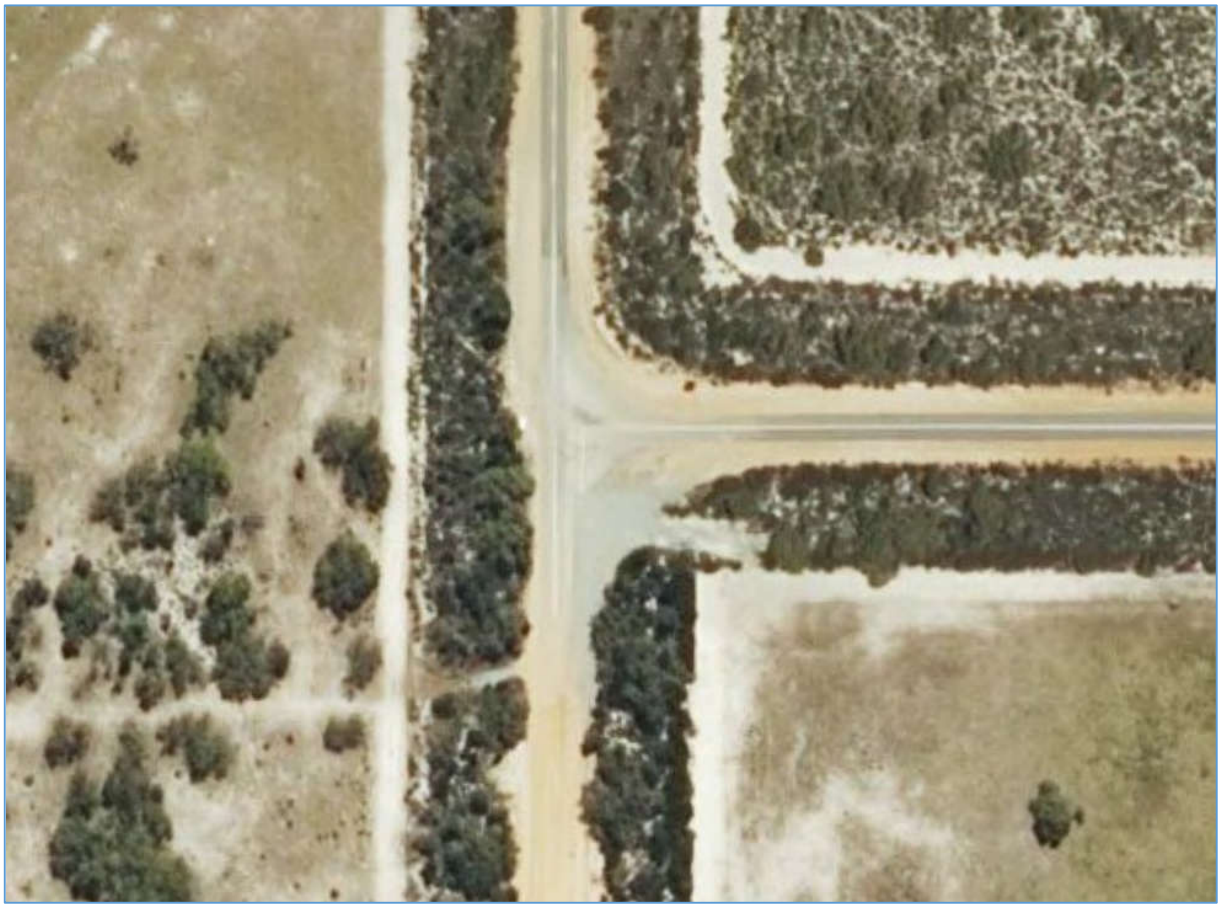


**Figure 26: Munbinea & Bibby Road Intersection**

As per previous **Figure 5**, it is estimated that there will be an additional 10 light vehicles movements at this intersection during the peak hour.

Therefore, due to the minor increase in traffic, it is considered that auxiliary lanes will not be warranted and that the existing configuration is acceptable.

As per **Figure 27**, the current intersection is suitable for light vehicles.

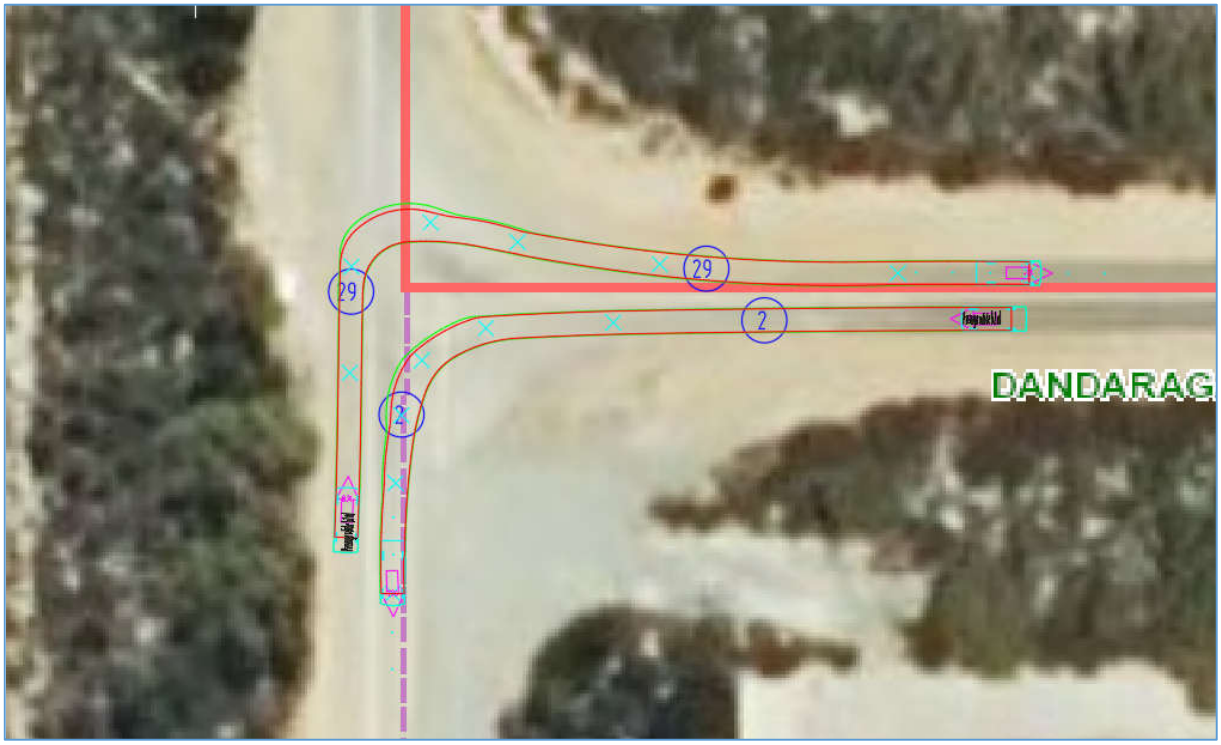



**Figure 27: Munbinea Rd & Bibby Rd Intersection Swept Paths**

### 4.5.2. Road Safety

Crash data for the intersection (SLK 13.57) was sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 11/12/2020. The report is summarised in **Table 8**.

**Table 8: Crash History**

| Location | Number of Crashes | MR Nature | Severity |
|---|---|---|---|
| Munbinea Road SLK 13.63 | 1 | Hit Object | PDO Major |

The crash history of the intersection is what can be expected for a rural/remote intersection and therefore does not suggest any particular safety issues in the existing road network. Therefore, the volume of traffic movements generated by the camp facility is not considered to increase the likelihood of crashes to unacceptable levels.

### 4.5.3. Safe Intersection Sight Distance

The Safe Intersection Sight Distance (SISD) has been assessed in accordance with Austroads Guide to Road Design Part 4A Equation 2 and the results are summarised in **Table 9**. The line-of-sight photos at the intersection are shown below in **Figure 28** and **Figure 29**.

Figure 28: Munbinea Rd (SLK 13.56) & Bibby Rd Intersection – Looking North

Figure 29: Munbinea Rd (SLK 13.56) & Bibby Rd Intersection – Looking South

Table 9: SISD Estimate at Munbinea Road / Bibby Road Intersection

| Traffic Direction | Road Condition | Vehicle Type | Design Speed (km/h) | Coefficient of Deceleration | Decision Time (s) | Longitudinal Grade (NB / SB) | Required SISD (m) | Available SISD (m) |
|---|---|---|---|---|---|---|---|---|
| North | Unsealed | Trucks | 100 | 0.23 | 3+2.5 | -2% | 340 | +500 |
| | | Cars | 110 | 0.22 | 3+2.5 | -2% | 406 | +500 |
| South | Sealed | Trucks | 100 | 0.28 | 3+2.5 | +1% | 289 | +500 |
| | | Cars | 110 | 0.36 | 3+2.5 | +1% | 297 | +500 |

The SISD from both directions are sufficient to achieve minimum SISD in accordance with the Austroads minimum requirements.

Sight distances have been estimated from dash cam video footage, site photos, Google Earth and Google Street View.

### 4.5.4. Approach Sight Distances

Approach sight distance is shown in **Figure 30**.

The required and available ASD at the intersection has been determined from Austroads Part 4A Equation 2 as summarised in **Table 10**.

Figure 30: Munbinea Rd (SLK 13.56) & Bibby Rd Intersection – Looking East

Table 10: ASD at Bibby Road towards Munbinea Road Intersection

| Vehicle Type | Design Speed (km/h) | Coefficient of Deceleration | Reaction Time (s) | Longitudinal Grade | Required ASD (m) | Available ASD (m) |
|---|---|---|---|---|---|---|
| Trucks | 100 | 0.28 | 2.5 | -2% | 221 | +500 |
| Cars | 110 | 0.36 | 2.5 | -2% | 217 | +500 |

The assessment indicates the ASD is acceptable.

### 4.5.5. Road Condition

The intersection is sealed for the Bibby Road and Munbinea Road north leg. The seal is currently in good condition and deemed suitable for the minor increase in traffic in terms of safety.

The south leg of Munbinea Road is sealed for approximately 30m before becoming unsealed.

It is understood that Image Resources are in discussions with the Shire on potential upgrading and/or regular maintenance of Munbinea Road (refer **Section 4.6.3** for further commentary). However, it is expected that dust may track onto the intersection from the vehicles, in particular from the haulage trucks associated within the mining operations. Therefore, sealing for a minimum 100m of the southern leg of Munbinea Road should be considered.

## 4.6. Munbinea Road – Unsealed Section

### 4.6.1. Existing Configuration

The existing road is an unsealed gravel graded road approximately 7m trafficable width (8-9m between guideposts).

Refer **Figure 31**, **Figure 32** and **Figure 33** for a typical example of the existing formation of Munbinea Road (SLK 0.00 to 13.56).

**Figure 31: Typical Existing Munbinea Road Unsealed Formation – Example 1 (SLK 0.21)**

**Figure 32: Typical Existing Munbinea Road Unsealed Formation – Example 2 (SLK 2.55)**

**Figure 33: Typical Existing Munbinea Road Unsealed Formation – Example 3 (SLK 9.90)**

As per previous **Figure 5** and **Figure 6**, it is estimated that there will be following additional daily traffic volumes along the road:

- North of the proposed site access:
    - 18 light vehicles movements.
- South of the proposed site access:
    - 18 light vehicles movements; and
    - 16 shuttle buses.

Due to the minor increase in traffic, it is considered that the existing road formation is adequate for the light vehicle traffic.

