

# ATTACHMENT BOOKLET FOR

# SPECIAL COUNCIL MEETING

29 April 2024 at 5:00pm

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# **Development Application Report**

Lockyer Gas Project

Shire of Irwin and Shire of Mingenew

URBAN & REGIONAL PLANNING

Prepared for Energy Resources Limited and Westranch Holdings Pty Ltd December 2023

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# 1 PRELIMINARY

#### 1.1 Introduction

Planning Solutions acts on behalf of Energy Resources Limited and Westranch Holdings Pty Ltd, collectively the proponent of the Lockyer Gas Project, comprising new gas extraction wells, well heads and a gas processing facility in the localities of Mount Horner, Lockier and Mooriary, in the Mid-west region of Western Australia.

Planning Solutions has prepared this report in support of an Application for Development Approval for the proposed development.

This application is made pursuant to the significant development pathway under Part 17 of the *Planning and Development Act 2005* (**PD Act**) and requires determination by the Western Australian Planning Commission (**WAPC**).

This report will discuss various elements pertinent to the proposal, including:

- Site details.
- Proposed development.
- Strategic planning framework.
- Statutory planning framework.

#### 1.2 Proponent

Energy Resources Limited and Westranch Holdings Pty Ltd (collectively, the **Proponent**) are wholly owned subsidiaries of Mineral Resources Limited (**MinRes**), an innovative and leading mining services company, with a growing world-class portfolio of mining operations across multiple commodities, including iron ore and lithium. The vision of MinRes is:

To be recognised as a great Australian company and a leading provider of innovative and sustainable mining services and mining operations.

MinRes has a diversified portfolio with operations in lithium, iron ore, energy and mining services, employing 5,600 people across Western Australia. It was founded 31 years ago and today is an ASX listed company with a market capitalisation of approximately \$13 billion. It is the largest acreage holder in the onshore northern Perth and Carnarvon gas basins.

The Lockyer gas field was discovered in October 2021 through the drilling of the Lockyer Deep-1 exploration well within petroleum exploration permit EP-368 (**the Title**) granted under the Petroleum and Geothermal Energy Resources Act 1967 (**PGER Act**), held by the Proponent. Subsequent well testing at Lockyer Deep-1 and appraisal drilling at Lockyer-2 and Lockyer-3 indicated that the field holds economic volumes of prospective conventional natural gas resources.

Exploration drilling at North Erregulla Deep-1, adjacent to the Lockyer structure, resulted in the discovery of additional prospective conventional gas resources, which are likely to be tied back to the Lockyer Gas Project.

# 1.3 Engagement

MinRes recognises the importance of building positive relationships with key stakeholders and the communities in which it operates, and seeks to build sustainable partnerships with business, government, and community partners, leading to mutually beneficial outcomes. MinRes strives to engage pre-emptively, transparently, and regularly with stakeholders associated with projects and operations. MinRes' engagement strategies are developed, providing insights across the political and social landscapes of the region, identifying all critical stakeholders, and recommending engagement methods to ensure all stakeholders are informed and consulted across the life of the project, ensuring they are partners in, and benefit from the project.

Ongoing engagement and consultation is being undertaken with several key stakeholders identified within the Lockyer Project footprint. MinRes has a dedicated community engagement department, ensuring ongoing engagement is conducted with the broader community with a particular focus on relevant landholders, community groups, local government and Native Title group.

The key objective of the stakeholder engagement process across the Lockyer Project is managing and maintaining positive relationships with the major stakeholders including the Shire of Mingenew, the Shire of Irwin, the Southern Yamatji people (traditional landowners), landholders, and major regulatory agencies. All of these relationships are well progressed, with project updates provided with all publicly available information, and negotiation of key approvals and agreements underway.

MinRes utilises its stakeholder engagement register to track actions against delivery and resolution of issues, commitments or identified grievances. Under this approach, accountability is assigned to internal MinRes owners who are responsible for addressing actions outlined under the consultation record. This generates traceability and ensures MinRes remains responsive to the requests of their stakeholders. MinRes is also able to track trends that may occur with stakeholder issues, enabling the company to proactively identify issues and work towards a solution with affected parties.

#### Refer Appendix 3, Communication Summary.

An intent to lodge meeting was held with officers of the State Development Assessment Unit, Chair of the WAPC, senior Department of Planning Lands and Heritage staff for the Chief Planning Advisor, and the Government Architect on 21 November 2023. The proposed development concept was presented and discussion on consideration via the Part 17 significant development approval pathway was considered. It confirmed the project was of a scope able to be considered through the approval pathway under Part 17 of the PD Act.

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# 2 SITE DETAILS

# 2.1 Land Description

The proposed development occurs on land within the Title. The individual components of the proposed development are identified in the following figure:



Figure 1: Outline map of the Proposal

The certificates of title for development components shown on Figure 1 is described in the Table 1 below.

Table 1	-	Lot	deta	ils

Lot	Plan	Volume/Folio	Street address	Registered proprietor		
Central proces	Central processing facility					
3558	DP232347	1871/791	25116 Midlands Road, Mount Horner	Dhungarra Pty Ltd		
3561	DP232348	943/130	N/A	Dhungarra Pty Ltd		
Lockyer Deep 1						
686	DP231557	1416/162	N/A	BF Kelly & Sons Pty Ltd		
Lockyer 3						
2385	DP108088	259/101A	N/A	BF Kelly & Sons Pty Ltd		
Lockyer 4						
100	DP46035	75/56A	N/A	BF Kelly & Sons Pty Ltd		

Lot	Plan	Volume/Folio	Street address	Registered proprietor
Lockyer 5, Noi	rth Erregula Deep 1 a	and North Erregula	2	
Lot M 433	P2984	1122/362	N/A	Perpetual Corporate Trust Limited

Refer **Appendix 1** for a copy of the certificates of title.

Pursuant to section 15(1) of the PGER Act, the exploration permit holders can exercise their right to enter on and develop land, whether Crown land or freehold. Accordingly, this development application is made by Energy Resources Limited and Westranch Holdings Pty Ltd, exercising their rights as holders of the Title under the PGER Act.

# 2.2 Site and Contextual Analysis

#### 2.2.1 Context

The proposed development is located in the Mid-West region of Western Australia, approximately 312km north of Perth, 25km east of Dongara, and 15km west of Mingenew. The towns of Dongara and Port Denison are well known for their coastal communities, sand dunes and the towns are a gateway to the Mid-West wildflower country.

The locality of the development can be described as broadscale agriculture pasture lands interspersed with areas of scrubland. The land is open and gently undulating.

The central processing facility is located within 1.9km of Midlands Road, being the main arterial road linking the rural communities of Dongara and Mingenew and providing road access to the broader region. The facility is accessed via Strawberry North-East Road – an unsealed local road servicing the local agricultural area.

The Midland Railway runs adjacent to Midlands Road and is used by freight traffic primarily accessing Geraldton port.

Refer Figure 2 for a plan showing the location of the proposed development.

#### 2.2.2 Site Conditions

The development site comprises a combination of cleared, agricultural and pastoral land with remnant native vegetation found throughout.

In terms of topography, the development site undulates from approximately 100m AHD to 190m AHD. The central processing facility site slopes to the south east from approximately 165m AHD to 135m AHD. The surrounding land is agricultural, with the central processing facility's operations village located on a small ridge with views to small parcels of bush scrub, rocky outcrops and long views to the Irwin River.

Refer the development plans at Appendix 2 which includes topographic details of the development site.



**PS** 

# **3 PROPOSED DEVELOPMENT**

#### 3.1 Introduction

The Lockyer Gas Project (**Lockyer Gas Project**) proposes the extraction and processing of gas from a field within the Title held by the Proponent.

The field was discovered by the Proponent in September 2021 (via Lockyer Deep-1) and hosts economic volumes of prospective and contingent gas resources across the Title and the adjacent petroleum exploration permit EP 426, also held by the Proponent.

Refer Figure 3 for a plan showing the location of the Lockyer gas fields in Western Australia.

The Lockyer Gas Project will collect natural gas from conventional gas wells and direct the gas via a pipeline to a central processing facility where the gas will be treated. The product gas will be routed via an export pipeline to the Dampier to Bunbury Natural Gas Pipeline (**DBNGP**) for sale.

The condensate by-product will be treated on site and transferred off site via B-double road trains to a site suitable for marine export.

The central processing facility is designed to produce up to 250 TJ/day of sale quality gas, with associated liquids estimated at up to 1500 barrels (~240m<sup>3</sup>) per day.

#### 3.2 Project location

The Lockyer Gas Project is located north of Midlands Road, the main road between Dongara and Mingenew, and towards the north of the permit area. The DBNGP is located to the west of the project area.

The development comprises an upstream gas gathering network connecting extraction wells in a hub-andspoke arrangement. Flow from the individual wells (via flowlines) will be aggregated at hubs prior to being directed into larger infield flowline connecting to a central processing facility. A gas export pipeline transfers treated gas to the DBNGP. The central processing facility is connected to the road network for sale of condensate off site.

Refer **Figure 1** for a plan showing the location of the central processing facility, gas extraction wells, and pipelines, and

Figure 4 for a plan showing the general arrangement of the various components of the Lockyer Gas Project.



**PS** 

Figure 3: Lockyer Gas Fields, Western Australia



Figure 4: Lockyer Gas Project Arrangement

# 3.3 Development Summary

The development will consist of:

- Production wells multiple conventional gas wells are envisaged as part of the initial development, with successful exploration and appraisal wells completed to enable their use as producers.
- An upstream gas gathering network connecting the wells to hubs via flowlines in a hub-and-spoke arrangement. Flow from the individual wells (via flowlines) will be aggregated at hubs prior to being directed into larger infield flowlines. In the initial phase the Central and Northern hubs will be developed,
- A central processing facility to treat the raw gas to the specification required for export to the DBNGP, inclusive of all utilities to support the field operations,
- A gas export pipeline connecting the central processing facility to the DBNGP,
- A condensate stabilisation, storage, and offloading system to support road transport of liquid product, and
- On-site infrastructure to support the operations phase including power generation, warehousing and workshops, control, equipment and switch room infrastructure and accommodation.
- Utilities infrastructure including telecoms, water bore and monitoring bores and sewage,

- Permanent operations village (within the central processing facility land area),
- Long term storage for operational and insurance spares

Near-site infrastructure will also be developed, secured, or upgraded to support the project execution and operations phases. This will include:

- Existing road access upgrades (between Midlands Road and the central processing facility),
- Connection to existing fibre optic communications network

#### 3.4 Upstream Gathering System

The upstream gathering system comprises wells, wellhead facilities, hubs and (buried) pipelines. Pipelines do not fall within the development approval scope.

Gas and condensate will be recovered initially from up to 6 wells that are routed back to hubs and directed via underground flowlines to the central processing facility for processing.

#### 3.4.1 Wellhead Facilities

Wellhead facilities are installed at each well site to manage safe well operations and support flow of the well stream fluids to the central processing facility. The wellhead facilities include safety critical equipment to isolate the well and reservoir fluids from the surface equipment in the event of issues potentially impacting safety or the environment.

A wellhead choke valve is used to control the rate of flow from each well. Each well is provided with a clamp on ultrasonic flowmeter to provide remote flow monitoring from the central processing facility.

Chemical injection is installed to ensure pipeline/flowline integrity. Corrosion inhibitor is injected from a dedicated pump skid connected to a corrosion inhibitor storage tank provided at each well site. Additionally, a methanol injection point is provided downstream of the wellhead shutdown valve for hydrate inhibition during well start-up.

Locally compressed air will be used to power valves and the chemical injection pumps.

All well flowlines will be designed for internal integrity monitoring using pipeline inspection gauges. A temporary pipeline inspection gauge launcher is shared between all remote well sites with flowlines of the same size.

Each wellhead site is enclosed with fencing and equipped with a solar array with batteries that provide power.

#### 3.5 Central Processing Facility

#### 3.5.1 Gas Processing Infrastructure

The central processing facility comprises a complex assembly of specialised equipment. The gas processing infrastructure is designed to produce gas and condensate from the extracted wellstream fluids. Refer **Figure 5** below which provides an indication of how the infrastructure sits together.



Figure 5: 3D Model of the Gas Processing Infrastructure

The central processing facility gas processing infrastructure is positioned within a 54,000m<sup>2</sup> footprint, 200m x 270m, exclusive of the flare.

The following is a simplified description of the processes being undertaken in the central processing facility.

#### Inlet receival

Fluids from the gathering flowlines are directed to a slug catcher, where bulk vapour-liquid separation occurs. Liquid from the slug catcher are then directed to a liquid/liquid (inlet) separator, whilst vapour is directed via a gas-gas heat exchanger (used to optimise energy efficiency) to the inlet cooler. Condensed liquids are separated from the gas stream in the inlet separator downstream of the inlet cooler.

#### Gas conditioning

Gas from the inlet separator is superheated before being routed to a mercury guard bed which removes mercury, if mercury is present. Process gas from the mercury guard bed is then routed to fixed beds for  $H_2S$  removal via absorption, and then to the amine acid gas removal unit for  $CO_2$  removal. The amine train will have a bypass stream capable of directing all flow around the package to limit the reservoir  $CO_2$  being removed from the gas and released as greenhouse gas emissions. Flow through the amine system will be controlled to maintain the pipeline  $CO_2$  specification. Together these acid gas removal systems will achieve the DBNGP gas specification for contaminants content.

Treated gas is then dew-pointed via JT cooling to meet the DBNGP hydrocarbon and water content specifications. A closed loop mono-ethylene glycol system is used to manage hydrate formation risk in the gas conditioning system.

#### Sales gas compression and export

Sales quality gas from the gas conditioning system is directed to the sales gas compressor for compression to a pressure suitable for discharge into the DBNGP via the Lockyer gas export pipeline.

A plant recycle is installed which provides the ability to return gas from the sales gas compression discharge manifold to upstream of the inlet cooler, to avoid flaring off-specification gas during facility start up or during process upsets.

#### Condensate stabilisation, storage and load out

Liquid hydrocarbons from the treated gas stream are processed in the condensate stabilisation system to meet the vapour quality specification required to allow the condensate to be transported off site by road.

Treated condensate from the column stabiliser is cooled then stored in condensate storage tanks at near atmospheric pressure until it is ready to be loaded out to B-double road trains (maximum length 27.5m).

#### Produced water treatment

Produced water (originating from the reservoir) is separated as part of the gas inlet and conditioning systems and treated prior to disposal via evaporation. Entrained liquid hydrocarbons are recovered using specialised oily water treatment equipment and recovered back to the condensate system, whilst the treated water is routed to the evaporation ponds. The ponds are designed to accommodate all expected produced water, as well as brine from the potable water system, oily water from the drains system and direct precipitation from annual rainfall.

## Incinerator Package

An incinerator package is provided to ensure all acid waste gas is completely combusted to minimise environmental air quality impacts.

## <u>Utilities</u>

Utility systems such as fuel gas, heating medium, instrument air, nitrogen, flare, bore water, firewater system, potable water, demineralised water, chemical injection, closed drains, open drains, and power generation are provided to support the operations of Lockyer Gas Plant

#### 3.5.2 Condensate Pad

A 9,000m<sup>2</sup> hardstand area 60m x 150m is provided for the loading of condensate onto B-double trucks. The condensate loading pad is linked to the facility's entry road, positioned to minimise the interactions of the condensate road trains with the remainder of the site operations.

# 3.5.3 Administration Facilities

The major administrative components of the central processing facility are:

- 1,005m<sup>2</sup> administration building
- 796m<sup>2</sup> warehouse building
- 400m<sup>2</sup> workshop
- Lay-down area
- Car parking and vehicle circulation areas

The administration facilities are located on the south side of the gas processing facilities, placed considering the prevailing wind directions, and are linked to the facility's main access road.

## 3.5.4 Sedimentation Pond

A sedimentation pond is located to the east of the condensate pad and will be used for disposing stormwater. The sedimentation pond will catch stormwater runoff only, with a separate, segregated drains system installed to capture potentially contaminated oily water (oily water will be treated and then routed to the evaporation pond).

#### 3.5.5 Construction Laydown

A 34,020m<sup>2</sup> hardstand construction laydown area is proposed to the west of the gas processing infrastructure. It will be used for the storing of materials and equipment used during construction of the facility. It is linked to the facility's main access road via a driveway.

#### 3.5.6 Operations Village

The development includes a 24-bed operations workforce accommodation village (Lockyer Village) located to the north of the gas processing infrastructure. It will occupy a footprint of 10,000m<sup>2</sup> (excluding spray field) and include:

- 24 x 1-bed accommodation units on the north side of the village
- Club lounge, including meal preparation and serving areas and village administration facilities
- Recreation building
- Gym building
- Vegetable garden
- Outdoor gym/playing field
- Service / loading zone
- 12 car parking bays and mini bus drop off/pick up zone

A service track allows vehicle access around the perimeter of the village. Pedestrian paths are provided for movements within the village.

A water treatment facility and a 32,300m<sup>2</sup> spray field is located to the southeast of the village for the treatment and disposal of wastewater from the village.

Refer Appendix 2 for architectural drawings and landscape design for the operations village.

#### Design statement

The proposed operations village is located on a small ridge with views to small parcels of bush scrub, rocky outcrops and long views to the Irwin River. The surrounding land is characterised as agricultural. The nearby coastal towns of Dongara and Port Denison are well known for their coastal communities, sand dunes and the towns are a gateway to the Mid-West wildflower country.