The road may need some upgrading to cater for the haulage vehicles associated with the mining operations in consultation with the Shire however, this is covered under a separate assessment.

### 4.6.2. Road Safety

Crash data for the unsealed section Munbinea Road was sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 11/11/2020.

There were no crashes reported.

Therefore, the crash history of the adjacent road network does not suggest any particular safety issues in the

existing road network. However, considering the existing traffic volumes are expected to be significantly low it is expected that the increase in traffic would increase the likelihood of crashes however, not to unacceptable levels as the increase in traffic is also low.

In addition, as per **Section 4.6.3**, it is understood that the unsealed section of Munbinea Road may require some upgrading and regularly monitored/maintained and therefore reducing the likelihood of incidents.

### 4.6.3. Road Condition

The road is considered to be in good condition when dry and appears to be well maintained by the Shire however, there are corrugations along the alignment during the most recent sight visit. It is noted that during and after rainfall, the road surface some sections may become slippery, soft and difficult to drive at speed.

On behalf of Image Resources, Galt Geotechnics (Galt) conducted fieldwork along Munbinea Road to investigate and assess the suitability of the existing pavement.

In summary, there is an existing 200-300mm wearing course / basecourse along the road.

As this section of the road is on the truck haulage route for mining operations, it is understood that Image Resources are in discussions with the Shire on potential upgrades to the road. A monitoring and maintenance plan is also being considered to ensure the road condition remains safe for traffic.

Although the haulage trucks will not travel past the proposed mine site access, it should be considered that similar upgrades or monitoring / maintenance is applied for the remaining length of Munbinea Road and to the camp access to cater for the light vehicles and shuttle buses.

## 4.7. Munbinea Road & Wongonderrah Rd Intersection and Camp Access

### 4.7.1. Existing Configuration

As per **Figure 24**, the existing intersection is a basic unsealed T intersection.


**Figure 34: Munbinea & Wongonderrah Road Intersection**

As per previous **Figure 7**, it is estimated that there will be an additional 18 light vehicles movements and 8 shuttle buses at this intersection during the peak hour.

Therefore, due to the significantly low traffic volumes, it is considered that auxiliary lanes will not be warranted and that the existing configuration is acceptable.

The current intersection is suitable for light vehicle movements and the shuttle buses for lane correct movements as per **Figure 35** and **Figure 36**.

The access into the camp site has also been checked, in particular the bend at the end Wongonderrah Road, as per **Figure 37** and **Figure 38**. The swept path assessment, based on aerial imagery, indicates that the bend is too narrow for lane correct movements and therefore widening to allow lane correct movements should be considered.

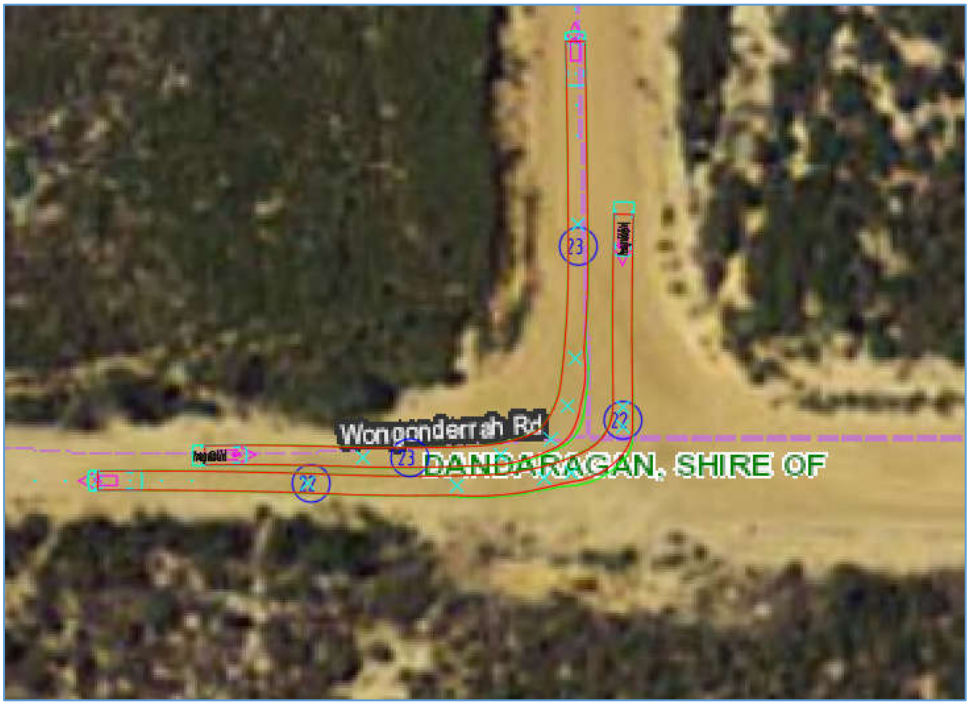



**Figure 35: Munbinea Rd & Wongonderrah Rd Intersection Swept Paths – Light Vehicles**


**Figure 36: Munbinea Rd & Wongonderrah Rd Intersection Swept Paths – Shuttle Bus (8.8m vehicle)**


**Figure 37: Camp Access - Wongonderrah Rd Swept Paths – Light Vehicles**


**Figure 38: Camp Access - Wongonderrah Rd Swept Paths – Shuttle Bus (8.8m vehicle)**

### 4.7.2. Road Safety

Crash data for the intersection was sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 11/12/2020.

There were no crashes reported.

Therefore, the crash history of the adjacent road network does not suggest any particular safety issues in the existing road network. However, considering the existing traffic volumes are expected to be significantly low it is expected that the increase in traffic would increase the likelihood of crashes however, not to unacceptable levels as the increase in traffic is also low.

In addition, as per **Section 4.6.3**, it has been recommended that the unsealed section of Munbinea Road to the camp access has similar upgrades or monitoring / maintenance as what is adopted for the remaining length of Munbinea Road and

It is understood that Image Resources are in discussions with the Shire on potential upgrading and/or regular maintenance of Munbinea Road (refer **Section 4.6.3** for further commentary). Upgrades/maintenance (or similar) should be considered for extension through these areas and into the camp facility, in particular through the bend, which would reduce the likelihood of incidents.

### 4.7.3. Safe Intersection Sight Distance

The Safe Intersection Sight Distance (SISD) has been assessed in accordance with Austroads Guide to Road Design Part 4A Equation 2 and the results are summarised in **Table 11**. The line-of-sight photos at the intersection are shown below in **Figure 39** and **Figure 40**.

Figure 39: Munbinea Rd (SLK 0.00) & Wongonderrah Rd Intersection – Looking East

Figure 40: Munbinea Rd (SLK 0.00) & Wongonderrah Rd Intersection – Looking West

Table 11: SISD Estimate at Munbinea Road and Wongonderrah Road Intersection

| Traffic Direction | Road Condition | Vehicle Type | Design Speed (km/h) | Coefficient of Deceleration | Decision Time (s) | Longitudinal Grade (NB / SB) | Required SISD (m) | Available SISD (m) |
|---|---|---|---|---|---|---|---|---|
| West | Unsealed | Trucks | 100 | 0.23 | 3+2.5 | -2% | 340 | +500 |
| | | Cars | 110 | 0.22 | 3+2.5 | -2% | 406 | +500 |
| East | Unsealed | Trucks | 50 | 0.27 | 3+2.5 | 0% | 84 | 110 |
| | | Cars | 50 | 0.27 | 3+2.5 | 0% | 84 | 110 |

The SISD from both directions are sufficient to achieve minimum SISD in accordance with the Austroads minimum requirements.

Sight distances have been estimated from dash cam video footage, site photos, Google Earth and Google Street View.

### 4.7.4. Approach Sight Distances

Approach sight distance is shown in **Figure 41**.

The required and available ASD at the intersection has been determined from Austroads Part 4A Equation 2 as summarised in **Table 12**.

**Figure 41: Munbinea Rd (SLK 0.00) & Wongonderrah Rd Intersection – Looking North**

Table 12: ASD Wongonderrah Road & Munbinea Road Intersection

| Vehicle Type | Design Speed (km/h) | Coefficient of Deceleration | Reaction Time (s) | Longitudinal Grade | Required ASD (m) | Available ASD (m) |
|---|---|---|---|---|---|---|
| Trucks | 100 | 0.23 | 2.5 | -1% | 248 | 350 |
| Cars | 110 | 0.22 | 2.5 | -1% | 303 | 350 |

The assessment indicates the ASD is acceptable.

### 4.7.5. Road Condition

The existing intersection and road approaching the camp site is unsealed.

It is understood that Image Resources are in discussions with the Shire on potential upgrading and/or regular maintenance of Munbinea Road (refer **Section 4.6.3** for further commentary). Upgrades/maintenance (or similar) should be considered for extension to this intersection and into the camp facility, in particular through the bend.

## 4.8. Jurien Road and Indian Ocean Drive Intersection

### 4.8.1. Existing Configuration

As per **Figure 42**, the existing intersection has a channelized right turn and a painted median.


**Figure 42: Jurien Road & Indian Ocean Drive Intersection**

As per previous **Figure 5**, it is estimated that there will be an additional 2 light vehicles movements at this intersection during the peak hour.

Therefore, due to the minor increase in traffic, it is considered that additional auxiliary lanes will not be warranted and that the existing configuration is acceptable.

The intersection geometry is also considered appropriate for light vehicle movements and therefore no additional widening is required.

### 4.8.2. Road Safety

Crash data for the intersection (SLK 171.39) was sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 11/11/2020. The report is summarised in **Table 13**.

Table 13: Crash History

| Location | Number of Crashes | MR Nature | Severity |
|---|---|---|---|
| Indian Ocean Drive SLK 171.39 | 1 | Right Angle | PDO Major |
| Indian Ocean Drive SLK 171.41 | 1 | Midblock - involving parking | PDO Minor" |

The crash history of the intersection is what can be expected for a rural intersection and therefore does not suggest any particular safety issues in the existing road network. Therefore, the volume of traffic movements generated by the camp facility (additional 2 light vehicles movements during the peak hour/daily) is not considered to increase the likelihood of crashes to unacceptable levels.

### 4.8.3. Safe Intersection Sight Distance

The Safe Intersection Sight Distance (SISD) has been assessed in accordance with Austroads Guide to Road Design Part 4A Equation 2 and the results are summarised in **Table 14**. The line-of-sight photos at the intersection are shown below in **Figure 43** and **Figure 44**.


Figure 43: Jurien Rd / Indian Ocean Drive Intersection Looking South


**Figure 44: Jurien Rd / Indian Ocean Drive Intersection Looking North**

**Table 14: SISD Estimate at Jurien Rd / Indian Ocean Drive Intersection**

| Vehicle Type | Design Speed (km/h) | Coefficient of Deceleration | Decision Time (s) | Longitudinal Grade (NB / SB) | Required SISD for NB / SB Traffic (m) | Available SISD (m) | |
|---|---|---|---|---|---|---|---|
| | | | | | | NB | SB |
| Trucks | 90 | 0.28 | 3+2.5 | 0% / 0% | 251 / 251 | 450 | +500 |
| Cars | 100 | 0.36 | 3+2.5 | 0% / 0% | 262 / 262 | 450 | +500 |

The SISD from both directions are sufficient to achieve minimum SISD in accordance with the Austroads minimum requirements.

Sight distances have been estimated from Google Earth and Google Street View.

### 4.8.4. Approach Sight Distances

Approach sight distance is shown in **Figure 45**.

The required and available ASD at the intersection has been determined from Austroads Part 4A Equation 2 as summarised in **Table 15**.

**Figure 45: Approach Sight Line for Jurien Road Intersection from Indian Ocean Drive**

**Table 15: ASD at Jurien Road towards Indian Ocean Drive Intersection**

| Vehicle Type | Design Speed (km/h) | Coefficient of Deceleration | Reaction Time (s) | Longitudinal Grade | Required ASD (m) | Available ASD (m) |
|---|---|---|---|---|---|---|
| Trucks | 100 | 0.28 | 2.5 | -2% | 221 | 400 |
| Cars | 110 | 0.36 | 2.5 | -2% | 217 | 400 |

The assessment indicates the ASD is acceptable.

### 4.8.5. Road Condition

The intersection is sealed and is currently in good condition and deemed suitable for the minor increase in traffic in terms of safety.

## 4.9. Jurien Road

### 4.9.1. Existing Configuration

The existing road is a 6m sealed road with 1.0m unsealed shoulders between edge of seal and guideposts (8.0m total formation width).

The road is posted at 110km/hr speed restriction.

The road is considered to be in good condition and appears well maintained.

Refer **Figure 46** for a typical example of the existing formation of Jurien Road.


**Figure 46: Typical Existing Jurien Road Formation**

As per previous **Figure 5**, it is estimated that there will be an additional 2 light vehicles movements along the road daily.

Therefore, due to the minor increase in traffic, it is considered that the existing road formation is adequate.

### 4.9.2. Road Safety

Crash data for the road was sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 11/11/2020. The report is summarised in **Table 16**.

Table 16: Crash History

| Location | Number of Crashes | MR Nature | Severity |
|---|---|---|---|
| Jurien Road SLK 34.230 | 1 | Midblock – Non collision | PDO Minor" |
| Jurien Road SLK 32.150 | 1 | Midblock – Hit Object | PDO Major |
| Jurien Road SLK 30.810 | 1 | Midblock – Hit Animal – involving parking | PDO Major |

The crash history of the road is what can be expected for a rural/remote road and therefore does not suggest any particular safety issues in the existing road network. Therefore, the volume of traffic movements generated by the camp facility (additional 2 light vehicles movements during the peak hour/daily) is not considered to increase the likelihood of crashes to unacceptable levels.

### 4.9.3. Road Condition

The road is sealed, considered to be in good condition and appears well maintained and therefore deemed suitable for the minor increase in traffic in terms of safety.

## 4.10. Jurien Road and Munbinea Road Intersection

### 4.10.1. Existing Configuration

As per **Figure 47**, the existing intersection is a basic sealed T intersection.

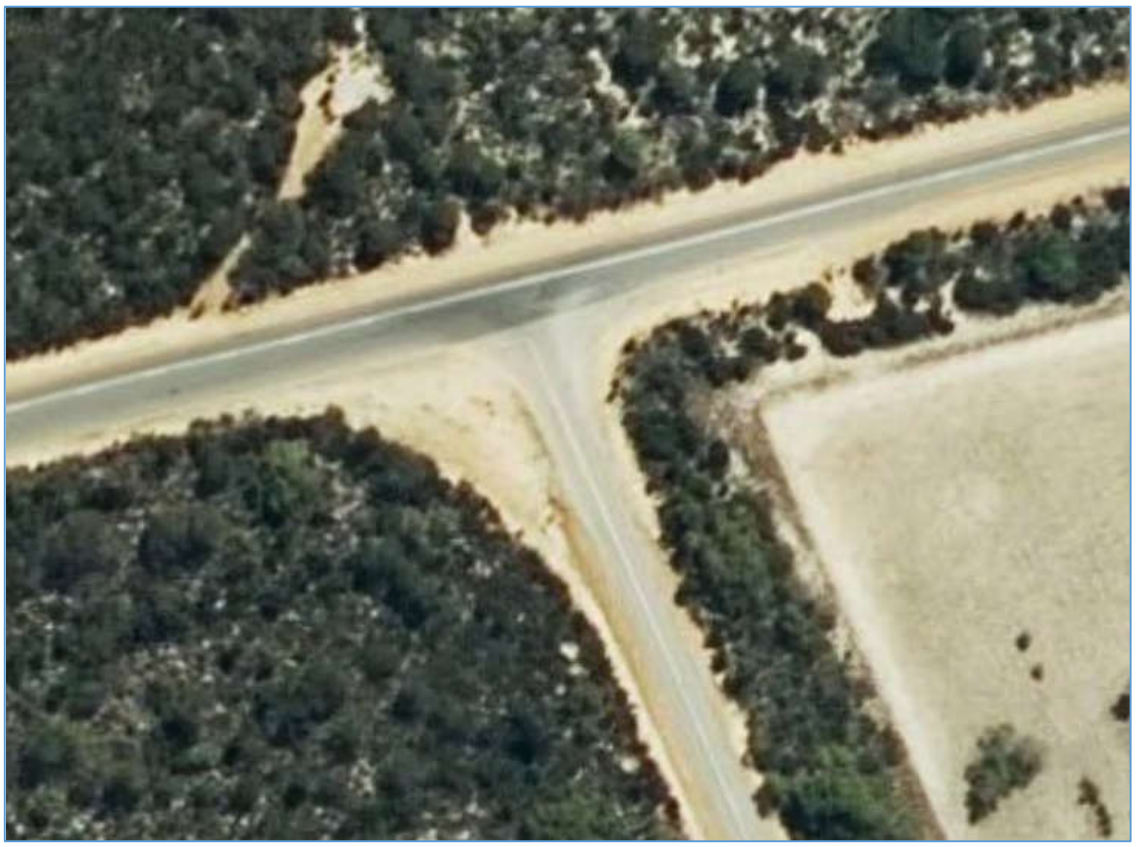


**Figure 47: Jurien Road & Munbinea Road Intersection**

As per previous **Figure 5**, it is estimated that there will be an additional 2 light vehicles movements at this intersection during the peak hour.

Therefore, due to the minor increase in traffic, it is considered that additional auxiliary lanes will not be warranted and that the existing configuration is acceptable.

The intersection geometry is also considered appropriate for light vehicle movements and therefore no additional widening is required.

### 4.10.2. Road Safety

Crash data for the intersection were sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 11/11/2020.

There have been no crashes reported for the intersection.

Therefore, the volume of traffic movements generated by the camp facility (additional 2 light vehicles movements during the peak hour/daily) is not considered to increase the likelihood of crashes to unacceptable levels.

### 4.10.3. Safe Intersection Sight Distance

The Safe Intersection Sight Distance (SISD) has been assessed in accordance with Austroads Guide to Road

Design Part 4A Equation 2 and the results are summarised in **Table 17**. The line-of-sight photos at the intersection are shown below in **Figure 48** and **Figure 49**.


**Figure 48: Jurien Rd / Munbinea Road Intersection Looking West**


**Figure 49: Jurien Rd / Munbinea Road Intersection Looking East**

**Table 17: SISD Estimate at Jurien Rd / Munbinea Road Intersection**

| Vehicle Type | Design Speed (km/h) | Coefficient of Deceleration | Decision Time (s) | Longitudinal Grade (WB / EB) | Required SISD for WB / EB Traffic (m) | Available SISD (m) | |
|---|---|---|---|---|---|---|---|
| | | | | | | WB | EB |
| Trucks | 100 | 0.28 | 3+2.5 | +1% / +2% | 289 / 289 | 300 | +500 |
| Cars | 110 | 0.36 | 3+2.5 | +1% / +2% | 293 / 297 | 300 | +500 |

The SISD from both directions are sufficient to achieve minimum SISD in accordance with the Austroads minimum requirements.

Sight distances have been estimated from Google Earth and Google Street View.

### 4.10.4. Approach Sight Distances

Approach sight distance is shown in **Figure 50**.

The required and available ASD at the intersection has been determined from Austroads Part 4A Equation 2 as summarised in **Table 18**.

**Figure 50: Approach Sight Line from Jurien Road**

**Table 18: ASD at Munbinea Road from Jurien Road Intersection**

| Vehicle Type | Design Speed (km/h) | Coefficient of Deceleration | Reaction Time (s) | Longitudinal Grade | Required ASD (m) | Available ASD (m) |
|---|---|---|---|---|---|---|
| Trucks | 100 | 0.28 | 2.5 | 2% | 201 | +500 |
| Cars | 110 | 0.36 | 2.5 | 2% | 202 | +500 |

The assessment indicates the ASD is acceptable.

### 4.10.5. Road Condition

The intersection is sealed and is currently in good condition and deemed suitable for the minor increase in traffic in terms of safety.

## 4.11. Munbinea Road – Sealed Section

### 4.11.1. Existing Configuration

The existing road is a 6m sealed road with 1.0m unsealed shoulders between edge of seal and guideposts (8.0m

total formation width).

The road does not have a posted speed limit and therefore is considered an open road in an unbuilt area with a 110km/hr speed restriction.

The road is considered to be in good condition and appears well maintained.

Refer **Figure 51** for a typical example of the existing formation of Jurien Road.


**Figure 51: Typical Existing Munbinea Road Formation**

As per previous **Figure 5**, it is estimated that there will be an additional 2 - 8 light vehicles movements along the road daily.

Therefore, due to the minor increase in traffic, it is considered that the existing road formation is adequate.

### 4.11.2. Road Safety

Crash data for the road was sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 11/11/2020. The report is summarised in **Table 19**.

Table 19: Crash History

| Location | Number of Crashes | MR Nature | Severity |
|---|---|---|---|
| Munbinea Road SLK 30.830 | 1 | Midblock – Non collision | PDO Major |
| Munbinea Road SLK 30.320 | 1 | Midblock – Hit Object – involving animal | PDO Major |
| Munbinea Road SLK 27.690 | 1 | Midblock – Hit Object – involving animal | PDO Major |

The crash history of the road is what can be expected for a rural/remote road and therefore does not suggest any particular safety issues in the existing road network. Therefore, the volume of traffic movements generated by the camp facility (additional 2-8 light vehicles movements during the peak hour/daily) is not considered to increase the likelihood of crashes to unacceptable levels.

### 4.11.3. Road Condition

The road is sealed, considered to be in good condition and appears well maintained and therefore deemed suitable for the minor increase in traffic in terms of safety.

## 4.12. Cervantes Road and Indian Ocean Drive Intersection

### 4.12.1. Existing Configuration

As per **Figure 52**, the existing intersection has an auxiliary left turn treatment and northbound lane widening through the intersection that allows through vehicles to pass right turning vehicles.