The village will provide accommodation to support the Lockyer gas operations plant. While only a small part of the overall project, the village is key to the success of the project, with a focus on providing a significant improvement in amenity for workers in the sector.

While this proposal has been designed to serve its primary purpose as a 'workers accommodation' village, the intent for the project is to maintain a new industry benchmark for this development typology. This project continues MinRes' commitment to providing excellent accommodation, outstanding food and beverage offerings and access to leisure and recreation facilities with a quality to rival inner-city corporate headquarters.



Figure 6: Perspective drawing of proposed operations village

The project proposes a restaurant lounge, café area, wellness facilities, activated outdoor landscaped space, recreation facilities, and a gym. Facility buildings are designed as high-quality modular construction to allow for reuse elsewhere and easy removal at the anticipated end of mining operations, allowing the site to be easily returned to its previous state and revegetated with local endemic plant species.

Climatic conditions and a regional location demand that buildings be constructed using robust, low maintenance, prefinished and readily available materials.

The proposed material palette is considered and restrained has been applied methodically all buildings and landscape to deliver a consistent, legible, and rational architectural response. The buildings are read as parts of a single, identifiable whole rather than a series of separate entities.

The proposed building arrangement has created a series of landscaped zones that allow for engagement, reflection, activity. The design team is conscious that occupancy levels on site will fluctuate depending on operations and maintenance, and it is important that the village feels open, welcome, safe and connected. The project gathers together amenity into functional clear zones – including public activity and service (main facility buildings), landscape (outdoor space) and sleeping and rest (accommodation pods).

The accommodation pods have similarly been designed with increased functionality and material quality. Equipped with a kitchenette, lounge room, queen sized beds and inbuilt laundry, each accommodation pod provides a level of comfort and amenity not seen in the mining industry. Internal materials have been selected to appear lighter and brighter but remain robust enough to withstand the harsh environmental conditions and the rough and tumble of everyday use.

Accommodation pods are fully transportable steel framed units, installed onto stumps and footings on site and linked back into the pedestrian network via by raised walkways.

Considerable effort has been made to ensure that this development exceeds minimum level requirements in relation to sustainability. To be further tested and verified during design development, the project considers and values energy efficiency, water efficiency, material use, indoor environment quality, and urban water management.

The project design team previously worked with MinRes on a similar project typology (Onslow and Kens Bore Mining Resorts). When undertaking that work, the project team sought to better understand why developments of this typology often fail to provide users with an environment that fosters productivity, engagement and good mental health outcomes. They looked at existing transient workers accommodation villages in contrast to wellness retreat style getaways – interrogating the masterplans and accommodation offerings to establish a way forward for this proposal. The ambition for this project was to provide 'resort style' accommodation and facilities, planned in a way that was site specific, and operated in a way that was inclusive and welcoming.

The project recognises that users are likely to spend a significant portion of time at this site and, as such, the intent is to build community, ownership, and a sense of belonging. This is achieved through distinct accommodation zones, shared gathering spaces, connected landscape responses and the inclusion of site-wide recreation opportunities that promote health and well-being.

The development proposal also acknowledges that regional mining villages can be unsafe for workers. Recent publicised events on other sites are at the forefront of design considerations to ensure a safe environment for workers, guests and staff. To address this, the project aims to promote safety and security through clear visual connections throughout site and well defined, easily recognisable, well-lit entry points to all buildings. All pathways have at least two access routes, with no dead ends or blind spots.

From an aesthetic perspective, the project demonstrates a considered and logical response to site that is realised through a constrained use of material and form to ensure design clarity. Ably supported by a rigorous landscape design proposal, the development reinforces the unique natural environment by integrating materials, forms, and colours from the existing local context.

## **Landscaping**

A landscaping plan has been prepared by Aspect Studios. The landscaping plan sets out the approach, materiality and planting proposed at the Operations Village. Proposed is an appropriate and restorative approach that considers the context of the development whilst being appreciative of the site. The proposed landscaping comprises the three main areas:

- Main Facilities
- Village Green
- Accommodation

Refer Appendix 2, Development Plans for a copy of the Landscaping Plan.

#### 3.5.7 Temporary Construction Village

Provision is made for a temporary construction workforce accommodation facility to be located to the east of the operations village. It is not proposed as part of this development application and separate approval will be required.

#### 3.5.8 Central Processing Facility – Access Roads

The central processing facility includes two access roads:

- A facility access road along the southern edge of the central processing facility site, linking Strawberry North-East Road to the east of the facility, and to internal existing farm tracks to the west of the facility.
- An access road linking the operations village (and temporary construction village) to the facility access road, along the western side of the central processing facility site.

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The internal roads will provide all-weather access to the facility.

## 3.6 Operational aspects

#### 3.6.1 Operations

The central processing facility will operate 24 hours a day, 7 days a week. Up to 20 permanent staff will be stationed at the facility as per operational requirements.

#### 3.6.2 Health and Safety

Health and safety management, including process safety management is of paramount importance, given the hazards associated with the high pressure and combustible fluids being processed. An 'inherently safer' approach to hazard management is one that actively eliminates the hazards, or reduces their magnitude, severity, or likelihood of occurrence by careful attention to the fundamental design and layout of the facility. Adoption of safety in design and human factors principles to the design of plant and equipment, processes, interfaces, and tasks has been and will continue to be used to support achievement of the objectives of reducing risk to personnel (and the environment) at the Lockyer Gas Project.

The following hierarchy of risk management controls will be adopted, in order of preference, when selecting options to reduce risks:

- Elimination of risk by removing the hazard
- Substitution of a hazard with a less hazardous one
- Prevention of potential events
- Separation of people from the consequences of potential events
- Control of the magnitude and frequency of an event
- Mitigation of the impact of an event on people and the environment
- Emergency response and contingency planning.

Where required to mitigate risk, add-on safeguards shall be considered with an order of preference as follows:

• Passive safeguards, then active safeguards, then procedural controls.

#### 3.7 Supporting information

#### 3.7.1 Environment

The Lockyer Gas Project will be subject to environmental impact assessment and regulation under various environmental legislation, primarily the *Environmental Protection Act 1986*, *Petroleum and Geothermal Energy Resources (Environment) Regulations 2023* and *Petroleum Pipelines (Environment) Regulations 2023*. Environmental Plans will be developed to ensure construction, commissioning and operations are compliant with environmental legislative requirements and all other applicable regulatory approvals and permits.

Control measures for managing wastes, emissions, discharges, hazardous materials and clearing of native vegetation will be identified and management to ensure compliance with legislative requirements. Management controls will consider the following in order of priorities (either individually or in combination, where applicable):

1. Elimination



- 2. Reduction
- 3. Reuse/recycle
- 4. Treatment
- 5. Disposal

Refer **Appendix 9,** Environmental Report Summary.

#### 3.7.2 Noise Attenuation

An Environmental Noise Assessment (**ENA**) was prepared in accordance with the *Environmental Protection* (*Noise*) *Regulations 1997*. The ENA notes the proposed development is only at the development application stage and much of the detailed design is yet to occur, however preliminary equipment sizing is completed and representative noise characteristics for major equipment, based on vendor provided information, was included. The ENA addresses the acoustic considerations in relation to noise emissions, noise separation, and noise intrusion.

The ENA assesses potential noise sources from the proposed development, and the assessment undertaken demonstrates that the predicted noise emitted from the proposal with recommended mitigation measures where required, will comply with the assigned levels determined in accordance with the *Environmental Protection (Noise) Regulations 1997.* Noise attenuation will be included on selected equipment, consistent with the assumptions in the ENA. Following commissioning of the facility a noise survey will be completed to ensure compliance with environmental regulations. Additional noise control can be installed to address any issues identified. It is noted that all equipment proposed for use at the Lockyer Gas Facility is industry standard design, and the noise characteristics (used as input to the modelling) are well understood.

Refer Appendix 7, Environmental Noise Assessment.

#### 3.7.3 Transport and Access

The Proponent has undertaken a detailed analysis of the access to the central processing facility as well as the surrounding road network. In accordance with the Main Roads WA (**MRWA**) Restricted Access Vehicles (**RAV**) Assessment Guidelines, the surrounding road network will be upgraded to cater for the additional traffic generated by the development.

Access to the central processing facility is subject to road upgrades that the Proponent is committed to. An approximate 470m long access road will be constructed between the central processing facility and Strawberry North-East Road within the existing unconstructed road reserve. Strawberry North-East Road, between the newly constructed access way and the Midland Road intersection (approximately 2km) will be sealed and widened to an 8m wide two-lane single carriageway. The Strawberry North-East Road / Midlands Road intersection will be upgraded to a simple right turn and basic left turn treatment. The intersection will also be widened to cater for RAV7 (20m) vehicles for the left in and left out movements.

Access to the wellhead sites will be via existing access points in a standard C-class vehicle.

Refer **Appendix 5** and **Appendix 6** for an Access Memorandum & Transport Impact Analysis demonstrating the proposed access arrangements will meet applicable design requirements and warrants.

#### 3.7.4 Waste Management

A Waste Management Plan (**WMP**) has been prepared in support of the proposed development by Talis Consultants. The WMP considers estimation of general waste volumes and recommendations for appropriate collection, storage, handling and management of waste and recycling for the development. Further details regarding the storage and collection of waste will be provided during the assessment process.



Refer **Appendix 8**, Waste Management Plan.

#### 3.7.5 Heritage

The Proponent has engaged with the Yamatji Southern Regional Corporation Ltd (**YSRC**) who act on behalf of the native title holders to implement appropriate cultural heritage management measures pursuant to the *Aboriginal Cultural Heritage Act 1972 (WA)*.

Refer **Appendix 10**, Heritage Report Summary.

#### 3.7.6 Visual Impact

A Visual Impact Assessment (**VIA**) has been prepared by prepared by Ecological Australia. The assessment comprises a view shed analysis and site assessment to determine the visual impact of the proposed development on the existing views from the surrounding landscape with particular consideration of sensitive receptors identified through stakeholder consultation and a desktop assessment.

The preliminary viewshed analysis indicates that while the proposed development may be visible at distance from a number of locations, the existing vegetation and topography largely shields the view of the bulk of the development.

Refer Appendix 11, Visual Impact Assessment Summary.

#### 3.7.7 Bushfire

A portion of the central processing facility is located within a designated bushfire prone area in accordance with the Department of Fire and Emergency Services (**DFES**) Map of Bushfire Prone Areas.

Accordingly, a Bushfire Management Plan (**BMP**) has been prepared by Barrons Building Surveying to demonstrate appropriate bushfire risk management for the proposed central processing facility.

A BAL-LOW rating was identified for the majority of assets at the central processing facility, with the exception of northwest portion of the operations village with a BAL rating of BAL-12. The BMP therefore includes management measures for the operations village.

Refer Appendix 12, Bushfire Management Plan.

**PS** 

# **4** STRATEGIC PLANNING FRAMEWORK

### 4.1 State Planning Strategy 2050

State Planning Strategy 2050 is the highest-level strategic planning document for Western Australia. The State Planning Strategy provides a framework of planning principles, strategic goals and directions in response to anticipated planning and growth challenges.

**Table 2** below provides comment on the applicable objectives and aspirations of the Strategy.

Table 2 - Applicable objectives of the State Planning Strategy 2050

Objective	Aspiration	Comment
Section 1.1 The Resources Economy		
To maintain and grow Western Australia as the destination of choice for responsible exploration of development resources.	The State maintains support for exploration activity and resource development through informed land-use and policy decisions.	MinRes is an ASX listed company with A\$13 billion market capitalisation and a demonstrated world leader in the responsible exploration of development resources.
Section 2.3 Energy		
To enable secure, reliable, competitive and clean energy that meets the State's growing demand	The use of offshore and onshore gas fields continues to reduce carbon emissions	The proposed development will supply gas to meet the predicted shortfall in the domestic gas market, creating energy security, supporting decarbonisation, and reducing the cost of energy to consumers.

The proposed development is entirely consistent with the relevant objectives and aspirations of State Planning Strategy 2050.

# 4.2 Shire of Irwin Local Planning Strategy (2017)

The Shire's Local Planning Strategy was endorsed by WAPC in August 2017. The Strategy acts as a guide for the progressive development of the Shire.

Section 3.5 (Oil and Gas) of Part 1 of the Strategy states:

Onshore oil and gas opportunities exist within the Waitsia field of the Perth Basin and this source is located east of the Dongara townsite.

Employment opportunities may be generated from the oil and gas industry in the longer term. While onshore oil and gas projects are yet to receive the necessary approvals, the Shire may need to consider if petroleum exploration and operations should be formalised in LPS No. 5 in terms of definitions, scheme provisions and associated guidance material. If required, the Shire can undertake a scheme amendment to update to incorporate these considerations.

Similarly, section 2.5 (Economy) of Part 2 of the Strategy states:

Oil and gas exploration is also an emerging industry in the Shire of Irwin and broader region. There have been several major discoveries of recoverable quantities of oil and gas reserves in the local government area and surrounds over the past 10 years. One of these discoveries includes the Hovea Field (onshore) located 15kms south of Dongara. It is anticipated this field may have the potential to produce up to 5% of WA's total fuel needs over the coming years. There have also been offshore discoveries and confirmation of resources in the Perth Basin (south of Dongara).

As the industry moves from exploration to production there will be many business and employment opportunities that will arise from these resource sector developments, particularly in the construction sector.

Section 6.4 (Mining and Petroleum) of Part 2 of the Strategy states:

Mining and petroleum industries play an important economic role in the Mid West region and it is therefore necessary to adequately plan for and protect these industries where appropriate. There are a number of mining and petroleum operators that have an impact on the local economy, including basic raw material extraction operations such as Cockburn Cement to iron ore operations in the wider region.

Mining operations provide for local employment and it is understood that a portion of the local workforce is employed by the local extraction industries. Travel access options to remote operations in the mid-west region are limited and could be improved to increase the accessibility for the local workforce.

Section 6.4.1 of Part 2 of the Strategy relates to the extraction of gas, including by means of fracking – it is important to note the Lockyer Gas Project uses conventional extraction methods and fracking is not proposed:

Activities that operate under the Petroleum and Geothermal Resources Act 1967 (including fracking) need to comply with the regulatory requirements under the Planning and Development Act 2005, including local government planning administration powers under local planning schemes. Under the Planning and Development Act 2005, development approval is required for anything classified as 'development'. Therefore an application for planning (development) approval is required for petroleum exploration and operations activities.

As there is no standard definition for petroleum activities or land uses (including fracking) within Shire's LPS No. 5, the Model Scheme Text nor the draft Planning and Development (Local Planning Schemes) Regulations 2014, these matters are dealt with as 'uses not listed' in LPS No. 5. This requires a planning application to be submitted to the local government following which the application would be required to be advertised in accordance with the requirements of LPS No. 5.

The Shire needs to consider if petroleum exploration and operations should be formalised in LPS No. 5 in terms of definitions, scheme provisions and associated guidance material. If required, the Shire can undertake a scheme amendment to update to incorporate these considerations.

The proposed development is clearly contemplated by the Strategy. Notwithstanding, petroleum activities and land uses are still not defined by the scheme, highlighting the disconnect between the vision for the Shire and the applicable statutory planning framework. Relatedly, the employment opportunities the proposed development will generate in construction and operation are consistent with the Strategy. The proposed development is estimated to create ~350 jobs during the construction phase from ~July 2024 and ~40 full-time site based staff once operational, with a preference for local residents.

Evidently, the proposed development is consistent with Shire's Local Planning Strategy and warrants approval accordingly.

# 4.3 Shire of Mingenew Local Planning Strategy (2006)

The Shire's Local Planning Strategy was endorsed in September 2006. The Strategy provides strategic guidance for the future development of the Shire.

The Strategy provides the following statements in part 4.1.1:

"The GSWA [Geological Survey of Western Australia] also advises that:

- 1. The western part of the Shire ... [is] highly prospective for petroleum....
- 3. There has been no reported mineral or petroleum production from the Shire in recent years.
- 6. Exploration for petroleum ... in the Shire is currently at a high level and should be encouraged on account of its economic and social benefits."

Further, Section 8.15 of the Strategy notes the Department of Minerals and Energy had identified a mineral or gas discovery could mean new employment and infrastructure opportunities which should be factored into the Scheme review.

The Strategy not only identifies the development site as highly prospective for petroleum exploration but encourages its exploration noting the economic and social benefits. The proposed development is estimated to create up to 350 jobs during the construction phase from ~July 2024 and employ approximately 40 full-time site-based staff once operational, with a focus on local employment and skills.

PS

# **5 STATUTORY PLANNING FRAMEWORK**

#### 5.1 Planning and Development Act 2005

The PD Act is the overarching legislation providing a system of land use planning and development in Western Australia and for related purposes. It provides for the making of planning instruments including state planning policies, region planning schemes, and local planning schemes, as well as establishing the WAPC with broad functions directed at regulating the State's planning system.

This development application is made under the special development application provisions for the COVID-19 pandemic in Part 17 of the PD Act. Pursuant to section 277(2) of the PD Act, an application determined by the WAPC under Part 17 has effect as if it had been made by a normal decision-maker under a planning scheme. This has the practical effect of negating the need to apply for and obtain development approval under a region or local planning scheme.

Section 275(6) of the PD Act sets out the matters the WAPC must have due regard to in considering and determining an application made under Part 17. Refer to **Table 3** for consideration of these matters.

Ma	tters to be considered	Response
(a)	the purpose and intent of any planning scheme that has effect in the locality to which the development application relates; and	Refer <b>sections 5.5, 5.6, and 5.7</b> of this report for consideration of the purpose and intent of the relevant planning schemes.
(b)	the need to ensure the orderly and proper planning, and the preservation of amenity, of that locality; and	This report considers the strategic and statutory planning framework as a whole. On balance, the proposal to extract gas in this location has been recognised and supported by the State Planning Strategy 2050 and the local planning strategies that have been prepared by both local governments and adopted by the WAPC; refer <b>section 4</b> for consideration of the strategic planning framework. An orderly and proper planning assessment has been undertaken against the applicable planning framework as demonstrated in this report. The development preserves the amenity of the locality as is demonstrated throughout this report and the supporting technical appendices.
(c)	the need to facilitate development in response to the economic effects of the COVID-19 pandemic; and	The economic benefit of the proposed development is multifaceted. Fundamentally, the project will help meet the predicted gas supply shortage forecast beyond 2029. It is helpful to consider the economic benefits of the project over two stages. The project has undergone significant research and development over the last year, requiring the contribution of hundreds of people. During construction, the development will employ up to 350 people during the construction phase from ~July 2024. Net spending over this period in WA in expected to total \$465 million. The project has an operational lifespan of 20 years. The project will employ approximately 40 full-time staff with a focus on local labour and skills. Net spending over this period is expected to total \$26.5 million with \$5.8 million spent in the Mid-West Region alone. This excludes the estimated \$820 million to be paid in royalties. Refer <b>Appendix 4</b> for the Economic Benefit Summary prepared in support of this application.

#### Table 3 - Matters to be considered for an application made under Part 17 of the PD Act



Matters to be considered	Response
(d) any relevant State planning policies and any other relevant policies of the Commission.	Refer section <b>5.4</b> and <b>section 5.5</b> for consideration of the relevant State planning policies and other WAPC policies.

The requirement for development approval does not apply to the construction and upgrade of public roads, being works which are exempt from requiring approval pursuant to section 6(1) of the Act.

# 5.2 Petroleum and Geothermal Energy Resources Act 1967

The development is of a type that falls within the ambit of the PGER Act. This Act does not contain any provisions relating to a development application, other than section 15(1) which provides that the rights under the exploration licence may be exercised on any land in the licence area *"notwithstanding the provisions of any other Act or law"*. However, section 15(1) is not being relied upon by the Proponent as amounting to an exemption from the need to obtain development approval under a planning scheme made under the PD Act.

# 5.3 State Planning Policies

The following State Planning Policies have been prepared under Part 3 of the PD Act and apply to the proposed development as documents for which due regard is to be given, except for those State Planning Policies that are to be read as part of the *Shire of Mingenew Scheme No. 4* (**Mingenew Scheme**) pursuant to section 77(2) of the PD Act thereby elevating those policy provisions to statute.

#### 5.3.0 State Planning Policy 2.0 – Environment and Natural Resources

State Planning Policy 2.0 Environment and Natural Resources (**SPP 2.0**) applies State-wide; it has the following objectives:

- to integrate environment and natural resource management with broader land use planning and decision-making;
- to protect, conserve and enhance the natural environment; and
- to promote and assist in the wise and sustainable use and management of natural resources.

A Briefing Paper – Environmental Impact Assessment Overview provides an overview of the environmental impact assessment approach being undertaken by MinRes to facilitate the Project. MinRes anticipates referring the Project to the Environmental Protection Authority under Part IV of the Environmental Protection *Act 1986*, and it is expected environmental issues will be comprehensively addressed through that independent process. The Briefing Note provides a summary of the key environmental factors including water resources, air quality, soil and land quality, and biodiversity, and demonstrates the SPP 2.0 objective of protecting, conserving, and enhancing the natural environment is met.

Refer **Appendix 7** for the Environmental Impact Assessment Overview.

Section 5.7 of SPP 2.0 provides assessment criteria for petroleum resources:

Mineral resources, petroleum resources and basic raw materials are important natural resource assets and are a vital part of the economy, contributing 30% to Western Australia's gross domestic product....

The Western Australian Petroleum Industry accounts for a substantial portion of the State's earnings from resources development. Onshore gas fields and pipelines carrying gas to domestic markets, processing plants and other industrial sites, require protection in the form of setback distances and dedicated easements, that safeguard the infrastructure and the safety of local communities. The activities of the oil and gas industries are administered by the Department of Mineral and Petroleum Resources, using petroleum legislation and regulations.

...

Planning strategies, schemes and decision-making should:

- (i) Identify and protect important and economic mineral resources to enable mineral exploration and mining in accordance with acceptable environmental standards.
- (ii) Identify and protect important basic raw material resources and provide for their extraction and use in accordance with Statement of Planning Policy No. 10: Basic Raw Materials.
- (iii) Support sequencing of uses where appropriate to maximise options and resultant benefits to community and the environment.
- (iv) Have regard to the State Gravel Supply Strategy (1998), the draft Towards a State Lime Strategy (2001) and any other Government adopted basic raw material or mineral strategy, in considering proposals for the extraction of basic raw materials and mineral resources.
- (v) Support, where possible, improved efficiencies in the production and consumption of mineral and basic raw material resources to ensure their availability for future environmental and human uses.

Per the above provisions, the applicable local planning strategies identify the gas fields and recognise their economic importance to the State.

Section 5.10 of SPP 2.0 relates to greenhouse gas emissions. It states:

There is widespread awareness of the need to increase the efficiency with which energy is used in Western Australia, including the need to reduce our reliance on energy produced from non-renewable resources such as fossil fuels. The primary objective is to reduce greenhouse gas emissions by means including (but not limited to) increasing energy efficiency, decreasing reliance on non-renewable fuels, and increasing usage of renewable energy sources.

The most recent National State of the Environment report recognises that Australians have a high per capita level of greenhouse emissions by world standards, increasing by 16.9% between 1990 and 1998.

Guided by the National Greenhouse Strategy (1998), the draft State Sustainability Strategy (2002), and the State greenhouse strategy currently being developed, planning can contribute to reducing the use of energy by the community through the design of urban settlements, promoting the use of alternative fuels and encouraging landscaping to provide energy efficient microclimates. Planning can also contribute to reductions in greenhouse gas emissions by reducing car dependency and encouraging the retention of vegetation and promoting revegetation in land use and development proposals.

Planning strategies, schemes and decision making should:

•••

(iii) Support the use of alternative energy generation, including renewable energy, where appropriate.



The State's planning framework recognises gas as an alternative energy source to other sources with higher emissions such as coal. For instance, Section 2.3 Energy of the State Planning Strategy 2050 includes under the heading 'State challenges' *"Further development of offshore and onshore gas reserves can also provide a transition away from fossil fuels that have higher emissions, such as coal."* This is included as an aspiration in Table 11 of the State Planning Strategy 2050.

#### 5.3.1 State Planning Policy 2.5 – Rural Planning

State Planning Policy 2.5 – Rural Planning (**SPP 2.5**) applies to all rural zoned land in Western Australia. The intent of SPP2.5 is to protect and preserve Rural zoned land, to ensure its economic, natural resource, food production, environmental and landscape values are maintained.

Pursuant to the Mingenew Scheme, SPP 2.5 is read as part of that Scheme.

#### Protection of rural land and land uses

Section 5.1 of SPP 2.5 provides measures for the protection of rural land and land uses. **Table 4** below provides an assessment of the proposal against the relevant provisions of SPP 2.5.

Policy measure	Proposal				
Requiring that land use change from rural to all other uses be planned and provided for in a planning strategy or scheme.	Both Shire's local planning strategies provide for the nature of the proposed development (onshore gas). There are also numerous state and local strategic planning documents which encourage the development of clean energy. The proposed development will not impact on the surrounding agricultural uses				
	and the impact of the proposed development on the rural setting is considered negligible. The proposal is therefore appropriate for consideration and warrants approval.				
Retaining land identified as priority agricultural land in a planning strategy or scheme for that purpose.	The development site is not identified for 'priority agricultural land'.				
Ensuring retention and protection of rural land for biodiversity protection, natural resource management and protection of valued landscapes and views.	The proposed development is supported by visual and environmental assessments which demonstrate that no areas for biodiversity protection will be adversely impacted, and that negligible visual impact is experienced. Refer <b>Appendix 9</b> and <b>Appendix 11</b> , Environmental Impact Assessment Overview & Visual Impact Report Summary. This reporting will be expanded upon as the Project progresses.				
Protecting land, resources and/or primary production activities through the State's land use planning framework.	The subject site is not identified for any particular resources or primary production activities under the planning framework.				
Creating new rural lots only in accordance with the circumstances under which rural subdivision is intended in Development Control Policy 3.4: Subdivision of rural land.	No new rural lots or fragmentation of land will be created as a result of the proposed development.				
Preventing the creation of new or smaller rural lots on an unplanned or ad-hoc basis, particularly for intensive or emerging primary production land uses.					

**PS** 

Policy measure	Proposal
Comprehensively planning for the introduction of sensitive land uses that may compromise existing, future and potential primary production on rural land.	The operations village relates wholly to the proposed development. No sensitive land uses are proposed as part of this application.
Accepting the impacts of well-managed primary production on rural amenity.	The proposed development does not negatively impact on the capability of primary production of any neighbouring rural lots.

#### Regional variation, economic opportunities and regional development

#### Section 5.5 of SPP 2.5 provides:

Western Australia is a large and diverse State with regional variations of climate, economic activity, cultural values, demographic characteristics and environmental conditions. The WAPC's decisions will be guided by the need to provide economic opportunities for rural communities and to protect the State's primary production and natural resource assets. WAPC policy is to:

•••

(d) recognise the differing needs of the various regions, and consider regional variations where they meet the stated objectives of this policy and are supported in strategies and schemes.

As identified in section 4 of this report, the State Planning Strategy 2050 and the relevant local planning strategies identify the locality's prospective onshore gas exploration and production capabilities, and the extraction and processing of gas is therefore a suitable use under section 5.5 of SPP 2.5.

#### Managing and improving environmental and landscape attributes

Section 5.10 of SPP2.5 relates to environmental and landscape attributes. A Visual Impact Assessment has been prepared in support of this application and details the proposed development is largely obscured from view by vegetation and due to the topography of the landscape.

Refer **Appendix 11** for the Visual Impact Assessment prepared in support of the development application.

#### Preventing and managing impacts in land use planning

Section 5.12 of SPP 2.5 relates to managing land use impacts. Clause 5.12.1(b) states:

where a development is proposed for a land use that may generate off-site impacts, there should be application of the separation distances used in environmental policy and health guidance, prescribed standards, accepted industry standards and/or Codes of Practice, followed by considering –

- (i) whether the site is capable of accommodating the land use; and/or
- (ii) whether surrounding rural land is suitable, and can be used to meet the separation distances between the nearest sensitive land use and/or zone, and would not limit future rural land uses; and
- (iii) whether if clauses (i) and/or (ii) are met, a statutory buffer is not required;

Per section 3.4(f) of SPP 2.5, the applicable environmental policy guidance is the Environmental Protection Authority's (**EPA**) Environmental Protection Guidance Statement No. 3: Separation Distances between Industrial and Sensitive Land Uses (**GS3**) which provides guidance on recommended separation distances between many rural land uses and sensitive land uses. GS3 assists in the determination of land use buffers and planning decision-making. Appendix 1 of GS3 provides generic separation distances between industrial and sensitive land uses, beyond which site-specific technical analysis is not required. The closest industry in Appendix 1 of GS3 to match the Lockyer Gas Project is the following:

Industry	Description of industry	DoE Licence or Registration category (*)	Key Government agencies for advice or approvals	Code of Practice (CoP) / environmental requirements	Impacts				Buffer distance in metres and qualifying notes	
					Gaseous	Noise	Dust	Odour	Risk	
Oil or gas extraction from land or offshore	production from wells involving primary separation or treatment	√ (10)	DoIR, DPI		$\checkmark$	V		V	V	2000
Oil or gas production (other)	production of oil or gas, including gas reforming	√ (11)	DoIR		$\checkmark$	V		V	V	2000

The wells do not involve any primary separation or treatment of extracted gas. Accordingly, they are not subject to generic separation distances under GS3.

The central processing facility is approximately 1,700m northeast of an existing residence at 25116 Midlands Road, Mount Horner. Accordingly, consideration and of the identified risk and their management is given below.

Notwithstanding, having regard for the assessment provided in **Table 4**, the proposed amendment is consistent with SPP2.5 and accordingly warrants approval.

#### Gas Releases

The main risk introduced by the Lockyer gas facilities is a loss of containment of the processed hydrocarbons resulting in a gas release.

The Lockyer facilities will be designed to comply with Australian Standards, or where Australian Standards are unavailable, international standards widely in use within the oil and gas industry. All equipment and processes used within the facility are industry standard, and no new or novel technology is proposed.

As part of the licensing and regulation of the facility, MinRes is required to develop the Lockyer Gas Facility Safety Case, which will be approved by the regulator, the WA Department of Energy, Mines, Industry Regulation and Safety.

A formal safety assessment will be completed by MinRes to support the safety case. The safety assessment will look at all major accident (hydrocarbon release) scenarios and will include potential events that originate within the site that could have an impact beyond the site boundaries. The formal safety assessment will include a gas release and dispersion analysis which will model credible gas releases from the site (based on industry accepted modelling) and define the extent of any gas clouds that may form in the event of a release.

Systematic risk analysis has not identified any scenarios that are expected to impact stakeholders or the environment external to the sites. The facilities design and location of the central processing facility within the overall site will ensure that any potentially released gas cloud is fully contained within the immediate vicinity of the plant, and wholly within the site, prior to being naturally dispersed to below flammability or toxicity limits. The gas processed at the Lockyer Gas Project is less dense than air and will not settle at ground level. There are no toxic or noxious gases normally released from the facilities.

The Lockyer facilities will include gas detection to provide early notification of any leaks, and trigger activation of the automated safety system responses, including shutdown of all production and blowdown of the facilities (via the emergency flare system) to remove pressurised hydrocarbons from equipment.

The Lockyer Gas Project facilities are designed to meet industry best practice. All hydrocarbon streams are fully contained within suitably pressure rated piping and equipment, and there are no continuously vented hydrocarbon gas streams associated with the Lockyer facilities. All waste gas streams are incinerated or flared to ensure that hydrocarbons are fully combusted and present no flammable, air quality or health risks.

## Air Quality / Air Emissions

Air dispersion modelling from the proposed operations was undertaken to assess the potential air quality impacts of atmospheric emissions from the Project. This considered expected pollutants from the Lockyer facilities based on the equipment types and sizes specified for the central processing facility, in conjunction with other regional emission sources.

The air dispersion modelling compared the predicted total ground level concentrations of pollutants at sensitive receptor locations against the relevant ambient air quality criteria defined by the WA Department of Water and Environmental Regulation, supplemented by the National Environment Protection Ambient Air Quality Measure 2016, including revised limits for NO<sub>2</sub> introduced in 2021.

The air dispersion modelling predicted cumulative ground level concentrations for all air pollutants will be below the corresponding ambient air quality and workplace exposure standard criteria at all sensitive receptor locations. The pollutant that most closely approached the guideline was the annual average for PM<sub>2.5</sub>, however this was a function of the assumed regional background concentrations, and the contribution from the Lockyer plant to the predicted concentrations was considered negligible.

The house at 25116 Midlands Road is the closest sensitive receptor to the Lockyer gas facilities.

#### Noise

The Lockyer Gas Project facilities will be designed to meet occupational health noise exposure limits as well as environmental external receptor noise emission limits. Noise studies have been conducted for the central processing facility, specific to the location of the gas plant and considering the location of noise generating equipment, noise emissions from individual equipment, and the location of sensitive receptors in the surrounding environment.

The predicted noise levels at all sensitive receptors comply with regulatory limits.

Noise emissions at 25116 Midlands Road, an occupied property within the same landholding as the central processing facility facilities, are predicted to be 35 dB(A), consistent with the overnight allowable limit for the10%-time exceedance level. Noise levels at this location for the 1% exceedance level are predicted to be 39dB(A), which is 4dB(A) below the allowable limit. It should be noted the modelled noise predictions are considered conservative, having used worst case meteorological and ground absorption conditions, as well as assuming all equipment in the facility is operating simultaneously.

Following commencement of operations, a noise survey will be conducted to demonstrate the facility equipment meets the noise limits guaranteed by equipment vendors and noise emissions are consistent with the modelled predictions. Engineering controls (e.g., insulation or enclosures) will be used to treat selected equipment if required.

Refer Appendix 7 for the Environmental Noise Assessment prepared for this application.

#### Odour

Odours from the Lockyer facilities are considered highly unlikely to impact areas outside the sites.

Hydrocarbon gas and liquids processed by the Lockyer central processing facility facilities are fully contained within enclosed piping and vessels. The drainage system is designed to contain any spills in the immediate vicinity to allow immediate clean up. Segregated drains will be installed to ensure there is no potential cross contamination from the facility drains to the stormwater runoff, which will be allowed to flow as unimpeded as possible. Chemicals, greases, and other lubricants required to support operations will be stored in closed containers.