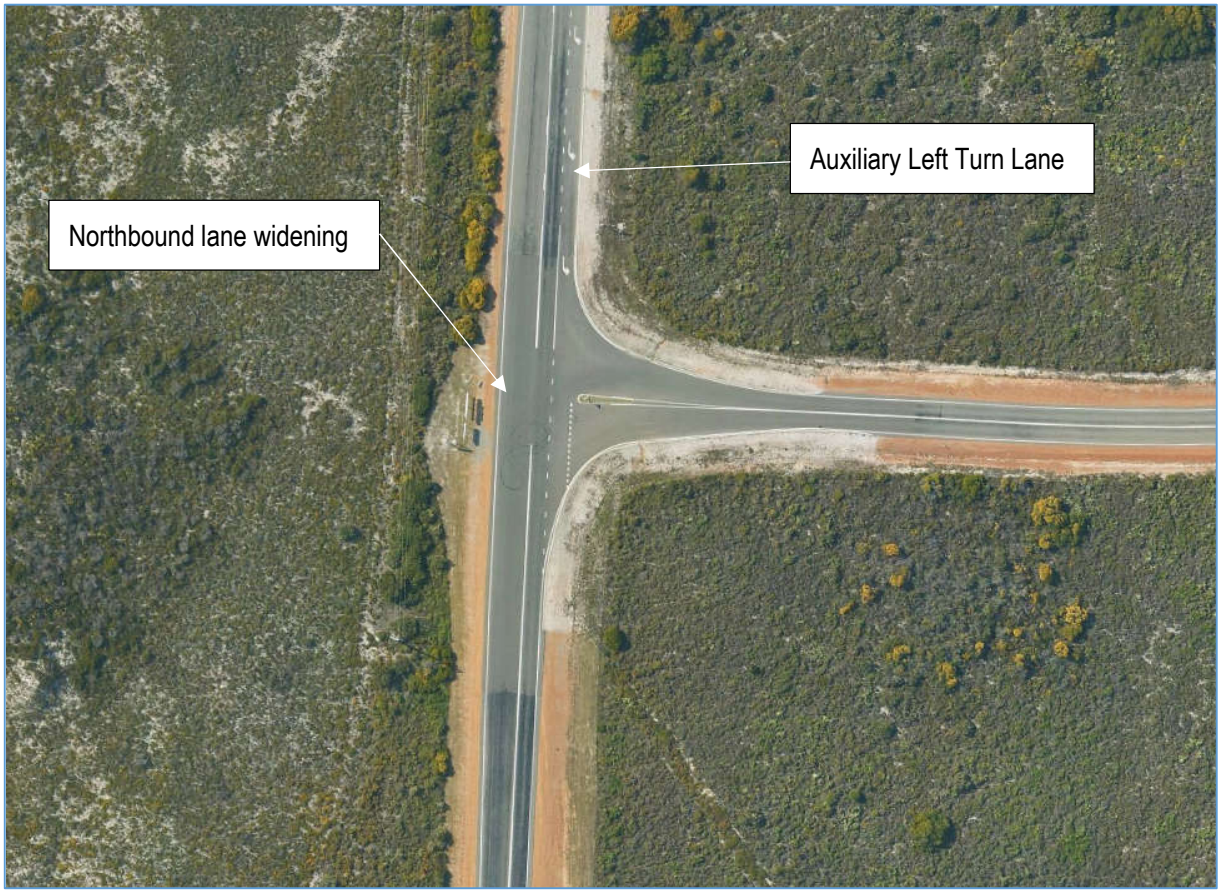



**Figure 52: Cervantes Road & Indian Ocean Drive Intersection**

As per previous **Figure 5**, it is estimated that there will be an additional 6 light vehicles movements at this intersection during the peak hour.

Therefore, due to the minor increase in traffic, it is considered that additional auxiliary lanes will not be warranted and that the existing configuration is acceptable.

The intersection geometry is also considered appropriate for light vehicle movements and therefore no additional widening is required.

### 4.12.2. Road Safety

Crash data for the intersection was sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 11/11/2020.

No crashes were reported for the intersection.

Therefore, the volume of traffic movements generated by the camp facility (additional 6 light vehicles movements during the peak hour/daily) is not considered to increase the likelihood of crashes to unacceptable levels.

### 4.12.3. Safe Intersection Sight Distance

The Safe Intersection Sight Distance (SISD) has been assessed in accordance with Austroads Guide to Road Design Part 4A Equation 2 and the results are summarised in **Table 20**. The line-of-sight photos at the intersection are shown below in **Figure 53** and **Figure 54**.

**Figure 53: Cervantes Rd / Indian Ocean Drive Intersection Looking South**

**Figure 54: Cervantes Rd / Indian Ocean Drive Intersection Looking North**

**Table 20: SISD Estimate at Cervantes Rd / Indian Ocean Drive Intersection**

| Vehicle Type | Design Speed (km/h) | Coefficient of Deceleration | Decision Time (s) | Longitudinal Grade (NB / SB) | Required SISD for NB / SB Traffic (m) | Available SISD (m) | |
|---|---|---|---|---|---|---|---|
| | | | | | | NB | SB |
| Trucks | 100 | 0.28 | 3+2.5 | 0% / 0% | 293 / 293 | 370 | +500 |
| Cars | 110 | 0.36 | 3+2.5 | 0% / 0% | 300 / 300 | 370 | +500 |

The SISD from both directions are sufficient to achieve minimum SISD in accordance with the Austroads minimum requirements.

Sight distances have been estimated from Google Earth and Google Street View.

### 4.12.4. Approach Sight Distances

Approach sight distance is shown in **Figure 55**.

The required and available ASD at the intersection has been determined from Austroads Part 4A Equation 2 as summarised in **Table 21**.

**Figure 55: Approach Sight Line along Cervantes Road from Indian Ocean Drive**

**Table 21: ASD at Cervantes Road & Indian Ocean Drive Intersection**

| Vehicle Type | Design Speed (km/h) | Coefficient of Deceleration | Reaction Time (s) | Longitudinal Grade | Required ASD (m) | Available ASD (m) |
|---|---|---|---|---|---|---|
| Trucks | 100 | 0.28 | 2.5 | +1% | 205 | 250 |
| Cars | 110 | 0.36 | 2.5 | +1% | 205 | 250 |

The assessment indicates the ASD is acceptable.

### 4.12.5. Road Condition

The intersection is sealed and is currently in good condition and deemed suitable for the minor increase in traffic in terms of safety.

## 4.13. Cervantes Road

### 4.13.1. Existing Configuration

The existing road is a 6m sealed road with 1.0m unsealed shoulders between edge of seal and guideposts (8.0m total formation width).

The road is posted at 110km/hr speed restriction.

The road is considered to be in good condition and appears well maintained.

Refer **Figure 56** for a typical example of the existing formation of Cervantes Road.


**Figure 56: Typical Existing Cervantes Road Formation**

As per previous **Figure 5**, it is estimated that there will be an additional 6 light vehicles movements along the road daily.

Therefore, due to the minor increase in traffic, it is considered that the existing road formation is adequate.

### 4.13.2. Road Safety

Crash data for the intersection was sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 11/11/2020.

No crashes were reported for the intersection.

Therefore, the volume of traffic movements generated by the camp facility (additional 2 light vehicles movements during the peak hour/daily) is not considered to increase the likelihood of crashes to unacceptable levels.

### 4.13.3. Road Condition

The road is sealed, considered to be in good condition and appears well maintained and therefore deemed suitable for the minor increase in traffic in terms of safety.

## 4.14. Cervantes Road and Munbinea Road Intersection

### 4.14.1. Existing Configuration

As per **Figure 57**, The existing intersection is a basic sealed T intersection with an auxiliary left turn lane.


**Figure 57: Cervantes Road & Munbinea Road Intersection**

As per previous **Figure 5**, it is estimated that there will be an additional 6 light vehicles movements at this intersection during the peak hour.

Therefore, due to the minor increase in traffic, it is considered that additional auxiliary lanes will not be warranted and that the existing configuration is acceptable.

The intersection geometry is also considered appropriate for light vehicle movements and therefore no additional widening is required.

### 4.14.2. Road Safety

Crash data for the intersection were sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 11/11/2020.

There have been no crashes reported for the intersection.

Therefore, the volume of traffic movements generated by the camp facility (additional 6 light vehicles movements during the peak hour/daily) is not considered to increase the likelihood of crashes to unacceptable levels.

### 4.14.3. Safe Intersection Sight Distance

The Safe Intersection Sight Distance (SISD) has been assessed in accordance with Austroads Guide to Road Design Part 4A Equation 2 and the results are summarised in **Table 22**. The line-of-sight photos at the intersection are shown below in **Figure 58** and **Figure 59**.

**Figure 58: Cervantes Rd / Munbinea Road Intersection Looking North**

**Figure 59: Cervantes Rd / Munbinea Road Intersection Looking South**

**Table 22: SISD Estimate at Cervantes Rd / Munbinea Road Intersection**

| Vehicle Type | Design Speed (km/h) | Coefficient of Deceleration | Decision Time (s) | Longitudinal Grade (NB / SB) | Required SISD for NB / SB Traffic (m) | Available SISD (m) | |
|---|---|---|---|---|---|---|---|
| | | | | | | NB | SB |
| Trucks | 100 | 0.28 | 3+2.5 | -2% / +2% | 284 / 284 | 310 | 400 |
| Cars | 110 | 0.36 | 3+2.5 | -2% / +2% | 293 / 293 | 310 | 400 |

The SISD from both directions are sufficient to achieve minimum SISD in accordance with the Austroads minimum requirements.

Sight distances have been estimated from Google Earth and Google Street View.

### 4.14.4. Approach Sight Distances

Approach sight distance is shown in **Figure 60**.

The required and available ASD at the intersection has been determined from Austroads Part 4A Equation 2 as summarised in **Table 23**.


**Figure 60: Approach Sight Line Cervantes Road from Munbinea Road**

**Table 23: ASD at Cervantes Road / Munbinea Road Intersection**

| Vehicle Type | Design Speed (km/h) | Coefficient of Deceleration | Reaction Time (s) | Longitudinal Grade | Required ASD (m) | Available ASD (m) |
|---|---|---|---|---|---|---|
| Trucks | 100 | 0.28 | 2.5 | 2% | 201 | +500 |
| Cars | 110 | 0.36 | 2.5 | 2% | 202 | +500 |

The assessment indicates the ASD is acceptable.

### 4.14.5. Road Condition

The intersection is sealed and is currently in good condition and deemed suitable for the minor increase in traffic in terms of safety.

# 5. Conclusion

## 5.1. Summary

In summary, the assessment concluded with the following observations/recommendations in regard to the impact/suitability of the camp facility traffic:

- **General:** The assessment concluded that the proposed camp does not result in an adverse transport impact to the is surrounding road network.
- **Roads:**
    - **Bibby Road:** deemed adequate.
    - **Munbinea Road – Unsealed Section:** may require pavement upgrades and/or monitoring and maintenance.
    - **Munbinea Road – Sealed Section:** deemed adequate.
    - **Wongonderrah Road:** Image Resources are encouraging personnel to not use this road. Road condition and traffic to be monitored.
    - **Jurien Road:** deemed adequate.
    - **Cervantes Road:** deemed adequate.
- **Intersections:**
    - **Bibby Road & Brand Highway:** deemed adequate.
    - **Wongonderrah Road & Brand Highway:** Non-conforming approach sight distance. Image Resources are encouraging personnel to not use this road. Consideration to be made for improvement to advance warning signage.
    - **Bibby Road & Munbinea Road:** Consider extending seal length to 100m for the southern Munbinea Road length to reduce dust tracking at intersection.
    - **Wongonderrah Road & Munbinea Road:** consider pavement upgrades and/or monitoring and maintenance including bend at camp access approach.
    - **Munbinea Road & Cervantes Road:** deemed adequate.
    - **Cervantes Road & Indian Ocean Drive:** deemed adequate.
    - **Jurien Road & Indian Ocean Drive:** deemed adequate.
    - **Jurien Road and Munbinea Road:** deemed adequate.