Wastewater from the facility (excluding black and grey water) will be routed to evaporation ponds for disposal. Some local odours may be experienced occasionally from the evaporation ponds, however the process wastewater will be highly treated to remove hydrocarbons (to less than ~15 mg/L) prior to discharge, minimising this risk. The evaporation ponds are designed to allow clean out of any solid materials that may accumulate.

Sewage and grey water will be treated in a health department approved sewage treatment system. Any solid wastes associated with this system will be periodically removed off site by a licensed specialist contractor, for disposal in a licensed facility. Treated liquids from the sewage treatment system will be dispersed on-site using a dedicated spray field area. The proposed system is consistent with MinRes' designs for other facilities in operation.

At the wellheads, all gas and chemical injection systems are fully enclosed in suitably rated piping or vessels, and there are no continuous releases to the environment. Wellhead facilities are powered via a combination of solar with batteries and pressurised air.

In light of the above, the existing house at 25116 Midlands Road will not be impacted by off-site emissions or risk from the central processing facility and the proposal therefore meets the requirements for managing land use impacts under SPP 2.5.

# 5.3.2 State Planning Policy 2.7 - Public Drinking Water Source

One of the objectives of State Planning Policy 2.7 – Public Drinking Water (**SPP2.7**) is to "ensure that land use and development within public drinking water source areas is compatible with the protection and long-term management of water resources for public water supply."

Pursuant to the Mingenew Scheme, SPP 2.7 is read as part of that Scheme.

The proposed development is not in or near any public drinking water source areas.

#### 5.3.3 Draft State Planning Policy 2.9 - Water, and Government Sewerage Policy (2019)

Draft State Planning Policy 2.9 Water (**SPP2.9**) and the Government Sewerage Policy (2019) both intend to preserve and protect water resources as well as public health and amenity.

Whilst SPP2.9 provides guidance to the decision making of development applications that affect water bodies and sources, the Government Sewerage Policy (2019) details the minimum requirements for on-site sewerage disposal. It is intended the proposed development will utilise potable ground water and provide an on-site sewerage treatment system. Before proceeding with either, the Proponent will obtain the relevant permits required and in strict accordance with the relevant policies.

# 5.3.4 State Planning Policy 3.6 – Infrastructure Contributions

State Planning Policy 3.6 – Infrastructure Contributions (**SPP 3.6**) provides that a decision maker can impose infrastructure contributions as part of the development application process if they can demonstrate there is both a need and nexus, and other principles of SPP 3.6 are met. Pursuant to the Mingenew Scheme, SPP 3.6 is read as part of that Scheme.



The Proponent is committed to upgrades on both Strawberry North-East Road and Midland Road following consultation with the Shire of Irwin and Main Roads.

#### Strawberry North East Road Upgrades

Proposed is the construction of an approximately 400m long and 8m wide access road, connecting the central processing facility to Strawberry North-East Road within an existing 20m wide road reserve. Similarly, proposed is upgrading Strawberry North-East Road between the aforementioned access road and Midland Road to a sealed 8m wide road, consistent with MRWA RAV Guidelines.

Refer Appendix 5, Access Memorandum.

#### Midlands Road

Proposed is to upgrade the existing Strawberry North-East Road / Midlands Road intersection to a simple right turn and basic left turn treatment. The intersection will also be widened to cater for RAV7 (20m) vehicles for the left in and left out movements.

Refer Appendix 6, Transport Impact Assessment.

#### 5.3.5 State Planning Policy 3.7 – Planning in Bushfire Prone Areas

State Planning Policy 3.7 – Planning in Bushfire Prone Areas (**SPP 3.7**) seeks to implement effective, risk-based land use planning and development to preserve life and reduce the impact of bushfires on property and infrastructure.

Sections of the central processing facility site are identified as being 'bushfire prone' by DFES. Accordingly, the proposed development is required to comply with the relevant policy measures of SPP3.7 and associated documents.

To this end, a Bushfire Attack Level (**BAL**) assessment has been undertaken to determine the potential bushfire risk on the proposed development.

The BAL assessment evaluates vegetation within 150m of the subject site and determines a BAL rating for the central processing facility. All of the specialised equipment as well as the administrative buildings are located within areas determined to be BAL-LOW. The operations village has been partially determined to have a BAL rating of BAL-12.5 in the northwest corner. Due to the BAL rating and in applying the precautionary principle, a BMP has been prepared in support of this application.

The assessment considers the bushfire impacts associated with the proposed redevelopment and demonstrates the proposal will comply with the SPP3.7, subject to the implementations outlined within the BMP and summarised below as:

- Asset protection zone to be placed and maintained on the western and northern side of the internal access roadways to the operations village to no less than 25m off the centre line of the roadway.
- Dedicated fire services system to be provided for the proposed development on Lot 3558 or Lot 3561, accessed for fire-fighting purposes only and constructed in agreement with DFES operation requirements guidelines and local government.

Refer to Appendix 12, Bushfire Management Plan.

#### 5.3.6 State Planning Policy 7.0 - Design of the Built Environment

State Planning Policy No.7.0 – Design of the Built Environment (**SPP 7.0**) is the lead policy that elevates the importance of design quality, and sets out the principles, processes and considerations which apply to the design of the built environment in Western Australia, across all levels of planning and development.

SPP 7.0 establishes a set of ten 'design principles', providing a consistent framework to guide the design, review and decision-making process for planning proposals.

A design statement has been provided for the operations village addressing the ten design principles. Refer section 3.5.6.

Consistent with WAPC decisions on similar proposals, an independent design review of the proposed development is not necessary given the site's isolation and that its industrial design was appropriate for its intended function.

#### 5.4 Other WAPC policies

#### 5.4.1 Position Statement: Workforce Accommodation

The WAPC's Position Statement: Workforce Accommodation (**PSWA**) has been prepared by the WAPC to assist users of the planning system in understanding the land use planning considerations for workforce accommodation. One of its purposes is to outline the development requirements for workforce accommodation under the PD Act and associated regulation. The PSWA's position statement is:

Where practicable, workforce accommodation should be provided in established towns, in locations suitable to its context, to facilitate their ongoing sustainability. Planning and development of workforce accommodation should be consistent with local planning strategies and schemes, except where the Mining Act 1978 and State Agreement Acts prevail.

In this regard, it is critical that the operational village is located at the central processing facility site, given the relatively small number of staff compared to the scale of the facilities operation. Having staff located at the central processing facility manages risk in the facilities operation and in the event of an incident.

Notably, the Shire of Irwin Local Planning Strategy and Irwin Scheme do not have specific provisions on the location or design of workforce accommodation facilities.

The PSWA includes a table summarising parameters that planning decision-makers can and cannot have regard to when considering proposals for workforce accommodation:

#### Table 5 - Extract from WAPC's Position Statement: Workforce Accommodation - planning decision-makers can:

Control	Not control
<ol> <li>Where a planning application is required, the terms of an approval related to:         <ul> <li>(a) timeframe</li> <li>(b) setbacks</li> <li>(c) landscaping</li> <li>(d) parking and access</li> <li>(e) location and appearance of buildings</li> <li>(f) integration with surrounding areas any other land use planning matters relevant to the site.</li> </ul> </li> <li>Where a planning application is required, the ability to approve/refuse a proposal considering local planning scheme requirements.</li> </ol>	<ol> <li>Any matters specified by a State Agreement Act.</li> <li>The issuing of a mining tenement made under the Mining Act 1978 - which can include a general purpose lease for 'any other purpose directly connected with mining operations' (may be located in a townsite).</li> <li>That workforce accommodation needs to be met by permanent accommodation rather than 'villages'.</li> <li>That workforce accommodation be located in a town rather than a mine-site.</li> <li>Whether the land for workforce accommodation is owned by the Crown or held in fee simple.</li> <li>Requirements for 'community contributions' by workforce accommodation proponents.</li> </ol>


Control	Not control	
	7. Requirements for workforce accommodation to achieve 'legacy benefits'.	

The proposed operational workforce accommodation facility has been designed to a high standard, consistent with contemporary facilities and in line with other MinRes accommodation facilities. It therefore warrants approval.

### 5.5 Shire of Irwin Local Planning Scheme No. 5

The *Shire of Irwin Scheme No. 5* (**Irwin Scheme**) is a local planning scheme prepared under the PD Act which applies to the local government district of the Shire of Irwin as shown on the Scheme map, and which therefore applies to the proposed central processing facility.

The provisions of the Irwin Scheme are supplemented by the deemed provisions contained in Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015.* Refer **section 5.7** for the applicable deemed provisions. Where a deemed provision is inconsistent with a provision of the Irwin Scheme, the deemed provision prevails to the extent of the inconsistency.

#### 5.5.1 Aims

Aims of the Irwin Scheme include:

- d) to assist employment and economic growth by facilitating the timely provision of suitable land for retail, commercial, industrial, entertainment and tourist developments as well as providing opportunities for home based employment;
- f) to promote the sustainable use of rural land for agricultural purposes whilst accommodating other rural activities;
- g) to protect and enhance the environmental values and natural inland and coastal resources of the Scheme area and to promote ecologically sustainable land use and development; and
- h) to safeguard and enhance the character and amenity of the built and natural environment of the Scheme area.

The proposed development is estimated to create up to 350 jobs during the construction phase from ~July 2024 and approximately 40 permanent staff once operational, with a focus on local employment and skills. It is expected the proposed development will have a negligible impact on rural activities occurring in the area both during construction and operation. A detailed operational management plan will be prepared during the detailed design stage to ensure this. Further, technical reporting completed in support of the proposal includes environmental and visual impact reporting detailed in **section 3.9** and **3.11**, respectively.

Ultimately, the proposed development is considered generally consistent with the aims of LPS5 and warrants approval accordingly.

### 5.5.2 Zoning

The land upon which the central processing facility is proposed is zoned General Farming. An assessment of the proposed development against the objectives for the General Farming zone is provided in **Table 6**.

Table 6 - Objectives of the General Farming zone	of the General Farming zone
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Objective	Comment
a) To provide for rights of vehicular access, unfettered as to time, location and circumstance, to any land subject of a planning approval.	Refer <b>section 3.6</b> for consideration of access and servicing. The Proponent has committed to road upgrades as part of the proposed development.
b) To ensure the preservation of the rural character and rural appearance of land within the zone.	Refer <b>section 3.11</b> for consideration of the visual impact of the proposed development. A Visual Impact Assessment has been completed demonstrating a negligible impact on the appearance of the land by the proposed development. Operational management plans developed as part of the detailed design stage will ensure the operations of the proposed development do not impact the rural character of the area.
c) To protect the economic viability of agricultural production via support only for subdivision or boundary relocation which retains or results in lot or location sizes which facilitate ongoing agricultural activity.	No subdivision is proposed as part of this application.
d)To preserve and protect the natural undeveloped land areas throughout the zone and to provide for the planting of trees and other suitable vegetation via the imposition of conditions on any planning approval issued, in order to assist in balancing the greenhouse effect, provide shade, prevent erosion, reduce salinity and provide habitats for native fauna.	Refer to <b>section 3.9</b> for consideration of the environment. It should be noted that all environmental risks will be assessed and managed pursuant to the <i>Environmental Protection Act 1986.</i> A formal Environmental Impact Assessment will be submitted via Part IV Section 38 referral to the EPA. Formal submission is planned for January 2024. The majority of the subject site is already cleared. Minimal clearing of native vegetation is proposed. Any clearing will be subject to clearing permits, separate to this application. Refer to <b>section 3.5</b> for consideration of the landscaping proposed at the Operational Village.
e) To ensure that natural drainage patterns/catchments throughout the Shire are paid regard to, via the appropriate location of man-made drainage networks.	A Stormwater Management Plan ( <b>SWMP</b> ) will be prepared as part of the detailed design stage. The SWMP will consider natural drainage patters and catchments appropriately locate any man-made drainage systems required.
f) To limit the number of dwellings to one per lot, unless for specific farm operation purposes, to discourage fragmentation or rural living use of agricultural land.	There are no existing dwellings on Lot 3561. The Operational Village is the only habitable compound located on Lot 3561.

The proposed development is consistent with the objectives of the General Farming zone and warrants approval accordingly.

### 5.5.3 Land Use Permissibility

Land use permissibility is set out in the Zoning Table of the Irwin Scheme. Clause 4.4.1 provides that where a specific use is defined, it is excluded from general terms used to describe other uses. And clause 4.4.2 provides for the circumstances where a use does not fall under any of the defined use classes listed in the Zoning Table.



While the Shire of Irwin Local Planning Strategy provided that onshore gas extraction should be formalised in the Irwin Scheme in terms of definitions, Scheme provisions and associated guidance material, it appears that has not happened and there is no specific use class listed in the Zoning Table relevant to the processing of gas and incidental accommodation of the operational workforce. It is likely, therefore, the processing of gas falls under the use class of 'industry – general, defined as:

Industry-general: means an industry other than a cottage, extractive, light, mining, rural, or service industry.

The Scheme definition of 'industry' is:

*Industry:* means premises used for the manufacture, dismantling, processing, assembly, treating, testing, servicing, maintenance or repairing of goods, products, articles, materials or substances and includes premises on the same land used for:-

- a) the storage of goods;
- b) the work of administration or accounting;
- c) the selling of goods by wholesale or retail; or
- d) the provision of amenities for employees,

incidental to any of those industrial operations.

Industry – general is an 'X' prohibited use in the General Farming zone. Accordingly, approval relies on discretion being exercised under Part 17 of the PD Act. In this regard, it is considered the proposed use is appropriate having regard to the strategic planning framework and the provisions of SPP 2.0 which identify and promote the protection of onshore gas extraction and processing in the locality.

#### 5.5.4 Development Standards and Requirements

The following development standards apply to the central processing facility under the Irwin Scheme.

#### Table 7 - Irwin Scheme development standards

Clause	Provided / Comment	Compliance	
5.8 Car parking standards	5.8 Car parking standards		
5.8.1 The number of onsite car parking bays to be provided for specified developments shall be in accordance with clause 5.24. Where a car parking requirement is not specified for a particular development in clause 5.24 the local government shall determine the parking standard. The local government may also determine that a general car parking standard shall apply to a particular site or area irrespective of the development proposed in cases where it considers this to be appropriate.	There is no applicable minimum car parking rate for industry – general under clause 5.24.	~	
5.8.2 The design of off-street parking areas including parking for disabled shall be in accordance with Australian Standards Act AS 2890.1 or AS 2890.2 as amended from time to time. Car parking areas shall be constructed, marked, drained and thereafter maintained to the satisfaction of the local government.	Car parking bays will meet or exceed the minimum standard.	~	

PS

Clause	Provided / Comment	Compliance
5.12 Waste disposal		
Land within the Scheme Area shall not be used for the purpose of storage or disposal of vehicle bodies, rubbish or industrial wastes (whether liquid or solid) without the written approval of the local government.	The Proponent will obtain all the necessary approvals prior to operation of the facility.	✓
5.14 Screening of development storage areas		
The owner of land on which there is stored, stacked or allowed to remain any materials which in the local governments opinion detract from the amenity of the area shall completely screen the said materials from adjoining properties and from streets in a manner specified by and to the satisfaction of the local government, by means of walls, fences, hedges or shrubs.	The subject site is remote and located approximately 1km from Strawberry North East Road, 2km from Midlands Road and 3km from Burma Road. As required, storage areas can be screened from view.	✓
5.15 Development of land without constructed road	frontage	
<ul> <li>Notwithstanding any other provisions of the Scheme, the local government's Planning Approval is required for the development of land abutting an unconstructed Crown road reserve or a lot which does not have frontage to a Crown road reserve.</li> <li>In considering such an application, the local government may:-</li> <li>a) refuse the application until the road has been constructed or access by means of a constructed road is provided; or</li> <li>b) grant approval to the application subject to a condition requiring the applicant to pay a sum of money in or towards the cost of constructing the road or part thereof and any other condition it considers fit to impose; or</li> <li>c) require other legal arrangements are made for permanent access, to the satisfaction of the local government.</li> </ul>	Refer to <b>section 3.6</b> for consideration of access and servicing. The Proponent has agreed to upgrade the existing road network as part of the proposed development. This includes construction of an access road within an existing 20m wide Road Reserve (Land ID Number 3727386).	•
5.20 Building height		
Except within the Residential zone, the maximum permissible height of any building shall be 10m, measured from natural (existing) ground level immediately below that point.	<ul> <li>The central processing facility comprises a combination of highly specialised equipment and structures that are designed as per operational requirements. Infrastructure proposed to be constructed within the central processing facility include:</li> <li>Amine regeneration system (18 m high)</li> <li>Amine contractor tower (18 m high)</li> <li>Still column tank (18 m high)</li> <li>Thermal oxidiser (39.6 m high)</li> <li>HP/LP flare (69.7 m high)</li> <li>Other infrastructure (average 5 m high).</li> <li>Refer Appendix 11 for consideration of the visual impact of the development which has been determined to be negligible.</li> </ul>	VARIATION



Clause	Provided / Comment	Compliance
5.21 Flora preservation and planting		
5.23.1 No natural vegetation shall be cleared from any crown reservation or removed from any road reservation in the Shire whether or not such reservation has been developed with a constructed roadway, without the written approval of local government and/or any other responsible authority.	The relevant clearing permits will be obtained prior to any clearing of native vegetation.	✓
5.23.2 In considering any rezoning or development proposal in any zone specified on the Scheme Map, local government may at its discretion unless otherwise specified in the provisions of the Scheme, require the preservation and or planting of flora as a condition of rezoning and or planning approval.	Noted. Refer <b>section 3.5</b> for consideration of the landscaping proposed in association with the Operational Village.	~
5.23.3 Areas of flora preservation and planting required by Clauses 5.23.1 and 5.23.2 may constitute all or part of the minimum landscaping requirement where such a requirement applies under the Scheme. Required areas of flora preservation and planting may exceed the minimum landscaping requirement.	Noted. Refer above.	~
<ul> <li>5.23.4 Within any area approved for flora preservation purposes as a condition of planning approval, no indigenous flora may be felled without the approval of local government, except:</li> <li>a) where the flora is dead, diseased or dangerous; and</li> <li>b) for the purpose of a firebreak required by a Regulation or By-Law except that in order to preserve the amenity of the area local government may at its discretion vary the position of any required firebreak to avoid destruction of vegetation or due to the physical features of the subject land.</li> </ul>	Noted.	~
5.23.5 The local government may, by notice served upon individual landowners or developers of land, require the preservation of groups and/or corridors of flora and thereafter no landowner shall cut, remove or otherwise destroy any such flora unless the local government rescinds the notice or orders.	Noted.	V
5.23.6 Where any particular land is affected by the provisions of this Clause, the local government may impose a condition on a planning approval, or request a condition of subdivision approval, requiring a written undertaking that prospective purchasers will be advised of the provisions of the Scheme relating to flora preservation or planting.	Noted.	✓
5.24 Zone/use development table		
Min front boundary setback – 15m	>15m	$\checkmark$
Min rear boundary setback - 15m	>15m	✓
Min side boundary setback - 5m	>5m	✓
Min car parking spaces - not specified	N/A	N/A
Min Landscaping % of sitenot specified	N/A	N/A

The proposed development is generally consistent with the development requirements of the General Farming zone. Where variation is sought, it is minor and supported by technical reporting that demonstrates there is no substantive impact created by the variation. The proposed development therefore warrants approval accordingly.

### 5.6 Shire of Mingenew Local Planning Scheme No. 4

The Mingenew Scheme is a local planning scheme prepared under the PD Act which applies to the local government district of the Shire of Mingenew as shown on the Scheme map, and which therefore applies to the proposed gas extraction wells.

The provisions of the Mingenew Scheme are supplemented by the deemed provisions contained in Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015.* Refer **section 5.7** for the applicable deemed provisions. Where a deemed provision is inconsistent with a provision of the Mingenew Scheme, the deemed provision prevails to the extent of the inconsistency.

#### 5.6.1 Aims

Aims of the Mingenew Scheme include:

- (e) to ensure the protection of agricultural land by discouraging land uses and developments that may detract from the principle function of the land while maintaining opportunities for innovations in agriculture to establish within the Shire; and
- (f) to facilitate and promote mining, including any subsequent and related land uses and developments that are required as a result;

The proposed development will be supported by operational management plans and practises that ensure the protection of the surrounding the agricultural land from the facilities operation. The wellheads are essential to the extraction and export of natural gas in the Shire.

#### 5.6.2 Zoning

The land upon which the wellheads are proposed is zoned General Farming. An assessment of the proposed development against the objectives for the General Farming zone is provided in **Table 8**.

Objective	Comment
To provide for the maintenance or enhancement of specific local rural character.	A Visual Impact Assessment has been completed demonstrating a negligible impact on the appearance of the land by the proposed development. Operational management plans developed as part of the detailed design stage will ensure the operations of the proposed development do not impact the rural character of the area. Refer <b>Appendix 11</b> for the Visual Impact Assessment Summary.
To protect broad acre agricultural activities such as cropping and grazing and intensive uses such as horticulture as primary uses, with other rural pursuits and rural industries as secondary uses in circumstances where they demonstrate compatibility with the primary use.	The proposed central processing facility occupies but a fraction of the area to which the exploration permit applies. The central processing facility will be supported by operational management plans and practices that ensure there is no substantive impact to broadacre agricultural uses by the facilities operation. The proposed development is considered compatible.

Table 8 - Objectives of the Rural zone



Objective	Comment
To maintain and enhance the environmental qualities of the landscape, vegetation, soils and water bodies, to protect sensitive areas especially the natural valley and watercourse systems from damage.	Refer to <b>section 3.9</b> for consideration of the environment. It should be noted that all environmental risks will be assessed and managed pursuant to the <i>Environmental Protection Act 1986.</i> A formal Environmental Impact Assessment will be submitted via Part IV Section 38 referral to the EPA. Formal submission is planned for January 2024. Any clearing will be subject to clearing permits, separate to this application.
To provide for the operation and development of existing, future and potential rural land uses by limiting the introduction of sensitive land uses in the Rural zone.	No sensitive land uses are proposed.
To provide for a range of non-rural land uses where they have demonstrated benefit and are compatible with surrounding rural uses.	Refer to <b>section 3.3</b> for consideration of the economic benefit of the proposed development. The central processing facility is demonstrated to be compatible with the surrounding rural land uses throughout this report. Further, several technical reports have been prepared in support of this application demonstrating that related impacts such as waste, traffic, environmental and visual can be effectively managed.

The proposed development is consistent with the objectives of the Rural zone and warrants approval accordingly.

### 5.6.3 Land Use Permissibility

Land use permissibility is set out in the Zoning Table of the Mingenew Scheme. Clause 18(3) provides that where a specific use is defined, it is excluded from general terms used to describe other uses.

The Zoning Table does not contain a use class specific to the extraction of gas. It lists 'industry' as a use class, defined by the Scheme as:

*industry* means premises used for the manufacture, dismantling, processing, assembly, treating, testing, servicing, maintenance or repairing of goods, products, articles, materials or substances and includes facilities on the premises for any of the following purposes –

- (a) the storage of goods;
- (b) the work of administration or accounting;
- (c) the selling of goods by wholesale or retail;
- (d) the provision of amenities for employees;
- (e) incidental purposes;

The gas extraction wells extract gas from subsurface resources and transfers the extracted gas into pipelines which are fed into the central processing facility. The wells do not manufacture, dismantle, process, assemble, treat, test, service, maintain or repair the extracted gas. Accordingly, the gas extraction wells are not an 'industry' use under the Mingenew Scheme.

Clause 18(4) provides for the circumstances where a use does not fall under any of the defined use classes listed in the Zoning Table. It states:

The local government may, in respect of a use that is not specifically referred to in the zoning table and that cannot reasonably be determined as falling within a use class referred to in the zoning table -

- (a) determine that the use is consistent with the objectives of a particular zone and is therefore a use that may be permitted in the zone subject to conditions imposed by the local government; or
- (b) determine that the use may be consistent with the objectives of a particular zone and give notice under clause 64 of the deemed provisions before considering an application for development approval for the use of the land; or
- (c) determine that the use is not consistent with the objectives of a particular zone and is therefore not permitted in the zone.

The gas extraction is a use consistent with the Rural zone objective, being a non-rural land use with a demonstrated economic benefit and being compatible with surrounding rural uses. It is therefore a permitted use per clause 18(4)(a) of the Mingenew Scheme.

#### 5.6.4 Development Standards and Requirements

The following development standards apply to the wellheads under the Mingenew Scheme.

#### Table 9 - Mingenew Scheme development standards

Clause	Provided / Comment	Compliance
3. Rural zone		
2. In considering an application for development approval in the Rural zone, in addition to the matters outlined in Clause 67 of the deemed provisions the local government will have due regard for the following:	Refer to <b>section 5.7.2</b> for consideration of the matters outlined in clause 67 of the deemed provisions.	✓
<ul> <li>(a) any sensitive or incompatible uses and how the application has addressed minimisation of potential environmental and health impacts through separation distances and other measures;</li> </ul>	Refer <b>section 5.3.1</b> for consideration of managing land use impacts under SPP 2.5.	✓
(b) any wetland or remnant vegetation or other sensitive feature, and how the application has addressed the protection of the feature;	The wellheads are not located in proximity to any sensitive features and do not require the clearing of any native vegetation.	~
(c) evidence of a sustainable water supply that does not rely on catchment outside the lot, or damming of a stream that will impact on the water availability for another lot or lots;	The wellheads do not require a water supply.	N/A
(d) soil conditions, slope, soil type, rock, potential for water logging, foundation stability, and how the application has addressed these site characteristics; and	The Proponent has undertaken detailed site analysis pursuant to the relevant legislation.	✓
(e) proposals for treatment and disposal of waste products.	No waste treatment is proposed.	N/A



Clause	Provided / Comment	Compliance
5. Site development requirements		
1. Unless otherwise provided by the Scheme, development on all lots is subject to the setbacks, plot ratio and site coverage as outlined in Schedule 2:		
Min front setback – 30m	>30m	✓
Min rear setback – 20m	>20m	✓
Min side setback – 20m	>20m	✓
Landscaping % - N/A		N/A
6. Landscaping		
1. The landscaping requirement referred to in Schedule 2 means an open area designed, developed and maintained as garden planting and areas for pedestrian use. At the discretion of the local government, natural bushland, swimming pools and areas under covered ways may be included within the landscaped area.	N/A	N/A
7. Building height		
<ol> <li>The maximum height limit for buildings and structures above natural ground level irrespective of whether or not development approval is required is 10m.</li> <li>Notwithstanding clause 7.1, the local government may, after following the advertising procedures set out at clause 64 of the deemed provisions, permit the construction of buildings or structures in excess of the height limit specified where it is satisfied:</li> <li>(a) site constraints are such as to prevent the construction of a building or structure within height limits; or</li> <li>(b) additional height is critical to the function and operation of the proposed building or structure; and</li> <li>(c) the building or structure will be in harmony with the general character of buildings in the locality; and</li> <li>(d) the building or structure will not adversely affect the beauty, character, quality of environment or the townscape generally; and</li> <li>(e) the building or structure will maintain a satisfactory relationship to the boundaries of the lot on which it is to be constructed and relates generally to the siting, design and aspect of buildings on other nearby lots;</li> <li>(f) the building or structure will not impair the amenity or development of adjoining lots.</li> <li>3. For the purpose of clause 7.1, a building or structure does not include reference to a chimney, mast, satellite dish (not exceeding a diameter of 4 metres), pole, wind turbine or signal receiving or transmitting tower provided that the structure or facility is designed, sited and/or treated so as not to detract from the visual amenity of the locality.</li> </ol>	The tallest wellhead structure is 6.728m in height.	



Clause	Provided / Comment	Compliance	
8. Car parking and servicing			
<ol> <li>Where land is proposed to be developed as a use not listed in Schedule 3, the number of parking spaces required is to be determined by the local government having due regard to:         <ul> <li>(a) the nature of the proposed development;</li> <li>(b) the number of employees or others likely to be employed or engaged in the use of the land;</li> <li>(c) the anticipated demand for visitor parking; and</li> <li>(d) the orderly, proper and sustainable planning of the area.</li> </ul> </li> </ol>	No parking is proposed at wellhead sites. Visits to the wellheads will be infrequent as they are monitored remotely. It is reasonable for vehicles to park alongside the wellheads, given they are located on land that has already been cleared.	V	
13. Amenity			
1. No lot, building or appliance shall be used in such a manner as to permit the escape of smoke, dust, fumes, odour, noise, vibration or waste products in such quantity or extend in such manner as to create or to be a nuisance to any inhabitant of the surrounding neighbourhood or to traffic or persons using roads in the vicinity.	The wellheads do not emit any pollutants.	~	
15. Development of land abutting an unconstructed road			
<ol> <li>In considering any development application for the development of land abutting an unconstructed road reserve, the local government shall either:         <ul> <li>(a) refuse the application until the road has been constructed or direct access to a constructed road is provided; or</li> <li>(b) grant approval subject to a condition requiring the applicant to contribute to the full or partial cost of constructing the road as determined by the local government and impose any other conditions it considers necessary; or</li> <li>(c) require other legal arrangements to be made for permanent legal access to the satisfaction of the local government.</li> </ul> </li> </ol>	All wellheads are accessible from constructed roads.	~	

The proposed wellheads are entirely consistent with the development requirements of the Rural zone. The proposed development therefore warrants approval accordingly.

### 5.7 Deemed Provisions

The deemed provisions in Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations* 2015 apply as if they are incorporated into both the Irwin Scheme and Mingenew Scheme.

#### 5.7.1 Bushfire Risk Management

Part 10A of the deemed provisions applies to proposals for habitable buildings in a bushfire prone area.

Refer Appendix 12 for the BMP providing a BAL contour map as required by Part 10A.

#### 5.7.2 Matters to be Considered

Clause 67(2) of the Deemed Provisions sets out the matters for which due regard is to be given when considering a development application. Refer **Table 10** below for an assessment of the relevant matters.

#### Table 10 - Matters to be considered

Matter to be considered	Provided
(a) the aims and provisions of this Scheme and any other local planning scheme operating within the Scheme area;	Refer <b>section 5.5</b> and <b>5.6</b> for consideration of the applicable Schemes.
(b) the requirements of orderly and proper planning including any proposed local planning scheme or amendment to this Scheme that has been advertised under the Planning and Development (Local Planning Schemes) Regulations 2015 or any other proposed planning instrument that the local government is seriously considering adopting or approving;	No planning instruments relevant to the proposal are being seriously considered.
(c) any approved State planning policy	Refer <b>section 5.3</b> for consideration of the applicable State Planning Policies
(d) any environmental protection policy approved under the Environmental Protection Act 1986 section 31(d)	Refer <b>section 5.3.1</b> for consideration of the EPA's Environmental Protection Guidance Statement No. 3: Separation Distances between Industrial and Sensitive Land Uses.
(e) any policy of the Commission	Refer <b>section 5.4.1</b> for consideration of The WAPC's Position Statement: Workforce Accommodation.
(f) any policy of the State	Refer <b>section 5.3.3</b> for consideration of the Government Sewerage Policy (2019).
(fa) any local planning strategy for this Scheme endorsed by the Commission	Refer <b>section 4.2</b> and <b>4.3</b> for consideration of the applicable local planning strategies.
(g) any local planning policy for the Scheme area;	Refer <b>section 5.8</b> for consideration of applicable local planning policies.
(h) any structure plan or local development plan that relates to the development	N/A
(i) any report of the review of the local planning scheme that has been published under the Planning and Development (Local Planning Schemes) Regulations 2015	N/A
(j) in the case of land reserved under this Scheme, the objectives for the reserve and the additional and permitted uses identified in this Scheme for the reserve	An access route is proposed in a road reserve that is not yet constructed.
(k) the built heritage conservation of any place that is of cultural significance	No built heritage of any significance is located in proximity to the proposed development.
<ul> <li>the effect of the proposal on the cultural heritage significance of the area in which the development is located;</li> </ul>	The Proponent has undergone extensive consultation with key stakeholders, including the local community and traditional owners. Refer <b>section 1.3</b> which details the consultation completed and planned.
<ul> <li>(m) the compatibility of the development with its setting, including –</li> <li>(i) the compatibility of the development with the desired future character of its setting; and</li> <li>(ii) the relationship of the development to development on adjoining land or on other land in the locality including, but not limited to, the likely effect of the height, bulk, scale, orientation and appearance of the development:</li> </ul>	The compatibility of the proposed development with its setting is detailed throughout this report. As discussed, the proposed development is consistent with the relevant planning strategies that allude to and envision natural gas exploration, production and export in the region. Further extensive technical reporting has been undertaken demonstrating the proposed developments has no substantive impact on the current landscape.

Ma	tter to be considered	Provided
(n)	the amenity of the locality including the following – (i) environmental impacts of the development; (ii) the character of the locality; (iii) social impacts of the development;	Refer <b>section 3.9</b> for consideration of environmental impacts. As discussed, the proposed development is consistent with the relevant planning strategies that allude and envision the proposed development in the region. Relatedly, the Proponent has undertaken extensive stakeholder consultation to ensure the character of the region and locality is respected (refer <b>section 1.3</b> ). The proposed development is expected to generate up to 350 jobs during construction and employ approximately 40 full-time site based staff once operational with a focus on local skills and employment (refer <b>section 3.3</b> ).
(0)	the likely effect of the development on the natural environment or water resources and any means that are proposed to protect or to mitigate impacts on the natural environment or the water resource	Refer <b>section 3.9</b> for consideration of environmental impacts.
(p)	whether adequate provision has been made for the landscaping of the land to which the application relates and whether any trees or other vegetation on the land should be preserved;	Refer <b>section 3.5</b> which details the proposed landscaping associated with the Operational Village.
(q)	the suitability of the land for the development taking into account the possible risk of flooding, tidal inundation, subsidence, landslip, bushfire, soil erosion, land degradation or any other risk	The Proponent has undertaken an extensive site analysis as per their own due diligence and pursuant to the relevant legislation.
(r)	the suitability of the land for the development taking into account the possible risk to human health or safety	Refer <b>section 3.9</b> for consideration of environmental impacts. Operational management plans and practices will further ensure there is no risk to human health or safety.
(s)	<ul> <li>the adequacy of –</li> <li>(i) the proposed means of access to and egress from the site; and</li> <li>(ii) arrangements for the loading, unloading, manoeuvring and parking of vehicles;</li> </ul>	Refer <b>section 3.6</b> for consideration of access and servicing.
(t)	the amount of traffic likely to be generated by the development, particularly in relation to the capacity of the road system in the locality and the probable effect on traffic flow and safety;	Refer <b>section 3.6</b> for consideration of access and servicing.
(u)	<ul> <li>the availability and adequacy for the development of the following –</li> <li>(i) public transport services;</li> <li>(ii) public utility services;</li> <li>(iii) storage, management and collection of waste;</li> <li>(iv) access for pedestrians and cyclists (including end of trip storage, toilet and shower facilities);</li> <li>(v) access by older people and people with disability;</li> </ul>	Refer <b>section 3.8</b> for consideration of waste management.
(v)	the potential loss of any community service or benefit resulting from the development other than potential loss that may result from economic competition between new and existing husinesses:	The proposed development will not negate any community service whilst creating employment opportunities.