EMERGENCY MANAGEMENT PLAN

# EMP-005-ATLAS CAMP BUSH FIRE MANAGEMENT PLAN

| | | | | |
|---|---|---|---|---|
| Revised By: | Brendon Ladner | HSET Superintendent | Date: | 03/09/2021 |
| Reviewed By: | Rathy Brandes de Roos | Senior Planning Engineer | Date: | 07/09/2021 |
| Approved By: | Todd Colton | Chief Operating Officer | Date: | 30/09/2021 |
| Revision: | 1.0 | Next Review Date: | | Commencement of Construction |

For Full Revision Table See Document Control Section

# TABLE OF CONTENTS

# 1. OBJECTIVE

The Image Resources (IMA) Atlas Camp Bush Fire Management Plan (BMP) documents the prevention, preparedness, response and emergency evacuation arrangements required to manage the bush fire risks associated with the operation of the Atlas Accommodation Camp.

# 2. FACILITY DETAILS

The Atlas Accommodation Camp is located on Lot 4113 Wongonderrah Road provides accommodation for up to 84 personnel working at the Image Resources Atlas Mineral Sands Project. A location map is included in Appendix 13.1

The Camp comprises 21 accommodation units (4 room steel-clad transportable buildings) and associated buildings and infrastructure including

- Kitchen and dining facilities (modular steel-clad transportable building)
- Recreational building (modular steel-clad transportable building)
- Laundry Units (steel-clad transportable buildings)
- Water Treatment and Storage Infrastructure (Poly Water Tanks, Pumps, Reverse Osmosis and Potable Water Treatment unit, Waste Water Treatment Unit and Tanks)

A site plan is included in Appendix 13.2

# 3. RISKS

The Camp Buildings and Infrastructure are constructed on land that DFES has assessed as not bushfire prone. The location was checked against the DFES Bush Fire Prone Map (https://maps.slip.wa.gov.au/landgate/bushfireprone/) on 3/09/21 and a copy of the result with the proposed camp location overlayed is included in Appendix 13.3.

The risk assessment for operation of the camp has been conducted and the following bush fire related risks have been identified:

- Camp operations or activities of residents causing a bush fire
- An active bushfire front directly impacting the camp
- A nearby bushfire restricting access to or from the camp
- A nearby bushfire causing the camp to be impacted by ember attack starting a new fire within the camp

# 4. RESPONSIBILITIES

The Registered Manager of the Atlas Mine has overall responsibility for development and approval of this BMP. The Camp Manager is responsible for ensuring the BMP is effectively implemented.

# 5. EMERGENCY CONTACTS

| Name/Role | Organisation | Contact Details |
|---|---|---|
| Fire/Ambulance/Police Emergency Assistance | WAPOL, DFES, St John Ambulance | 000 |
| Emergency Warnings | DFES | www.emergency.wa.gov.au |
| Terry Tye – Registered Manager | Image Resources | 0419 887 024 |
| Shane Elliss – Emergency Management Coordinator | Shire of Dandaragan | 0428 114 221 |
| Richard Brown – Chief Bushfire Control Officer | Shire of Dandaragan | 0428 513 028 |
| TBC - Numbung Station Manager | Numbung Station | TBC |
| Mine Shift Coordinator | Image Resources | 0447 471 004 |
| TBC – Camp Manager | Image Resources | TBC |

# 6. PREVENTION

## 6.1. HOT WORKS

Any hot works conducted in open within the camp perimeter, will require a Hot Works Permit issued by an authorised Hot Works Permit Issuer. When a total fire ban has been declared hot works permits will not be issued unless a Total Fire Ban Prescribed Activities Notification Form has be completed using the DFES Online Notification Form.

## 6.2. OPEN FIRES

During the restricted burning period (normally 19th September to 31st October and 1st March to 1st April), fires in the open will be avoided unless essential. If there is a need for a fire be lit in the open a permit issued by a Shire of Dandaragan Fire Control Officer is required prior to the fire being lit.

During the prohibited burning period (1st November to 28th February) the Camp Manager will be responsible for ensuring that no fires are lit.

# 7. PREPAREDNESS

## 7.1. PLANNING/DESIGN

Bush fire preparedness principles shall be considered and incorporated in the planning process during the planning and design phase of initial construction and any planned additions or alterations to the camp and/or associated infrastructure.

## 7.2. FUEL MANAGEMENT

Fuel loads in the paddocks surrounding the camp buildings and infrastructure will be managed prior to the fire threat fire period. Where possible fuel loads should be reduced through grazing or cropping to levels that limit likely fire intensity, as a minimum, fuel loads should be less than 2t/hectare for a distance of 100m around the camp perimeter during the prohibited burning period.

## 7.3. ASSET PROTECTION ZONES

An asset protection zone will be maintained including establishing defendable space for a distance of 20 metres around all buildings and critical infrastructure (including water supply and waste treatment infrastructure). As a minimum within the asset protection zone:

- Grass must be short cropped and maintained during the declared fire danger period.
- All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.
- Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.
- Plants greater than 10 centimetres in height must not be placed within 3m of a window or glass feature of the building.
- Shrubs must not be located under the canopy of trees.
- Individual and clumps of shrubs must not exceed 5 sq. metres in area and must be separated by at least 5 metres.
- Trees must not overhang or touch any elements of the building.
- The canopy of trees must be separated by at least

- There must be a clearance of at least 2 metres between the lowest tree branches and ground level.

## 7.4. FIRE FIGHTING RESOURCES

### 7.4.1. Water Supply

Static water for firefighting during a bushfire is available from the Camp potable water treatment system raw water tanks. A minimum of 10,000L of water will be maintained in these tanks during the high bush fire threat period (Shire of Dandaragan Restricted Burning Period).

Water carts are also available at the mine site if required to supplement the static supply.

### 7.4.2. Fire Fighting Pump

A diesel fire-fighting pump connected to the raw water tank with sufficient hose to reach all areas of the camp is available to put out spot fires should the camp come under ember attack or to wet down and prepare the camp in the event of an approaching fire front.

### 7.4.3. Bush Fire Appliances/Machinery

The mine has the following firefighting equipment available for firefighting should a fire threaten the camp:

- 700L slip on firefighting units (2 units)
- 25,000L Water carts with monitors and firefighting hoses (2 units)
- Earthmoving equipment - Various

## 7.5. FIRE BREAKS

Fire breaks shall be installed and maintained as per the Shire of Dandaragan Fire Break & Fuel Hazard Reduction Notice

- On the property boundary
- Additional fire breaks around the perimeter of the camp to the same standard as in the Shire of Dandaragan Fire Break Orders utilising the access road to the west of the camp and installed breaks of the northern, eastern and southern perimeter.

## 7.6. AWARENESS AND THREAT MONITORING

The Camp Manager and Senior Operations personnel are required to be subscribed to Shire of Dandaragan Harvest and Vehicle Movement Ban Notification SMS service. The Camp Manager will be responsible for ensuring that fire danger rating and weather conditions are monitored throughout the year and during high threat period the Emergency WA website https:\\www.emergency.wa.gov.au is monitored. During the restricted burning period declared by the Shire of Dandaragan the Camp Manager will ensure the total fire ban webpage https://www.emergency.wa.gov.au/#totalfirebans is monitored daily.

# 8. EMERGENCY RESPONSE

## 8.1. EMERGENCY MANAGEMENT TEAM

At all times the Image Emergency Management Team will act under the direction of the controlling HMA (Hazard Management Agency) appointed to manage the emergency by the FES Commissioner under the Emergency Management Act (2005). Where possible the Image Incident Controller will appoint a liaison officer to facilitate communications/coordination of activities with the Shire of Dandaragan, DFES or DBCA Incident Management Team (IMT).

| Emergency Management Team Role | |
|---|---|
| **Emergency Management Team Leader** | Duty Registered Manager |
| **Camp Fire Evacuation Warden** | Duty Camp Manager |
| **Operations Officer** | HSET Superintendent (Primary)<br>Emergency Response Team (ERT) Captain (Alternative) |

## 8.2. EVACUATION

Given the camps location and proximity to bush fire prone areas early evacuation of non-essential personnel is the preferred option. The trigger to consider evacuation of personnel will be the issuing of a *Bushfire Advice Warning* or *Bush Fire Watch and Act Warning* via the Australian Warning Systems (emergency.wa.gov.au,13 DFES (13 33 37) or Local ABC Radio). Prior to evacuating the camp consideration must be given to limited evacuation routes and proximity of the available escape routes to high bush fire risk areas (i.e. escape routes through bush fire prone areas). Evacuation of the camp will not be considered if any of the following risks are present:

- Emergency Warning Issued for the camp location
- Emergency Warning Issued covering any portion of the designated evacuation route or possible impact of fire on any portion of the evacuation route within 2 hours.

When it is not safe to evacuate all personnel will be required to shelter in place (see section 8.3).

### 8.2.1. Muster Requirements

**Prior to departure -** The Camp Manager will use the accommodation register to muster personnel prior to leaving site and record all personnel leaving, the vehicle they are travelling in, contact details (mobile phone numbers) and their destination.

**Safely out of danger zone** – The Camp Manager will ensure that all evacuated personnel have been safely evacuated. This will be recorded on the evacuation muster sheet. Confirmation personnel are safely out of the danger zone may be via a phone call when personnel get to a pre-determined point outside the danger zone or by conducting a muster at the muster points designated in the evacuation routes below.

### 8.2.2. Evacuation Routes

At all times the choice of evacuation route will consider the advice given by Emergency Services in Bush Fire Warnings. The evacuation route to be used will be approved by the Emergency Management Team Leader based on the fire's location and potential fire spread and advice from Emergency Services.

Available Evacuation Routes:

- East on Wongonderrah Road, South on Brand Highway to Muster Point at the Liberty Roadhouse at Cataby.
- East on Wongonderrah Road, North on Brand Highway, East on N W Road to Muster Point at the Badgingarra Sporting Complex.
- North on Munbinea Road, West on Cervantes Road, South on Indian Ocean Drive, West on Cervantes Road, Muster at the Cervantes Recreation Centre.

### 8.3. SHELTER IN-PLACE

Once a Bush Fire Emergency Warning had been issued covering the camp or part of the designated evacuation route all remaining personnel must prepare to shelter in place or a Bushfire approaches closer than 500m to the camp. The Camp Manger must muster all personnel and ensure they are in the designated safe refuge.

#### 8.3.1. Safe Refuge

The designated safe refuge is the Gym/Rec Centre Building.

#### 8.3.2. Asset Protection

If Trained Fire Fighting Personnel are present in camp and fire intensity is low enough to safely provide asset protection, fire crews should be stationed to extinguish spot fires and protect structures from the advancing fire front.

## 9. RECOVERY

Once the threat has passed and a bushfire All Clear has been issued via the Australian Warning System, the Camp Manager will assess the camp and determine if it is safe for Personnel to Return. Once declared safe the site management team will coordinate the return of personnel.

## 10. MONITORING AND AUDIT

This plan will be reviewed:

- annually prior to the restricted burning period
- after any bushfire that requires its activation
- if there is a significant change to buildings or infrastructure

## 11. TRAINING AND COMPETENCY

All personnel accommodated at the Camp will be provided an induction that includes an overview of this management plan.