Matteria ha constitued	Dury total
Matter to be considered	Provided
<ul><li>(w) the history of the site where the development is to be located;</li></ul>	The Yamatji people are the traditional owners of the subject site. Since colonisation, and particularly following the land grant scheme of 1886 to the Midland Railway Company of Western Australia and construction of the nearby portion of the Midland railway in August 1891 (with a siding at Strawberry), the locality has been developed for broadacre agriculture and pastoral grazing. The Proponent has engaged with both the traditional owners and business located in the region (refer <b>section 1.3</b> ).
<ul> <li>(x) the impact of the development on the community as a whole notwithstanding the impact of the development on particular individuals;</li> </ul>	The proposed development will create employment opportunities for the local and broader community.
(y) any submissions received on the application;	Any submissions received during advertising will be considered.
(za) the comments or submissions received from any authority consulted under clause 66;	Any submissions received pursuant to clause 66 will be considered.
(zb) any other planning consideration the local government considers appropriate.	Refer <b>Table 9</b> for additional considerations of the Mingenew Scheme for the Rural zone that are in addition to clause 67(2).

### 5.8 Local Planning Policies

## 5.8.1 Shire of Irwin Local Planning Policy for Developer Contributions for Upgrades to Roads and Footpaths

The purpose of the Shire of Irwin's Local Planning Policy: Developer Contributions for Upgrades to Roads and Footpaths (**Developer Contributions LPP**) is to provide clear and consistent advice on the local government's expectations for road and footpath upgrading. It provides that where there is an identified nexus between the requirements for a road and/or footpath upgrade and the proposal, all applications for development approval made will be subject to the provisions of this policy. Relevant policy provisions include:

- 5. When determining a development application, if in the opinion of the local government the development generates the requirement for a road and/or footpath upgrade, a financial contribution must be made by the developer towards the upgrading of the road and/or footpath network.
- 6. Contributions towards the upgrading of the road and footpath network will be based on the standards contained in Schedule 1 of this Policy. The standards and costs will be reviewed periodically in the local government's Schedule of Fees and Charges. Where a secondary street exists, the local government reserves the right to seek a contribution for the secondary street in addition to the primary street frontage, where it is considered that the traffic movements and existing rights of entry warrant such a contribution.

Schedule 1 of the Developer Contributions LPP provides a formula for the development contribution rate for roads.

The proposed central processing facility requires the upgrading of Strawberry North-East Road between Midlands Road and the facility's entrance road – a distance of approximately 1,980m, and the construction of a new entrance road within an unconstructed road reserve – a distance of approximately 470m, and the upgrades of intersections to facilitate turning movements for vehicles accessing the facility. The Proponent intends to upgrade and construct the roads at their cost.



### 6 CONCLUSION

This application seeks approval for the development of a conventional gas processing facility and associated wellheads.

In summary, the proposal warrants approval for the following reasons:

- The proposed facility will supply gas to meet the critical shortfall forecast in the domestic gas market.
- The proposed development will deliver a use which is entirely suitable within the context of the region and permits held by the Proponent.
- The proposed development will generate substantial wealth for the State and create hundreds of jobs during conception, construction, and operation.
- The proposed development is designed to a high standard and will have a negligible impact on the local landscape and environment.

Having regard to the above, the proposal clearly demonstrates the suitability of the proposed development for the development site. Accordingly, it is appropriate for the WAPC to grant approval to the proposed development.

## Appendix 1: Certificates of Title

# Appendix 2: Development Plans

# Appendix 3: Communication Summary

## Appendix 4: Economic Benefit Statement

## Appendix 5: Access Memorandum

# Appendix 6: Transport Impact Assessment

## Appendix 7: Environmental Noise Assessment

# Appendix 8: Waste Management Plan

# Appendix 9: Environmental Impact Assessment Overview

# Appendix 10: Heritage Report Summary

# Appendix 11: Visual Impact Report Summary

# Appendix 12: Bushfire Management Plan

## LOCKYER VILLAGE | STRAWBERRY NORTH-EAST ROAD, LOCKIER WA 6522

GENERAL NOTES

DO NOT SCALE FROM THESE DRAWINGS.

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DA DRAWING LIST			
SHEET NUMBER	SHEET NAME	SHEET SCALE	
DA000	COVER PAGE	NOT TO SCALE	
DA001	SITE PLAN	1:200	
DA002	SITE SECTIONS	1:200	
DA100	CLUB LOUNGE FLOOR PLAN	1:100	
DA101	CLUB LOUNGE ROOF PLAN	1:100	
DA102	CLUB LOUNGE ELEVATIONS	1:100	
DA103	CLUB LOUNGE SECTIONS	1:100	
DA200	RECREATION FLOOR PLAN	1:100	
DA201	RECREATION ROOF PLAN	1:100	
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DA203	RECREATION SECTIONS	1:100	
DA300	GYM FLOOR PLAN	1:100	
DA301	GYM ROOF PLAN	1:100	
DA302	GYM ELEVATIONS	1:100	
DA303	GYM SECTIONS	1:100	
DA400	ACCOMMODATION POD PLANS, ELEVATIONS & SECTIONS	1:100	



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COVER PAGE

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SITE - LOCKYER VILLAGE STRAWBERRY NORTH-EAST ROAD, LOCKIER WA 6522

REV. DATE	DESCRIPTION	
STATUS	DEVELOPMENT APPLICATION	
DRAWN	МС	JF
CLIENT	MINERAL RESOURCES	
PROJECT NO.	231103	



SITE PLAN SCALE: 1:200

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AREAS		
NAME	AREA	
ACCOMMODATION PODS	1225 m²	
CLUB LOUNGE	502 m²	
EXTERNAL SPACE	7806 m <sup>2</sup>	
GYM	200 m <sup>2</sup>	
OUTDOOR DINING/ PERGOLA	68 m²	
RECREATION	200 m <sup>2</sup>	
TOTAL AREA	10000 m <sup>2</sup>	

## **GENERAL NOTES**

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SPACE ZONING LEGEND





- WATER TANK 01

(3.3 DIAM.)

- WATER TANK 02



(3.3 DIAM.)

– WASTE WATER

168

– SMSB

167

A 13/12/23 ISSUE FOR DA REV. DATE
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## CLUB LOUNGE FLOOR PLAN

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KEY PLAN



BUILDING FOOTPRINT AREA		JILDING FOOTPRINT AREA
	NAME	AREA
	CLUB LOUNGE	502 m <sup>2</sup>

### **GENERAL NOTES**

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### SPACE ZONING LEGEND



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# CLUB LOUNGE ROOF PLAN

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KEY PLAN



KEYNOTE LEGEND	
CODE	DESCRIPTION
RFS01	Profiled Sheet Metal

<u>GENERAL NOTES</u>

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KEYNOTE LEGEND		
CODE	DESCRIPTION	
ESC01	External Screen	
FCB01	Compressed Fibre Cement Sheeting	
GLS01	Glazing	
RFS01	Profiled Sheet Metal	

GENERAL NOTES

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL DRAWINGS.

GROUND LINE SHOWN INDICATIVELY ONLY.

### **ABBREVIATIONS**

FIXED WINDOW F SW SWING DOOR RL ROLLER DOOR

### MATERIAL PALETTE



FCB01 - COMPRESSED FIBRE CEMENT SHEETING. FINISH: BARESTONE ORIGINAL



RFS01 - PROFILED SHEET METAL FINISH: WOODLAND GREY



ESC01 - EXTERNAL SCREENING FINISH: ZEUS TIMBERLAND POWDERCOAT



DA102





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## RECREATION FLOOR PLAN

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KEY PLAN



BL	JILDING FOOTPRINT AREA
NAME	AREA
RECREATION	200 m <sup>2</sup>

### GENERAL NOTES

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## SPACE ZONING LEGEND

FOH SERVICE ROOM WET AREA

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## **RECREATION ROOF PLAN**

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SCOPE EXTENTS - 100 m

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KEY PLAN



KEYNOTE LEGEND		
CODE	DESCRIPTION	
RFS01	Profiled Sheet Metal	

GENERAL NOTES

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## **RECREATION SOUTH ELEVATION**







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71

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KEYNOTE LEGEND	
CODE	DESCRIPTION
ESC01	External Screen
FCB01	Compressed Fibre Cement Sheeting
GLS01	Glazing
RFS01	Profiled Sheet Metal

**GENERAL NOTES** 

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### ABBREVIATIONS

FIXED WINDOW F SW SWING DOOR

## MATERIAL PALETTE



FCB01 - COMPRESSED FIBRE CEMENT SHEETING. FINISH: BARESTONE ORIGINAL



RFS01 - PROFILED SHEET METAL FINISH: WOODLAND GREY



ESC01 - EXTERNAL SCREENING FINISH: ZEUS TIMBERLAND POWDERCOAT



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# **RECREATION SECTION 01**

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DA200 SCALE: 1:100

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KEY PLAN



BUILDING FOOTPRINT AREA			
NAME	AREA		
GVM	$200 \text{ m}^2$		

#### GENERAL NOTES

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#### SPACE ZONING LEGEND









SCOPE EXTENTS - 100 m

74



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KEY PLAN



KEYNOTE LEGEND		
CODE	DESCRIPTION	
RFS01	Profiled Sheet Metal	

**GENERAL NOTES** 

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KEYNOTE LEGEND			
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ESC01	External Screen		
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GLS01	Glazing		
RFS01	Profiled Sheet Metal		

#### GENERAL NOTES

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#### **ABBREVIATIONS**

F FIXED WINDOW SW SWING DOOR

#### MATERIAL PALETTE



FCB01 - COMPRESSED FIBRE CEMENT SHEETING. FINISH: BARESTONE ORIGINAL



RFS01 - PROFILED SHEET METAL FINISH: WOODLAND GREY



ESC01 - EXTERNAL SCREENING FINISH: ZEUS TIMBERLAND POWDERCOAT



DESCRIPTION







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KEY PLAN



KEYNOTE LEGEND			
CODE	DESCRIPTION		
ESC01	External Screen		
FCB01	Compressed Fibre Cement Sheeting		
GLS01	Glazing		
RFS01	Profiled Sheet Metal		

#### NOTES:

REFER TO DA001 - SITE PLAN FOR LOCATION, SETOUT & FFL'S OF ACCOMMODATION PODS

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#### **ABBREVIATIONS**

F FIXED WINDOW SW SWING DOOR

#### SPACE ZONING LEGEND



#### MATERIAL PALETTE



FCB01 - COMPRESSED FIBRE CEMENT SHEETING. FINISH: BARESTONE ORIGINAL



RFS01 - PROFILED SHEET METAL FINISH: WOODLAND GREY



ESC01 - EXTERNAL SCREENING FINISH: ZEUS TIMBERLAND POWDERCOAT

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# LOCKYER VILLAGE LANDSCAPE

Mineral Resources Limited PER23050.00



**ASPECT Studios** 

## Contents

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01.	Context
02.	Site Appreciation
03.	Landscape Approach
04.	Landscape Plans
05.	Landscape Quality
	01. 02. 03. 04. 05.

#### **Document Control**

Job Number:	PER23050.00
Report Title:	Lockyer Village
Revision:	А
Date Issued:	12.12.2023

## Introduction

The landscape design for the Lockyer Village, has been prepared by ASPECT Studios in collaboration with Milieu Creative. The design responds to the scale, form and function of the architecture and local context to create a new accommodation village.

Located in the heart of wildflower country the landscape design will showcase a mix of native, endemic and sensory plant species to support the proposed village that consists of accommodation, communal recreational and amenity areas.

The landscape concept responds to the site's larger contextual relationship to the surrounding landscape, celebrating the landscape views and and layered vegetation. The landscape spaces have been designed to provide a place where the residents can gather for play and recreation, or relax in private gardens. The following general principles form the landscape approach to the site:

- Use high quality landscape design to integrate the proposed village within the local context;
- Develop a legible network of spaces that fully integrate with and connect to the surrounding context;
- Create spaces with varying characters and identities.
- Maximise opportunities for social interaction through arrangement of facilities and landscape amenity.
- Create a robust landscape made from proven materials and planting species, integrating bold forms that can be managed and maintained.
- Selection of local and native plant species that benefit surrounding ecologies.

The design of landscape considers the architectural design by Milieu Creative in both concept and materiality, with the intention of creating a cohesive transition from internal to external spaces.



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## Landscape Principles

The following design principles have been developed to guide the design of the village and surrounding landscape. Throughout the design process these principles will continue to inform and develop the landscape response. Celebrate the Site



- Celebrate the unique character of the site and the local landscape character.
- Maximise visual, physical and symbolic connectivity to the local context.

### Connected Workforce



- Create strong connections between workers and the environment.
- Design to support social interaction and relationship building.

### Wellness by Design



- Design comfortable and safe connections to promote incidental physical activity.
- Provide landscape areas to support recreational, sporting and social activities.

## Landscape Approach

The landscape approach responds to the immediate context of the development area. A series of strategies have been developed that focus the development of the landscape design around key views, local character, the existing topography and integrating the architecture into the landscape.







Work with the topography



## A connected village

## Landscape Plan

#### Main Facilities

The Main Facilities are located on the southern edge of the village adjacent to the access road. The facilities are enhanced with high-quality planting and materials, which contribute to a sophisticated and inviting character that welcomes residents and visitors alike.

The Main facilities and associated landscape creates a gateway into the village.

#### Village Green

The Amenity and Recreation Areas are characterised by a mix of high quality landscape surface treatments and softscape palette that connect the amenity and accomdation areas.

The outdoor amenities area provides guests and staff with a range of health and fitness opportunities in an outdoor setting. Access is provided through a network of high quality paved surfaces that link to the accommodation and administration areas.

#### Accommodation

The accommodation area has been designed to respond to the existing topography and ecology of the site. Minimising disturbance to the existing levels through a considered architectural and landscape response an elevated boardwalk system extends through the area forming pedestrian circulation route that touches the ground lightly.



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## Landscape Plan

LEGEND	
1	Bus Stand (Pickup/Drop-off)
2	Outdoor dining area
3	Terraced landscaping
4	Gardens with private seating zones
5	Community/Vegetable garden
6	Outdoor amenities/Fitness area
7	Accommodation pods with landscaping
8	Village Entry Zone
9	Village Clubhouse
10	Amenities
1	Gym and Fitness
12	Village Services and water tanks
13	Vehicle entry/exit
14	Vehicle parking zone



5m 10m

84

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## Landscape Materials

#### **Materials Strategy**

A refined palette of robust and low maintenance materials are proposed that are in keeping with the project context and Architecture. The proposed landscape scheme will use a palette of high quality materials, selected to reinforce the identity of the spaces.

Materials have been selected that are sympathetic to the local context and are appropriate to their location and use. The materials detailed here form a structured palette that are coordinated to create visual unity and integrity within the landscape.

The Material strategy will:

- Use materials that are sympathetic to the local context and are appropriate to their location and use.
- Create visual unity and integrity within the landscape but allow for variations in texture and colour that can be used to define function and character.
- Give consideration to long-term performance, durability and maintenance requirements.
- Consider impact on the environment and sourcing, cost and project sustainability.







Turf



Concrete walls



Concrete steps



Stone boulders





Composite Timber Walkway





Asphalt Roads

## **Planting**

#### **Planting Strategy**

The planting scheme for the project is designed to provide an appropriate and restorative response to place and the greater site ecologies. A variety of colour and texture will be on display throughout the village by way of local and native species, and will support the health and wellbeing of residents.

#### Water Efficient Irrigation System

Trees and plants will be irrigated by a water efficient irrigation system. The irrigation water demand volumes will not be excessive, however, a constant and uninterrupted supply must be maintained especially during dry and hot periods.

Where possible, plants will be hydro-zoned according to water requirements. This allows the reticulation to the endemic plantings to be separately controlled and greatly reduced following their establishment period. The automated irrigation system can be designed to include monitors to detect malfunctions so that rapid response rectification can be programmed before the planting is detrimentally affected by a disruption to water supply.

#### **Indicative Species List**

#### Trees

Acacia acuminata Brachychiton acuminatus Eucalyptus eudesmioides Eucalyptus erythrocorys Eucalyptus macrocarpa Eucalyptus obtusiflora Eucalyptus oraria Eucalyptus victrix

#### Shrubs

Atriplex cinerea Alyogyne hakeifoli Callistemon pheoniceus Chamaelaucium uncinatum Diplolaena grandiflora Hakea scoparia Senna artemisioides Westringia dampieri

#### Herbs

Dianella revoluta Eremophila glabra Mingenew Gold Eremophila glabra Kalgoorlie Gold Lomandra micrantha Thryptomene saxicola Mingenew Form

































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## **GENERAL NOTES**:

- 1. ALL DIMENSIONS IN METRES U.N.O.
- COORDINATES TO GDA 20 / MGA ZONE 50.
   3D STRINGS ARE TO BE USED FOR CONSTRUCTION SET OUT SUPPLIED BY CSI CIVIL DESIGNER.

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- 3. 3D STRINGS ARE TO BE USED FOR CONSTRUCTION SET OUT SUPPLIED BY CSI CIVIL DESIGNER.

## LEGEND:

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—— > —— MINOR CREEK FLOW DIRECTION
• EXISTING TREE LINE
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— — — 102.00— — EXISTING CONTOUR (1m INTERVALS)

### DEPARTMENT OF PLANNING, LANDS AND HERITAGE DATE

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3	CHEMICAL INJECTION	-	1201-PKG-2503
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5	INSTRUMENT AIR PACKAGE	-	1200-PKG-1401
6	SAFETY SHOWER/EYEWASH STATION	-	1200-PKG-3003

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NOTES:



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 ONE CHEMICAL INJECTION PACKAGE FOR HUB AND LOCKYER DEEP-1. TO BE CONFIRMED BASED ON CORROSION STUDY.
 THE BURIED FLOWLINE/PIPELINE ROW OUTSIDE THE FENCE AREA IS INDICATIVE ONLY AND SHALL BE AS PER GIS/ALIGNMENT SHEET. Equinox Australia

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3	CHEMICAL INJECTION	-	1202-PKG-2503
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5	INSTRUMENT AIR PACKAGE	-	1202-PKG-1401
6	SAFETY SHOWER/EYEWASH STATION	_	1202-PKG-2504

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4	CHEMICAL INJECTION	-	1301-PKG-2503						
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## LOCKYER CONVENTIONAL GAS DEVELOPMENT

## **ECONOMIC BENEFITS STATEMENT**

## Introduction

The Lockyer Conventional Gas Development (**the Project**) is proposed to be developed by Mineral Resources Limited (MinRes), in the mid-west region of Western Australia, 25 km east of Dongara (**Figure 1**).

The Project involves the development of a central gas processing facility (CPF) sized for up to 250 TJ/day and associated infrastructure within petroleum exploration permit EP 368 (with potential to expand activities in Exploration Permit 426). The Lockyer gas field was discovered by MinRes in October 2021 and is subject to continuing exploration and appraisal activities. As this is a conventional gas development, no fracking is required.

A Development Application for the Project is submitted to the Western Australian Planning Commission for assessment and determination via the State Development Assessment Unit. As a Project aligned to the State Government's pathway to decarbonisation policies the economic, social, and environmental benefits of the Project are of State significance. The estimated initial project capex is \$850m, inclusive of the CPF, associated pipelines infrastructure, and gas production wells. Ongoing annual operating expenditure is estimated at \$36m/yr. The Project life is up to 20 years.

This document provides an overview of those benefits and significance of the Project to the State of Western Australia.



Figure 1: Lockyer Conventional Development Project Infrastructure Locations



## TIMELINE FOR DEVELOPMENT

The Project is on an accelerated timeline to meet the forecast critical gas shortfall in the Western Australian market, enabling the delivery of gas by December 2025. A summary of the key project milestones is outlined in Table 1.

## **Table 1: Project Milestones**

Milestone	Estimated Date	
DA Approval	March 2024	
Environmental Approvals	June 2024	
Construction Commencement	July 2024 (linked to DA and Environmental Approvals)	
Commissioning/First Gas	December 2025	

## **Economic Benefits**

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The economic benefits of undertaking the Project include:

- Economic activity and job creation
  - Reinforcement of State's domestic gas supply
  - Other economic benefits:
    - Royalties
    - Downstream opportunities

## ECONOMIC ACTIVITY - PROJECT DESIGN AND CONSTRUCTION

The estimated design, construction and commissioning capex for the Project is \$850M. The expected breakdown of this expenditure within WA, rest of Australia and internationally is shown in Table 2, below.

### Table 2: Expenditure Breakdown

Infrastructure	Western Australia	Rest of Australia	International
Gas Processing Facility	\$243M	\$88M	\$131M
Pipelines	\$65M	\$7M	\$64M
Wells	\$110M	\$30M	\$60M
Supporting Infrastructure	\$47M	\$5M	\$0
TOTAL	\$465M	\$130M	\$255M

Expenditure within WA will include engineering and technical design, project management, construction and commissioning services, directly employed labour, and materials and equipment procurement. The expected distribution of expenditure within these categories is shown in Table 3, below.

### Table 3: Distribution of Expenditure

Items	Western Australia
Services – Engineering & Design, Project Management, Construction and Commissioning	\$121M
Materials & Equipment	\$143M
Labour	\$201M
TOTAL	\$465M



Opportunities exist for local (Mid-West) companies to supply the Project, particularly during the construction and commissioning phases when on-site activity is at its peak.

## **ECONOMIC ACTIVITY – OPERATIONS PHASE**

The Project will operate for up to 20 years. Operations expenditure will include all labour, materials, equipment and services required to operate, maintain, inspect and repair the facilities. MinRes will support local communities through a combination of direct employment of local personnel, use of local contractors and businesses to supply services and materials, and sponsorship of community groups and activities, consistent with MinRes' corporate programs across WA.

The expected annual operations expenditure within WA is shown in the table below. Potential spend within the Mid West is shown, with direct labour and transport services the largest categories by value. The rest of Australia and international spend is estimated at \$5.6M and \$4.3M respectively, comprising materials and equipment and specialist oilfield services not available within WA.

### Table 4: Annual Operations Expenditure - WA

Items	WA (excl Mid West)	Mid West	Total WA
Engineering & Design Services	\$0.9M	\$0	\$0.9M
Labour	\$8.6M	\$2.0M	\$10.6M
Materials & Equipment	\$3.2M	\$0.1M	\$3.3M
Operations Services	\$7.0M	\$2.4M	\$9.4M
Other (insurances, leases, community)	\$1.0M	\$1.3M	\$2.3M
TOTAL	\$20.7M	\$5.8M	\$26.5M

## **JOB CREATION**

From ~July 2024, the Project will employ up to 350 people during the development and construction phase through to commissioning. This development and construction phase will see the direct employment of designers, engineers, project managers, safety specialists and construction labour crews covering civil, structural, electrical, mechanical and telecommunications trades. The site-based workforce will be supported by transport, catering and accommodation services personnel.

Indirect employment in WA will be supported by the procurement, fabrication and services contracts required to support the construction and commissioning activities and ongoing operations.

Local contractors will be used where available and are expected to be particularly suitable for the Operations phase services, expected to occur for a period of up to 20 years. The extended operating period will support sustainable business development in the region.

Once commissioned and the facility is operating, approximately 40 full-time site based operational staff will be employed. Suitably qualified local residents will be preferred for employment.

The direct jobs created as a result of undertaking the Project are summarised in Table 5.



### Table 5: Direct Job Creation

Phase	Direction Job Creation				
rnase	Jobs	Est Man Hours (WA)	FTE		
Construction (~18 months)	Designers Engineers Project Managers Construction Jobs – Labour and Supervision Construction Camp Staff	1,200,000	340 (assumes an average of 45 hour weeks and 18 month construction phase)		
Operations (Up to 20 years)	Site Based Operations & Maintenance Personnel (typ. Trade Qualified) Hospitality (site based) Administration & Logistics (including Condensate transport) Engineers, Managers & non-site based support staff		30 6 10 10		

## WESTERN AUSTRALIA GAS SUPPLY

The Project will produce gas for sale into the WA domestic gas market and processing to LNG for export and sale internationally through to 2030, after which, all gas produced will be available for domestic use. The gas will be processed at the CPF to meet the Dampier to Bunbury Natural Gas Pipeline (DBNGP) specification then transported via the gas export pipeline to the DBNGP for transport within WA.

The WA domestic gas market is facing a tight supply and demand balance between 2023 and 2029. Demand is forecast to continue to grow with natural gas having an increasingly critical role in maintaining energy security as WA reduces reliance on coal and diesel, and in supporting the transition to more renewable sources of energy as a reliable and flexible stabiliser for the electricity grid (the South West Interconnected System, SWIS). Gas demand is expected to increase significantly from 2028 due to the WA Government plan to permanently retire the Collie and Muja D coal fired power generation. New gas fired generation and more importantly additional gas supply will be needed to fill the forecast shortfall in 2029 and beyond.



Figure 2: Base Scenario WA gas market balance, 2023 to 2032



## **OTHER ECONOMIC AND PUBLIC BENEFITS**

The direct and indirect flow on effect of MinRes capital investment in the Project will result in several other economic, social and environmental benefits to the State, as detailed below:

### Royalties

The Project will result in approximately \$820m<sup>1</sup> of royalties to the State of Western Australia over the life of asset.

### Decarbonisation and Energy Security

The Project aligns with the State Government's low carbon transition policies, priority themes and key initiatives including transformation of energy generation and use. As detailed under the WA Government's Low Carbon Transition, the decarbonisation of industry requires innovation and mechanisms to de-risk future investment and secure energy sources. The Project is one such measures facilitating the move to net zero emissions through the adoption of alternative energy sources and improving the efficiency of process.

### Reduced gas costs to consumers

It is anticipated that additional supply to the Western Australian domestic gas market will have a downward impact on cost of living pressures for the Western Australian community associated with energy supply.

## Local Community and Downstream Opportunities

It is envisaged that the reinforcement of the domestic gas market and security in energy supply will indirectly support further expansion of industry and manufacturing both within the surrounding local communities, the mid-West and broader State.

## **Project Readiness**

Engineering design work for the Project commenced in Q1 2023. The Project is currently undertaking Front End Engineering Design, with detailed design and procurement of equipment and materials expected to commence in Q1 2024. Project construction planning has commenced, including engagement with local and WA government authorities and relevant private third party infrastructure owners. Applications to support the required Environmental regulatory approvals are planned to be submitted in early Q1 2024.

It is the intention of MinRes to commence execution of the Project immediately upon obtaining approval from the Western Australian Planning Commission and the required environmental approvals.

## FINANCIAL & TECHNICAL FEASIBILITY

A series of financial and technical feasibility studies have been commissioned by MinRes to assess the viability of the project during both the construction and operations phases.

MinRes will use its existing project execution capability, including construction capability to support on time delivery of the scope.

## **PROJECT FUNDING**

The project is fully funded by MinRes.

<sup>&</sup>lt;sup>1</sup> Royalties are estimated assuming a gas price of \$10/GJ over the life of the asset. Variations in the gas price and the ultimate recovery from the field will impact royalties.





Figure 3: Perth Basin Exploration Permits and Production Licences

## MEMORANDUM



TO:	Energy Resources Limited – LGP Project Team
FROM:	CSI Mining Services
DATE:	4 December 2023
RE:	Lockyer Gas Project – Preliminary Traffic Impact Assessment from the Proposed CPF Access Road on Strawberry North- East Road

## Purpose

The purpose of this memorandum is to provide a preliminary traffic impact assessment associated with the Lockyer Gas Project development on Strawberry North-East Road and support the Development Application being submitted for the project.

Location of the Central Processing Facility (CPF) development site and the proposed access location off Strawberry North-East Road is outlined in Figure 1 below.



Figure 1 – Proposed CPF access location off Strawberry North-East Road

## Strawberry North-East Road (SNER)

SNER is classified as an Access Road according to the Main Roads WA Road Information Mapping System, as shown in Figure 2 below.

## MEMORANDUM



The road is currently an unsealed two-lane single carriageway with an approximate width of 8.0 to 8.5m.



Figure 2 – Existing Road Network and Road Hierarchy

As there is no publicly available traffic data for SNER, the traffic data has been conservatively assumed based on Coalseam Road, a similar traffic network in the area, as follows:

- Current Daily / Peak Hour Traffic Volume = 65 vpd / 6 vph
- %HV = 28%
- Projected 10-year scenario\* (2023/34) Daily / Peak Hour = 75 vpd / 7 vph \*Assuming 1% annual growth rate

As per Main Roads WA (MRWA) HVS Network Mapping Tool, SNER is categorized under Tandem Drive RAV 7.1 network and Tri Drive 1.1 with the following conditions:

- All operators must carry written support from the road manager and acknowledging the operator's use of the road
- No operation on unsealed road segment when visibly wet, without road owner's approval
- Maximum speed 80 km/h

## Proposed CPF Access Road

The proposed access to the CPF Site from SNER is approximately 2km north of Midlands Road via an existing 20m wide road reserve (Landgate Land ID Number 3727386).

## MEMORANDUM



The projected operational traffic volumes accessing the CPF site from Midlands Road via SNER is outlined in Table 1 below.

Item	Daily / Peak Hour HVs	Daily / Peak Hour LVs
Condensate Loadout and Deliveries	3 vpd / 1 vph (in and out)	N/A
Chemical Top Up	0.04 vpd / 0 vph (in and out, based on 1 per month)	N/A
Personnel access to Control Room and Admin Building	N/A	10 vpd / 4 vph (in and out)
Camp operations and support	N/A	3 vpd / 1 vph

Table 1 – Projected CPF Operational Traffic Volumes

## Preliminary Traffic Impact Assessment Road Minimum Width

The existing SNER carriageway width complies with the rural road minimum widths as set out in MRWA RAV assessment guideline, which is 8.0m wide. The guideline also stipulates that a road should be sealed if the Average Annual Daily Traffic (AADT) exceeds 150 vpd.

It is proposed that SNER between Midlands Road and the CPF Access Road be upgraded to a sealed twolane single carriageway standard with a minimum width of 8.0m wide as part of the development.

## Road Capacity

MRWA Road Hierarchy Types and Criteria provides the following traffic volume guidance for Access Roads:

 Indicative Traffic Volume (AADT) Built Up Area – maximum desirable volume 3,000 vpd Non Built Up Area – up to 75 vpd

The proposed increase in traffic volumes on SNER from the development is 16 vpd, which equates to an estimated total daily traffic of 81 vpd or approx. 21% increase from the existing volumes.

While the above suggests that the total daily volumes slightly exceeds the indicative daily traffic volumes for non built up area, the proposed to be upgraded section of SNER is considered to have more than adequate capacity to cater for the additional traffic generated from the development. Discussions will be held with Council and MRWA to determine the appropriate intersection configuration and any required traffic management controls, such as signage.

## Conclusion

Noting that the classification of the proposed CPF Access Road and its final intersection configuration with the SNER are yet to be agreed with the Shire of Irwin and/or Shire of Mingenew, SNER with the proposed upgrades have more than adequate capacity to cater for the additional traffic generated from the development.

## Prepared by:

## Approved by:

Arnan Kartawijaya Civil Engineer Paul Standing Lead Civil Engineer



# **Traffic Impact Assessment**

Project:	Lockier Project
-	Traffic Impact Assessment
	Intersection 2
Client:	Mineral Resources
Author:	N. Baby
Date:	13th October 2023
Doc No:	2309009-TIA-002
Revision:	A

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## Document Status: For Client Review

Revision	Prepared By	Reviewed By	Approved By	Issue	Date
A	N. Baby	J. Bridge	J. Bridge	Issue for Review	13/10/23

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File Reference: \\shaw-svr\newdata\Jobs Active 2023\CE -Roads & Drainage\MRL\_Lockier Project TIA\_2309009\3. Documents\3.6 TIA\INTERSECTION 2\2309009-TIA-002\_A.docx

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## 1. Introduction

## 1.1. Background

Mineral Resources (MRL) are currently investigating two potential intersection locations on Midlands Road, Mount Horner, to allow heavy haulage access to their proposed Lockier Project

**Figure 1** shows the location of the two intersections. MRL have proposed a possible access realignment near an existing rural driveway at intersection 1 to improve the intersection approach and enable 90 degrees crossing of the railway and intersection 2 is an existing intersection.



Figure 1: Intersection Locations



## 1.2. Purpose

Shawmac has been engaged by MRL to prepare a Transport Impact Assessment (TIA) to assess the suitability of each of the proposed intersections.

This TIA will assess Intersection 2 in accordance with the Western Australian Planning Commission's (WAPC) Transport Impact Assessment Guidelines for Developments: Volume 4 – Individual Developments (2016) and specifically includes:

- Document the details of the proposed expansion works.
- Document the existing situation including road network, traffic volumes (MRL and background), crash history, RAV network etc.
- Confirm future traffic generation and trip distribution based on MRL proposed traffic.
- Assess the suitability of intersection 2 in terms of:
  - Conformance to RAV network requirements
  - Intersection configuration/warrants (i.e., whether there is a need for turn pockets)
  - o Sight distance
  - Intersection approach alignments
  - $\circ$  Rail crossings
  - Vehicle swept paths.
  - o Acceleration lane warrants
  - Site specific issues
- Provide recommendations as required.
- Prepare 2d sketches (general arrangement) of recommended upgrades/intersection configurations based on provided arial imagery.

Intersection 1 has been assessed under a separate TIA document (Shawmac Doc #2309009-TIA-001).



## 2. Existing Situation

## 2.1. Road Network

The layout and hierarchy of the existing road network according to the Main Roads WA Road Information Mapping System is shown in **Figure 2**.



## Figure 2: Adjacent Road Network

## 2.2. Carriageway Width and Cross Section

The carriageway and configuration of relevant roads are summarised in Table 1.