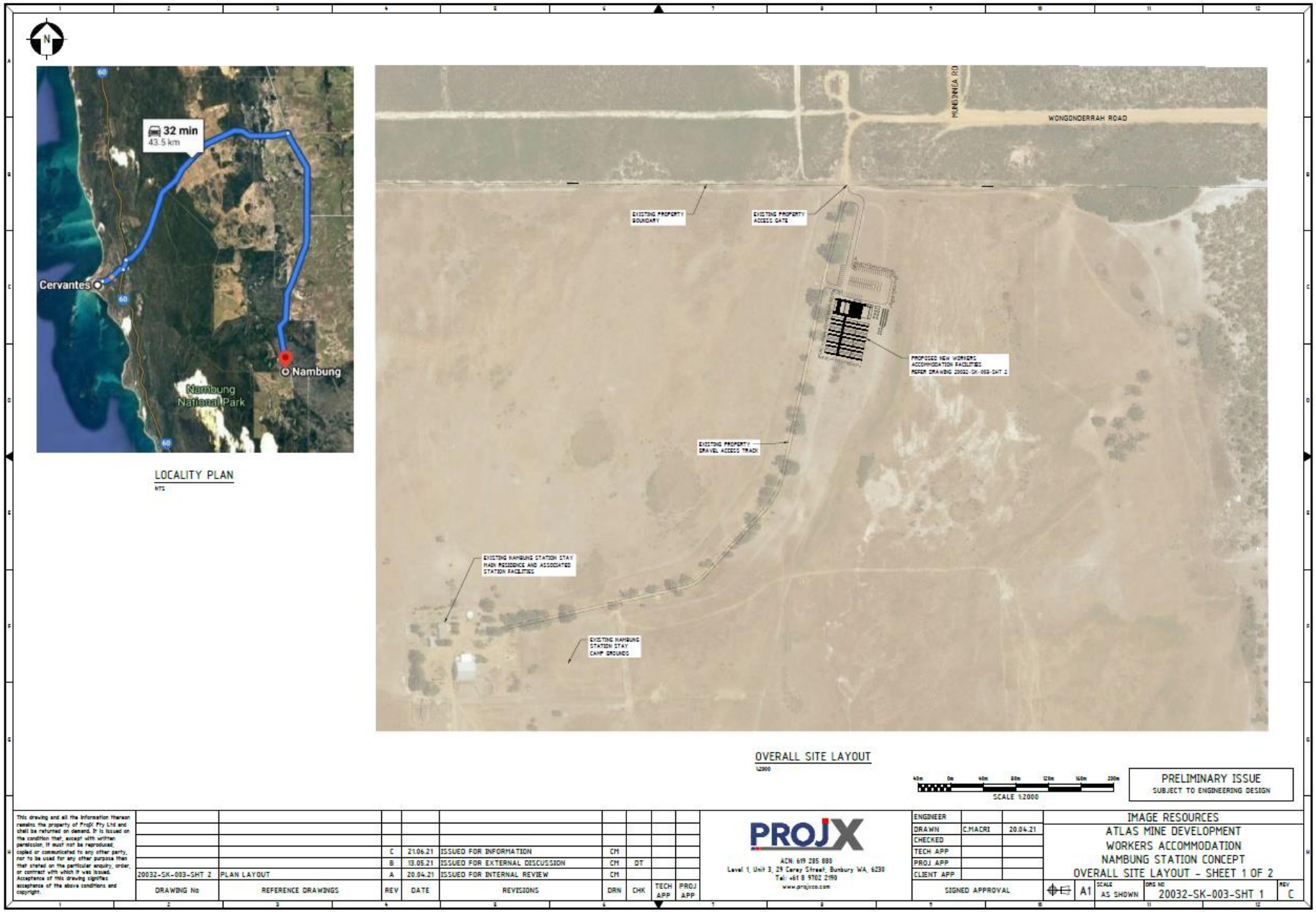
Emergency Management Team Members will be trained in the Image Emergency Management System and their individual roles required under this plan

## 12. DOCUMENT CONTROL

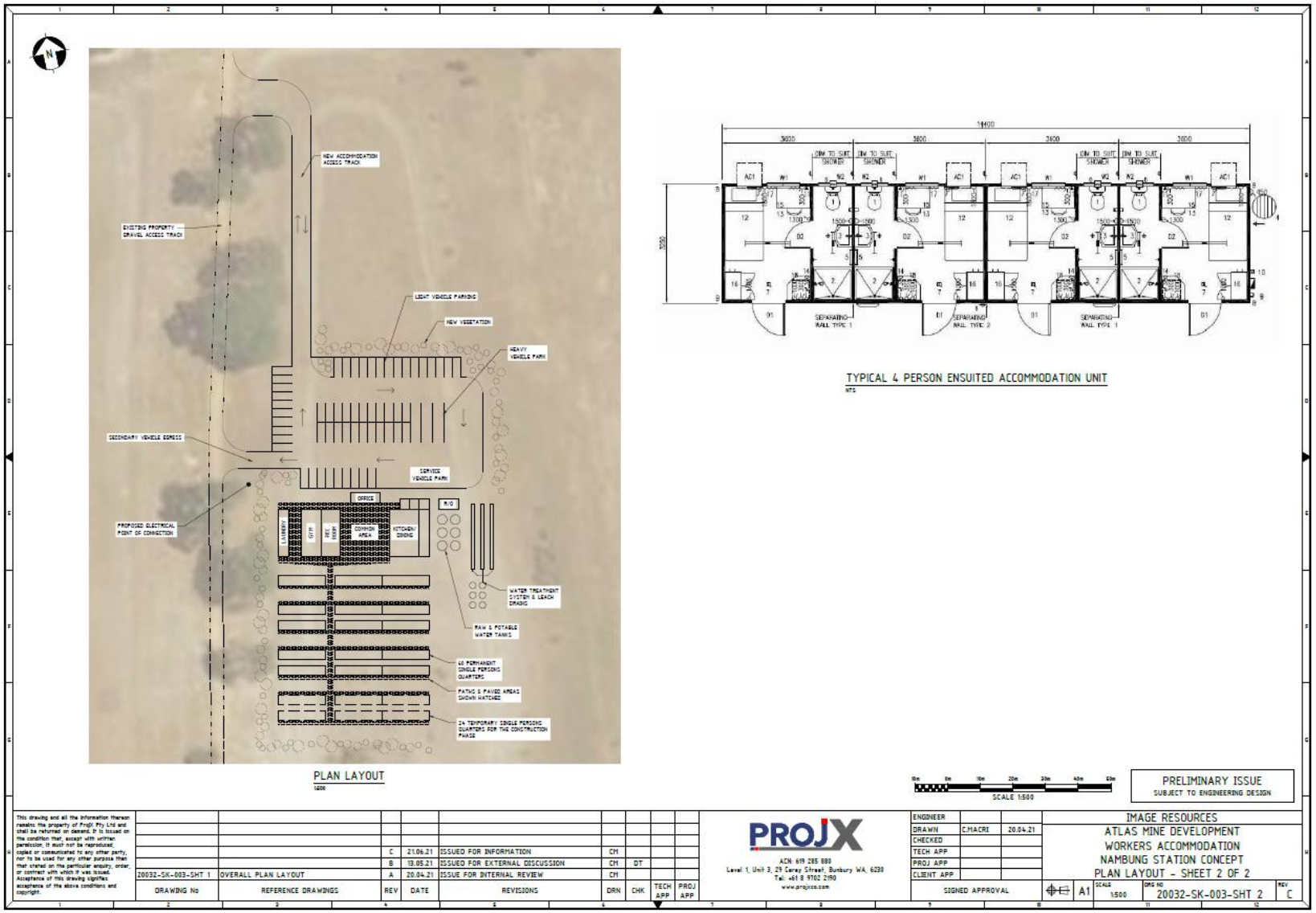
| Revision | Revision Date | Revised By | Approved By | Revision Details |
|---|---|---|---|---|
| 1.0 | 6/9/21 | B Ladner | T Colton | New document |
| | | | | |
| | | | | |

## 13. APPENDICES

## 13.1. **LOCATION MAP**



## 13.2. SITE LAYOUT

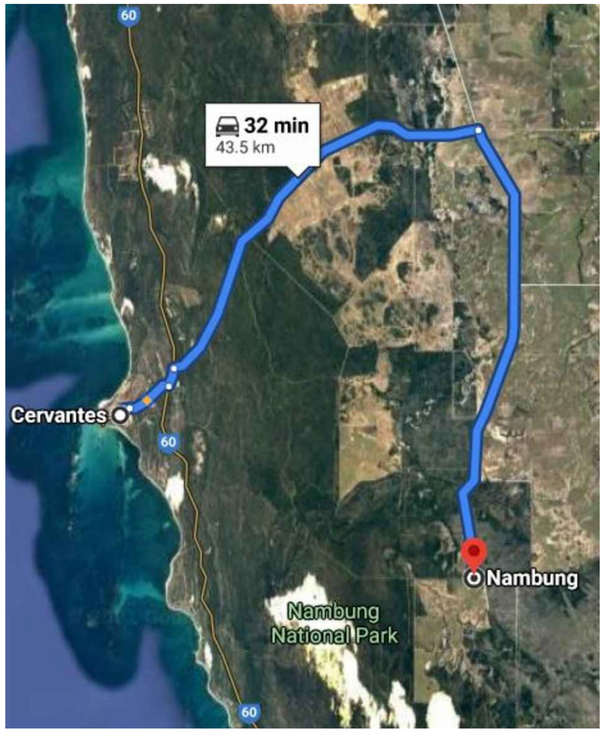


## 13.3. BUSH FIRE PRONE AREA MAP

## 13.4. TRIGGER ACTION RESPONSE PLAN (TARP)

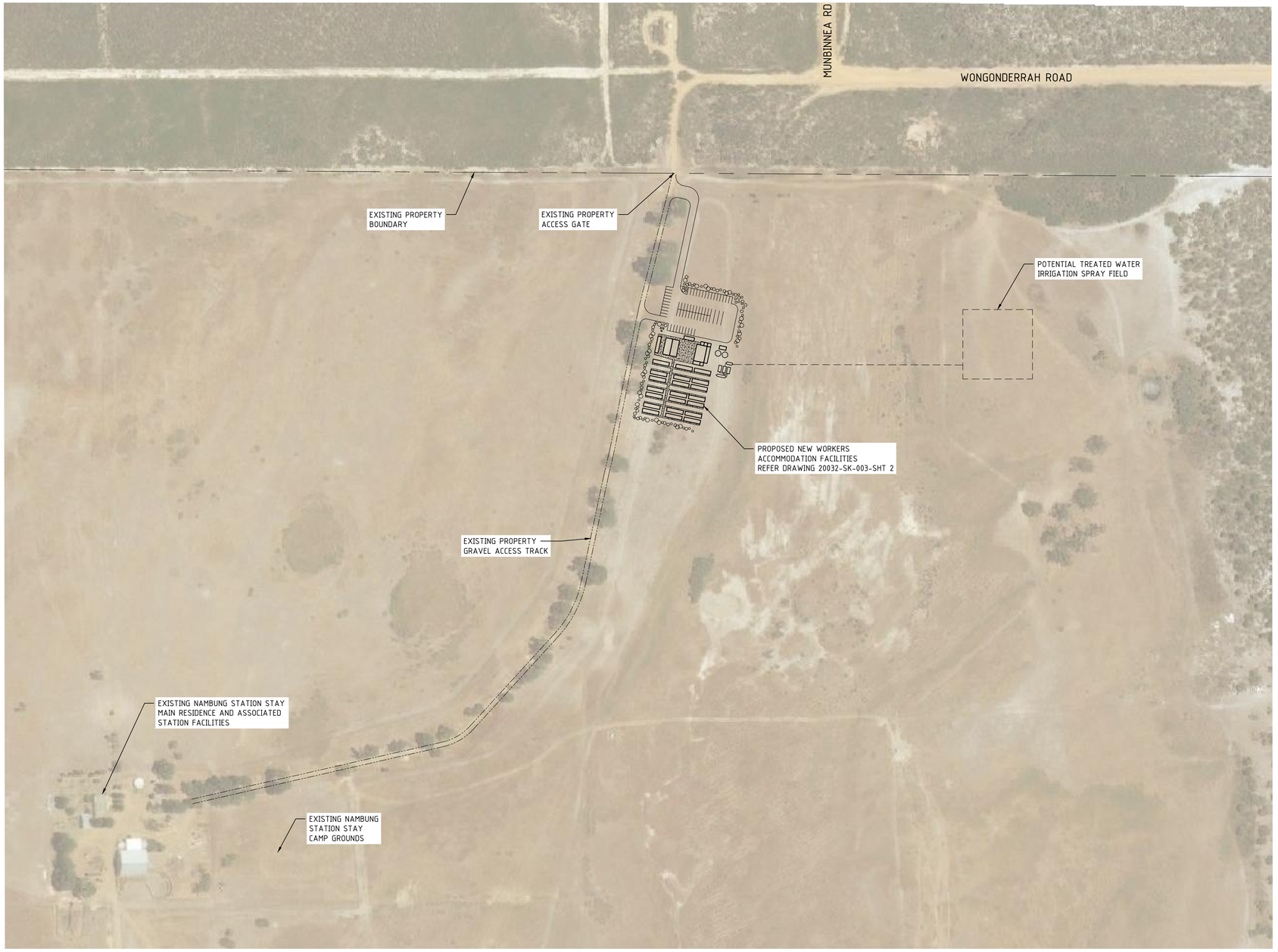
***Softcopy*** Trigger Action Response Plan located on O:\HSET\Emergency Management Plan\Camp

***Hardcopy*** located in Camp Managers Office and Camp Reception




LOCALITY PLAN

NTS




OVERALL SITE LAYOUT

1:2000

40m 0m 40m 80m 120m 160m 200m

SCALE 1:2000

PRELIMINARY ISSUE
SUBJECT TO ENGINEERING DESIGN



| DRAWING No | REFERENCE DRAWINGS | REV | DATE | REVISIONS | DRN | CHK | TECH APP | PROJ APP |
|---|---|---|---|---|---|---|---|---|
| | | D | 09.08.21 | RE-ISSUED FOR INFORMATION | CM | | | |
| 20032-SK-003-SHT 4 | INDICATIVE FLOOR PLANS | C | 21.06.21 | ISSUED FOR INFORMATION | CM | | | |
| 20032-SK-003-SHT 3 | ELEVATIONS | B | 13.05.21 | ISSUED FOR EXTERNAL DISCUSSION | CM | DT | | |
| 20032-SK-003-SHT 2 | PLAN LAYOUT | A | 20.04.21 | ISSUED FOR INTERNAL REVIEW | CM | | | |

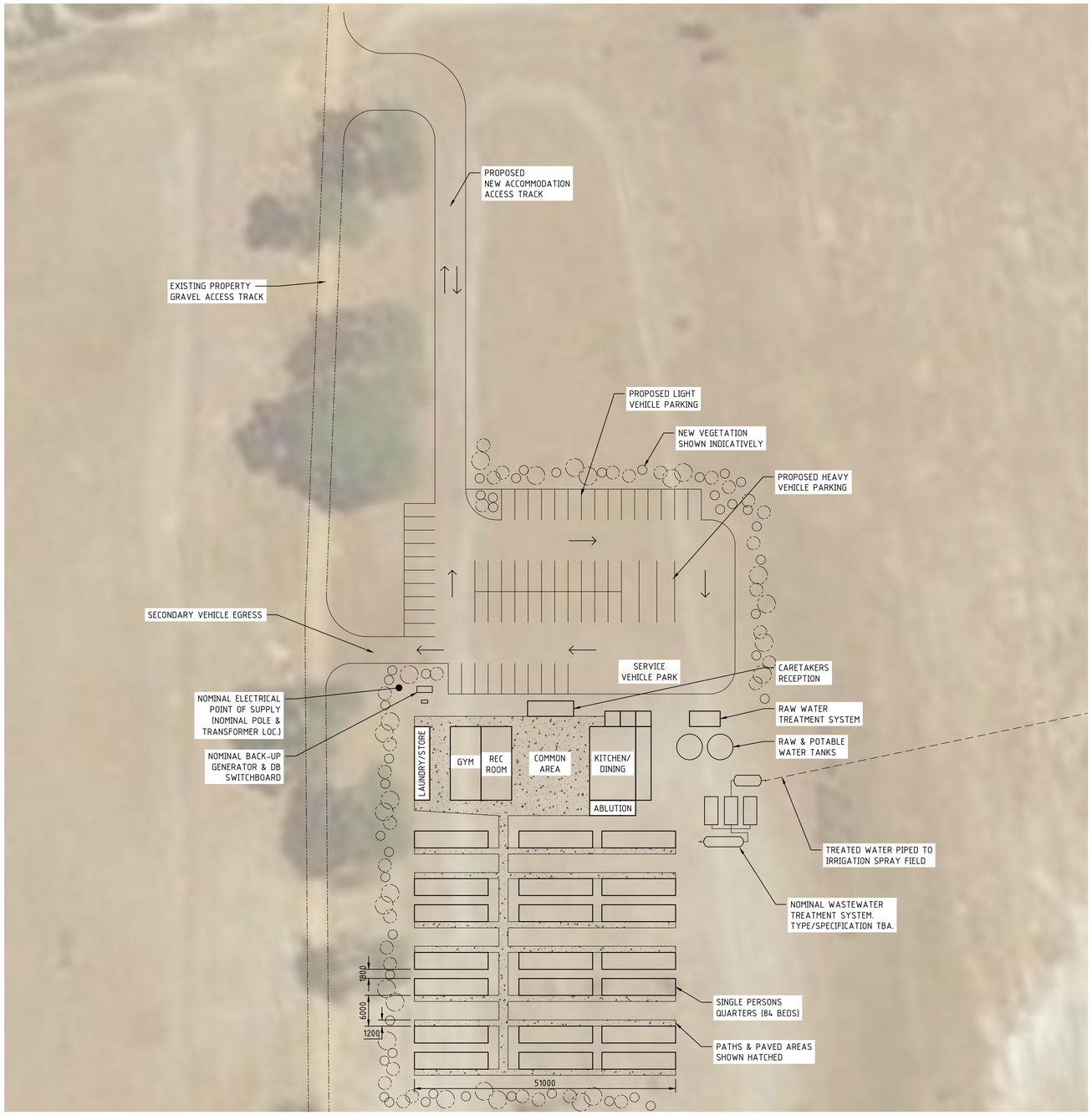
PROJX
ACN: 619 285 880
Level 1, Unit 3, 29 Carey Street, Bunbury WA, 6230
Tel: +61 8 9702 2190
www.projxco.com

| | | |
|---|---|---|
| ENGINEER | | |
| DRAWN | C.MACRI | 20.04.21 |
| CHECKED | | |
| TECH APP | | |
| PROJ APP | | |
| CLIENT APP | | |

SIGNED APPROVAL

IMAGE RESOURCES
ATLAS MINE DEVELOPMENT
WORKERS ACCOMMODATION
NAMBUNG STATION CONCEPT
OVERALL SITE LAYOUT - SHEET 1 OF 4

A1 | SCALE AS SHOWN | DRG NO 20032-SK-003-SHT 1 | REV D




NOTES:

1. ALL STORMWATER TO BE CONTAINED ON SITE.
2. ALL VEGETATION SHOWN INDICATIVELY ONLY.
3. PARKING AREAS AND ACCESS TRACKS TO BE NOMINALLY GRAVEL/LIMESTONE.
4. WASTEWATER TREATMENT SYSTEM TO BE TO THE APPROVAL OF THE HEALTH DEPT.

## PLAN LAYOUT

1:500

10m 0m 10m 20m 30m 40m 50m

SCALE 1:500

PRELIMINARY ISSUE
SUBJECT TO ENGINEERING DESIGN



| DRAWING No | REFERENCE DRAWINGS | REV | DATE | REVISIONS | DRN | CHK | TECH APP | PROJ APP |
|---|---|---|---|---|---|---|---|---|
| | | E | 09.08.21 | RE-ISSUED FOR INFORMATION | CM | | | |
| | | D | 30.06.21 | RE-ISSUED FOR INFORMATION | CM | | | |
| 20032-SK-003-SHT 4 | INDICATIVE FLOOR PLANS | C | 21.06.21 | ISSUED FOR INFORMATION | CM | | | |
| 20032-SK-003-SHT 3 | ELEVATIONS | B | 13.05.21 | ISSUED FOR EXTERNAL DISCUSSION | CM | DT | | |
| 20032-SK-003-SHT 1 | OVERALL PLAN LAYOUT | A | 20.04.21 | ISSUE FOR INTERNAL REVIEW | CM | | | |

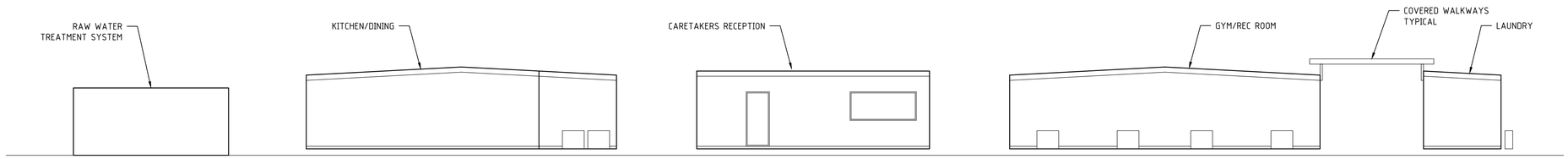
PROJX
ACN: 619 285 880
Level 1, Unit 3, 29 Carey Street, Bunbury WA, 6230
Tel: +61 8 9702 2190
www.projxco.com

| | | |
|---|---|---|
| ENGINEER | | |
| DRAWN | C.MACRI | 20.04.21 |
| CHECKED | | |
| TECH APP | | |
| PROJ APP | | |
| CLIENT APP | | |

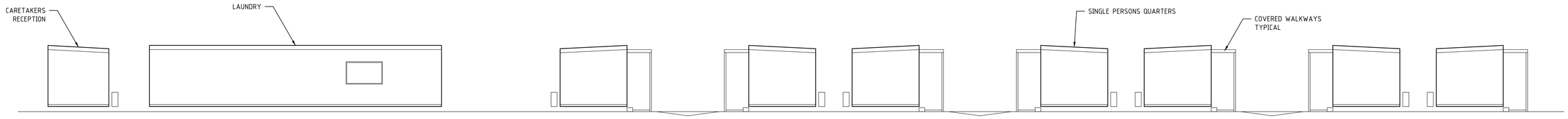
SIGNED APPROVAL

IMAGE RESOURCES
ATLAS MINE DEVELOPMENT
WORKERS ACCOMMODATION
NAMBUNG STATION CONCEPT
PLAN LAYOUT - SHEET 2 OF 4

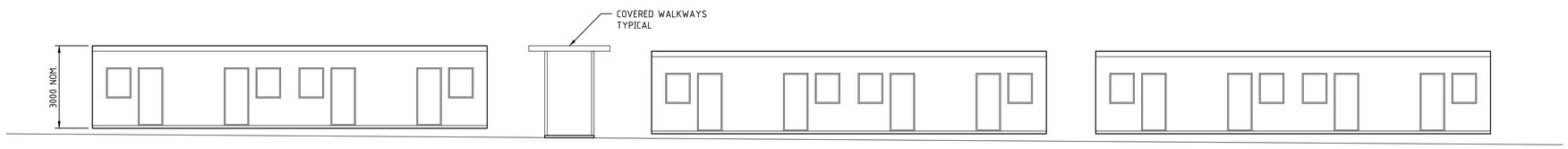
A1 | SCALE 1:500 | DRG NO 20032-SK-003-SHT 2 | REV E




## NORTH ELEVATION
1:100




## WEST ELEVATION
1:100




## SOUTH ELEVATION
1:100

NOTES:

1. COVERED WALKWAYS SHOWN INDICTATIVELY ONLY, SUBJECT TO DETAILED DESIGN.

2 0 2 4 6 8 10
SCALE 1:100

PRELIMINARY ISSUE
SUBJECT TO ENGINEERING DESIGN



| DRAWING No | REFERENCE DRAWINGS | REV | DATE | REVISIONS | DRN | CHK | TECH APP | PROJ APP |
|---|---|---|---|---|---|---|---|---|
| 20032-SK-003-SHT 4 | INDICATIVE FLOOR PLANS | | | | | | | |
| 20032-SK-003-SHT 2 | PLAN LAYOUT | B | 24.08.21 | ISSUED FOR INFORMATION | CM | | | |
| 20032-SK-003-SHT 1 | OVERALL PLAN LAYOUT | A | 09.08.21 | ISSUE FOR INTERNAL REVIEW | CM | | | |

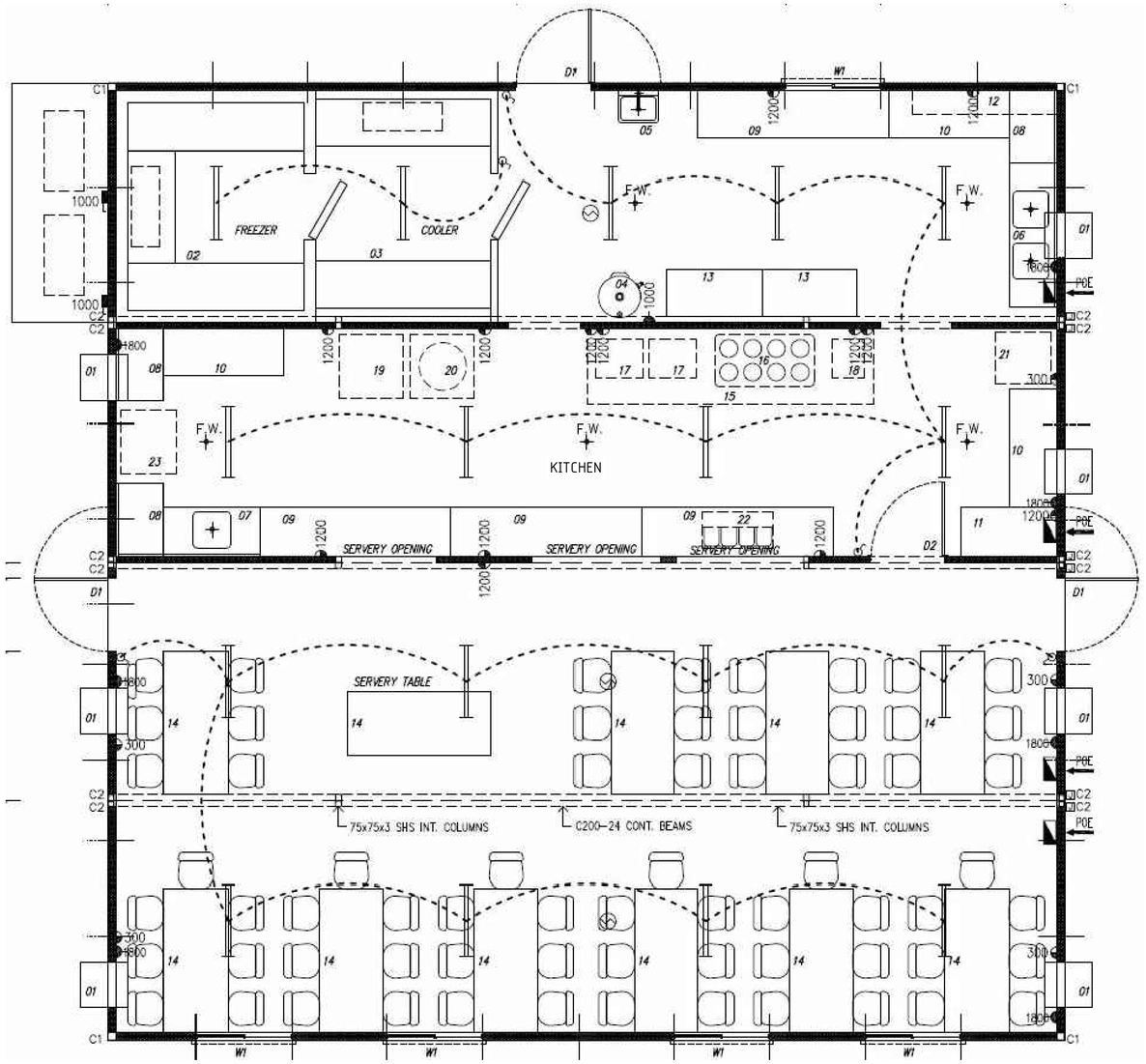
PROJX
ACN: 619 285 880
Level 1, Unit 3, 29 Carey Street, Bunbury WA, 6230
Tel: +61 8 9702 2190
www.projxco.com

| | | |
|---|---|---|
| ENGINEER | | |
| DRAWN | C.MACRI | 09.08.21 |
| CHECKED | | |
| TECH APP | | |
| PROJ APP | | |
| CLIENT APP | | |

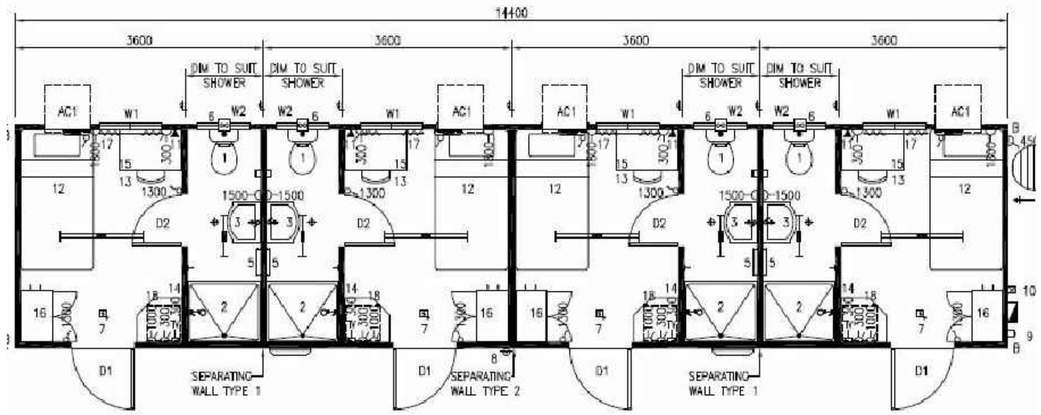
SIGNED APPROVAL

IMAGE RESOURCES
ATLAS MINE DEVELOPMENT
WORKERS ACCOMMODATION
NAMBUNG STATION CONCEPT
ELEVATIONS - SHEET 3 OF 4

A1 | SCALE 1:100 | DRG NO 20032-SK-003-SHT 3 | REV B




KITCHEN/DINER
NTS




4 PERSON ENSUITED ACCOMMODATION UNIT
NTS


LAUNDRY/LINEN/STORE
NTS

NOTES:

1. FLOOR PLANS SHOWN INDICTATIVELY ONLY, SUBJECT TO SUPPLIER AVAILABILITY AND SPECIFICATION.

PRELIMINARY ISSUE
SUBJECT TO ENGINEERING DESIGN



| DRAWING No | REFERENCE DRAWINGS | REV | DATE | REVISIONS | DRN | CHK | TECH APP | PROJ APP |
|---|---|---|---|---|---|---|---|---|
| 20032-SK-003-SHT 3 | ELEVATIONS | | | | | | | |
| 20032-SK-003-SHT 2 | PLAN LAYOUT | B | 24.08.21 | ISSUED FOR INFORMATION | CM | | | |
| 20032-SK-003-SHT 1 | OVERALL PLAN LAYOUT | A | 23.08.21 | ISSUE FOR INTERNAL REVIEW | CM | | | |

PROJX
ACN: 619 285 880
Level 1, Unit 3, 29 Carey Street, Bunbury WA, 6230
Tel: +61 8 9702 2190
www.projxco.com

| | | |
|---|---|---|
| ENGINEER | | |
| DRAWN | C.MACRI | 24.08.21 |
| CHECKED | | |
| TECH APP | | |
| PROJ APP | | |
| CLIENT APP | | |
| SIGNED APPROVAL | | |

IMAGE RESOURCES
ATLAS MINE DEVELOPMENT
WORKERS ACCOMMODATION
NAMBUNG STATION CONCEPT
INDICATIVE FLOOR PLANS - SHEET 4 OF 4

A1 | SCALE NTS | DRG NO 20032-SK-003-SHT 4 | REV B

WESTERN AUSTRALIA

| REGISTER NUMBER | |
|---|---|
| **4113/DP217467** | |
| DUPLICATE EDITION **2** | DATE DUPLICATE ISSUED **18/9/2014** |

VOLUME **2125** FOLIO **58**

# RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

**LAND DESCRIPTION:**

LOT 4113 ON DEPOSITED PLAN 217467

**REGISTERED PROPRIETOR:**
(FIRST SCHEDULE)

GENOCANNA NOMINEES PTY LTD OF CARE OF ROSS MOORE & ASSOCIATES, 27 GAMBIA WAY, BELDON
(T I533605 ) REGISTERED 1/7/2003

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**
(SECOND SCHEDULE)

1. I533606 MORTGAGE TO RABOBANK AUSTRALIA LTD REGISTERED 1/7/2003.
2. M690064 LEASE TO CROWN CASTLE AUSTRALIA PTY LTD OF LEVEL 1, 754 PACIFIC HIGHWAY, CHATSWOOD, NEW SOUTH WALES EXPIRES: SEE LEASE. AS TO PORTION ONLY. REGISTERED 30/6/2014.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

**STATEMENTS:**

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 2125-58 (4113/DP217467)
PREVIOUS TITLE: 1964-305
PROPERTY STREET ADDRESS: 2269 WONGONDERRAH RD, NAMBUNG.
LOCAL GOVERNMENT AUTHORITY: SHIRE OF DANDARAGAN

NOTE 1: A000001A LAND PARCEL IDENTIFIER OF MELBOURNE LOCATION 4113 (OR THE PART THEREOF) ON SUPERSEDED PAPER CERTIFICATE OF TITLE CHANGED TO LOT 4113 ON DEPOSITED PLAN 217467 ON 11-JUL-02 TO ENABLE ISSUE OF A DIGITAL CERTIFICATE OF TITLE.

NOTE 2: THE ABOVE NOTE MAY NOT BE SHOWN ON THE SUPERSEDED PAPER CERTIFICATE OF TITLE OR ON THE CURRENT EDITION OF DUPLICATE CERTIFICATE OF TITLE.