## Table 1: Road Configuration

Road and Location	Road Type	Cross Section	Carriageway Width (Approx.)	Sealed Pavement Width (Approx.)
Midlands Road	Primary Distributor	Two-lane single carriageway	9.0m	7.0m
Strawberry North-East Road	Access Road	Two-lane single carriageway	8-8.5m	NA



## 2.3. Traffic Volumes

The proposed intersection is at SLK 236.43 of Midlands Road. According to MRWA Traffic map, the nearest traffic count data for Midlands Road is at the 2022/23 count site West of Mingenew Mullewa Road (SLK 251.00).

Data from the Network Performance Site (NPS) traffic count at SLK 223.06 on Midlands Road, shows an average 6% growth from 20/21 period to 23/24 period. As the project mine design life is 15years, a 10-year growth scenario (2033/34) has been allowed for in accordance with WAPC Transport Impact Assessment Guidelines for Developments. A 2% annual compound growth has been adopted for conservatism to estimate the 2023/24 traffic volumes as well as the future 10-year traffic volumes (2033/34).

Traffic data for Strawberry North East Road was not available. Therefore, the traffic data (with annual growth rate of 1%) is assumed based on the similar traffic network in the area. Also, it is assumed that 60% of turning vehicle on to the Strawberry North East Road will be to/from west of Midlands Road.

A summary of this information is provided in **Table 2** and **Table 3**. Detailed traffic count data is attached in **Appendix A – Traffic Counts**.

Road	Location	Existing Daily Volume		2033/34 Daily Volume		% HV	Data Source
		EB/NB	WB/SB	EB/NB	WB/SB		
Midlands Road	SLK 251.00	305	363	372	443	33.5%	MRWA 22/23
Strawberry NE Road	NA	33	32	38	37	28%	Assumed

### Table 2: Daily Traffic Volumes

### Table 3: Peak Hour Traffic Volumes

		Existing Peak Volume				2033/34 Peak Volume			
Road	Location	EE	B/NB	WB/S	SB	EB/	NB	WB	/SB
		AM	PM	AM	PM	AM	PM	AM	PM
Midlands Road	SLK 251.00	41	24	31	43	50	30	37	52
Strawberry NE Road	NA	6	4	4	6	7	5	5	7



## 2.4. RAV Status

As per MRWA HVS network mapping tool:

- Midlands Road is categorised under Tandem Drive RAV 7.3 network and Tri Drive 1.3 network without any conditions.
- Strawberry North East Road is categorised under Tandem Drive RAV 7.1 network and Tri Drive 1.1 with the following conditions:
  - All operators must carry written support from the road manager acknowledging the operator's use of the road.
  - o No operation on unsealed road segment when visibly wet, without road owner's approval.
  - Maximum speed 80 km/h.

Figure 3 shows the Tandem Drive and Figure 4 shows the Tri Drive network for the road network in the local vicinity.



Figure 3: Tandem Drive 7 Network





Figure 4: Tri Drive 1 Network



## 2.5. Speed Limit

The speed limit of the adjacent road network is shown below in Figure 5.

As per MRWA HVS network mapping tool, RAV vehicles approaching Midlands Road from Strawberry North East Road are restricted to 80km/hr.



Figure 5: Speed Zoning



## 2.6. Crash History

Crash data for Midlands Road in the vicinity of Intersection 2 was sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 31/12/2022. The report is summarised in **Table 4**.

## Table 4: Crash History

Location	Number of Crashes	MR Nature and Location	Severity
Midlands Road SLK 234.69 to SLK 241.75	0	NA	NA

As shown no crashes were reported.

## 2.7. Changes to Surrounding Transport Networks

There are no known changes to the adjacent road network that have potential to affect this assessment.



## 3. Transport Logistics

## 3.1. Proposed Development and Traffic Generation

 Table 5 and Table 6 show the traffic generation during construction and operations phase, as provided by MRL, respectively.

### Table 5: Construction Phase Traffic Generation

Item	Daily HVs	Daily LVs
Bulk Earthworks	5 nos. In and out	12 nos. In and out
Pipeline construction	15 nos. In and out	10 nos. In and out

### Table 6:Operations Phase Traffic Generation

Item	Daily HVs	Daily LVs
Condensate Loadout and Deliveries	3 nos. In and out	NA
Chemical Top Up	0.04 nos. (1no In and out per month)	NA
Personnel access to CCR/Admin Building	NA	10 nos. In and out

## 3.2. Operating Hours

Haulage operations will occur 12 hrs a day. There is no defined peak period for the haulage activity and the movements are expected to be evenly distributed throughout the operating hours.

## 3.3. Proposed Haulage Vehicle

It is proposed to use maximum RAV 7.3/TD 1.3 trucks up to 36.5m long for haulage. Refer **Figure 6** for typical configurations of proposed design vehicles.

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Figure 6: Typical Tandem Drive RAV 7 Trucks



## 3.4. Haulage Route and truck movements

As per the traffic data provided by MRL, 80% of traffic comes to/from West and 20% comes from east. Also, MRL has advised that majority of LV and bus traffic would occur during shift change where most vehicles would be entering during 5-7am and exiting during 5-7pm.

For the purposes of assessing the peak period impacts, the following assumptions have been made:

- 100% of haulage vehicles are to/from the west.
- Truck deliveries occur over a 12-hour period, and 10% of all daily truck volumes are received within a peak hour.
- Chemicals top up traffic is not included in the assessment as it is only 1 per month.

**Figure 7** and **Figure 8** shows the daily and peak hour traffic volumes during construction and operations phase as provided by MRL, respectively.



Figure 7:Traffic Distribution AADT/AM Peak Hour (2023) Volumes-Construction Phase





Figure 8:Traffic Distribution AADT/AM Peak Hour (2033) Volumes-Operations Phase



## 4. Traffic Impact Assessment

## 4.1. Assessment Years

The development is assessed based on current network condition (2023) and 10-year scenario (2033) in accordance with WAPC Transport Impact Assessment Guidelines for Developments.

## 4.2. Impact on Roads

## 4.2.1. Road Minimum Widths

The sealed and carriageway widths of Midlands Road was checked against the rural road minimum widths in accordance with Appendix A of the MRWA RAV assessment guideline. The comparison is shown below in **Table 7**.

Road	Background / Proposed AADT 2023	Background / Proposed AADT 2033	Speed (RAV) (km/hr)	Existing / RAV Status Required Min Seal Width (m)		Existing / Required Min Carriageway Width (m)	
Midlands Road	668/ 752	814/ 840	100	RAV 7.3	7.0 / 6.5	9.0 / 8.3	
Strawberry NE Road	65/149	75/ 101	80*	RAV 7.1	NA	8-8.5 / 8.0	

### Table 7: Rural Road Minimum Width

\* As per the MRWA HVS network mapping tool, RAV vehicles approaching Midlands Road from Strawberry NE Road are restricted to 80km/hr.

As shown above, the existing road seal widths comply with the minimum requirements.

As per MRWA RAV Guidelines, a road should be sealed if the AADT is over 150. Therefore, Strawberry NE Road can remain unsealed as AADT is less than 150.

## 4.2.2. Road Safety

The crash history of the adjacent road network (as previously outlined in **Section 2.6**) does not suggest any particular safety issues in the existing road network.



## 4.3. Safe Intersection Sight Distance

The Safe Intersection Sight Distance (SISD) is the minimum distance which should be provided on the major road at any intersection. SISD provides sufficient distance for a driver of a vehicle on the major road to observe a vehicle on a minor road approach moving into a collision situation (e.g., in the worst case, stalling across the traffic lanes) and to decelerate to a stop before reaching the collision point.

The SISD is assessed based on the following parameters:

- An observation time of 3 seconds as per Austroads Part 3;
- A reaction time of 2.5 seconds;
- Deceleration coefficients for the purpose of SISD calculations are 0.36 for light vehicles and 0.28 for heavy vehicles (Road Train Type 1/ RAV 7 equivalent);
- Driver eye height is 2.4m for trucks and 1.1m for cars;
- Object height of 1.25m; and
- Sight distance offset 3-5m from edge of proposed holding line.

The results are summarised in Table 8.

Location	Vehicle Type	Design Speed (km/h) (WB / EB)	Coefficient of Deceleration	Decision Time (s)	Longitudinal Grade (EB / WB) *	Required SISD for EB / WB Traffic (m)	Available SISD (m) EB WB	
Intersection 2	Trucks	110 / 110	0.28	3.0+2.5	0.8% / 1.4%	333 / 330	+350	+350
	Cars	110 / 110	0.36	3.0+2.5	0.8% / 1.4%	298 / 295	+350	+350

#### Table 8: SISD at Proposed Intersection 2

\*Positive for through traffic travelling uphill and negative for through traffic travelling downhill. Grades are estimated based on the google earth only.

As shown, the SISD is sufficient to achieve the minimum requirements in accordance with the Austroads Guide to Road Design Part 4A. However, there are existing vegetation within the road reserve towards the east direction that with will need to be monitored and trimmed/pruned as required to ensure sight distances and maintained.

The measurement of the SISD is shown in **Figure 9.** The line-of-sight street view at the intersection location are shown in **Figure 10** and **Figure 11**.





Figure 9: Sight Distance Measurement at Intersection 2





Figure 10: Midlands Road Looking East



Figure 11: Midlands Road Looking West


# 4.3.1. Approach Sight Distances

The Approach Sight Distance (ASD) is required to ensure that drivers of trucks and light vehicles approaching the intersection from the minor road at the 85th percentile operating speed are able to see the intersection and stop at the holding line.

The ASD is assessed based on the following parameters:

- A reaction time of 2.5 seconds;
- Deceleration coefficients for the purpose of ASD calculations are 0.36 for light vehicles and 0.28 for haulage trucks;
- Driver eye height is 2.4m for trucks and 1.1m for cars; and
- Object height of 0.0m at the holding line.

The required and available ASD at the intersection has been determined from Austroads Part 4A Equation 2 as summarised in **Table 9**.

# Table 9: Approach Sight Distance Assessment

Location	Vehicle Type	Design Speed (km/h)	Coefficient of Deceleration (unsealed)	Reaction Time (s)	Longitudinal Grade*	Required ASD (m)	Available ASD (m)
Existing	Trucks	40**	0.28	2.5	2	49	56
Driveway	Cars	40**	0.36	2.5	2	44	56

\*Positive for traffic travelling uphill and negative for through traffic travelling downhill. Grades are estimated based on google earth only. \*\* The speed along Strawberry NE Road is assumed as 40km/hr as vehicles have to stop at railway line.

The measurement of ASD is shown in Figure 12 and line of sight from Midlands Road is shown in Figure 13.

As shown, the ASD is sufficient to achieve the minimum requirement as per Austroads Part 4A Equation 2.





Figure 12: Approach Sight Distance Measurement



Figure 13: Approach Line of Sight from Midlands Road

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# 4.4. Intersection Volumes

For the purpose of auxiliary lane assessment, the development peak hour is shown in Figure 14.



Figure 14:Intersection AM Peak Hour (2023) Volumes-Construction Phase



# Figure 15:Intersection AM Peak Hour (2033) Volumes-Operations Phase

# 4.5. Auxiliary Lanes

The requirement for turning treatments was calculated using the Intersection Warrants calculator provided in Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8. The results of the assessment are shown in **Figure 16** and **Figure 17**.









# Figure 17: Operations Phase Warrants for Turn Treatments-AM Peak (2033)

As shown, the required left-turn and right turn treatments for the proposed intersection are a Simple Right Turn (SR) and Basic Left Turn (BAL) treatment.

As per MRWA Guideline drawing 202231-0008, a Simple Right turn does not need require any upgrades or sealed shoulders at the proposed intersection (refer **Figure 18** for extract).

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Figure 18: MRWA Guideline Drawing 202231-0008 Extract – SR/SL

As per MRWA Guideline drawing 202231-0007, a BAL treatment will require widening sealed shoulder turn treatments to be installed at the existing intersection (refer **Figure 19** for extract).



Figure 19: MRWA Guideline Drawing 202231-0007 Extract - BAR/BAL

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# 4.6. Acceleration Lane

The RAV guideline provides the following advice with regards to acceleration lanes:

To assist in ensuring network performance levels are maintained, the assessor needs to identify if the acceleration lanes and turn pockets are present at intersections and the length of these treatments. Capturing this information in the assessment will assist in determining if network improvements are necessary, in consultation with the road manager.

Note 11 on the MRWA T-Intersection guideline drawing (201431-0001) provides the following advice with regards to acceleration lanes:

Provide 600m long acceleration lane (or lanes) when the AADT on the through road exceeds 600 with at least 2 road trains per hour on the terminating leg.

Consideration could be given to extending the acceleration lane length to 1500m (min) and line marking as an overtaking opportunity.

# AGRD04 notes that:

There are no simple numerical warrants for the provision of acceleration lanes. However, an auxiliary lane may be added on the departure side of a left turn or right turn if traffic is unable to join safely and/or efficiently with the adjacent through traffic flow by selecting a gap in the traffic stream.

Acceleration lanes may be provided at major intersections depending on traffic analysis. However, they are usually provided only where:

- insufficient gaps exist for vehicles to enter a traffic stream.
- *turning volumes are high (e.g. > 300 vph).*
- the observation angle falls below the requirements of the minimum gap sight distance model (for example, inside of horizontal curves).
- heavy vehicles pulling into the traffic stream would cause excessive slowing of major road vehicles.

The requirement for acceleration lanes has been assessed against the Austroads and Main Roads WA guidelines as detailed in **Table 10**.



# Table 10: Acceleration Lane Warrants - Northbound

Note	Assessment
MRWA – To assist in ensuring network performance levels are maintained, the assessor needs to identify if the acceleration lanes and turn pockets are present at intersections and the length of these treatments. Capturing this information in the assessment will assist in determining if network improvements are necessary, in consultation with the road manager.	Due to the low volumes of traffic turning into and out of Strawberry NE Road, the level of service of the access is expected to be acceptable.
MRWA - Provide 600m long acceleration lane (or lanes)	The AADT on the through road (Midlands Road) exceeds 600.
least 2 road trains (36.5m long) per hour on the terminating leg.	Even though peak hour traffic during construction phase is 2 road trains per hour, it is expected that there will be only less than 1 haulage road train per hour during the operations phase on the terminating leg entering Midlands Road during peak hour. In addition, it is expected that construction phase trucks would be empty when entering Midlands Road.
	Since construction phase will only last for 12 months, and as construction delivery trucks would be empty when entering Midlands Road, the requirements to provide for a 600m acceleration lane have not been met.
	NOTE: As this drawing is a guideline only, the requirement of an acceleration lane is to be considered (when considering all other aspects) and is technically not mandatory).
<ul> <li>Austroads - Acceleration lanes may be provided at major intersections depending on traffic analysis. However, they are usually provided only where:</li> <li>Insufficient gaps exist for vehicles to enter a traffic structure.</li> </ul>	For the 2033/34 scenario the background traffic during AM peak hour in eastbound direction is 50 vehicles per hour which equates to about 0.83 vehicles per minute and in westbound direction is 37 vehicles per hour which equates to about 0.61 vehicles per minute (1 vehicle every 41 seconds in either direction).
stream.	Therefore, it is considered that there are sufficient gaps for trucks to enter a traffic stream.
Austroads continued:	Turning volumes at the intersection during the peak hour is expected to be
• Turning volumes are high (e.g. > 300 vph).	<300 vpn.
Austroads continued:	The intersection has good sight distances and observation angle.
<ul> <li>The observation angle falls below the requirements of the minimum gap sight distance model (for example, inside of horizontal curves).</li> </ul>	
Austroads continued:	For the 2033/34 scenario the background traffic during AM peak hour in
Heavy vehicles pulling into the traffic stream would cause excessive slowing of major road vehicles.	vehicles per minute and in westbound direction is 37 vehicles per hour which equates to about 0.61 vehicles per minute (1 vehicle every 41 seconds in either direction), which is considered frequently having gaps for RAV 7 trucks turning out of intersection.
	Trucks departing from the intersection have good sight distance towards both direction and therefore be able to pull into through traffic without causing excessive slowing.

Based on the above assessment an acceleration lane is not considered to be warranted by the proposed haulage traffic.

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# 4.7. Swept Path Assessment

A swept path analysis on aerial photos for a Tri-Drive 36.5m MRWA RAV 5-7 vehicle template (20m turning radius) was completed to determine if the existing intersection geometry is sufficient to accommodate the proposed RAV vehicle movements.

Refer Figure 20 for swept path analysis.

The analysis indicates that the existing intersection is not wide enough to cater for lane correct RAV7 (20m) vehicles for the left in and left out movements.





Figure 20:Intersection 2 Swept path Analysis



# 4.8. Railway Crossings

# 4.8.1. Railway Approach Sight Distance

As per MRWA's RAV Route Assessment Guidelines, the driver of a RAV approaching a give way or stop signcontrolled rail crossing must be able to see the crossing from a distance conforming to Appendix D of the guidelines. In this situation, the required sight distance is 170m on approach from Strawberry North-East Road, 46m on approach from Midlands Road (assuming maximum 80km/hr operating speed and 2% grade for Strawberry North-East Road and 30 km/hr turning speed from Midlands Road into Intersection 2).

Figure 21 and Figure 22 show the sight lines and street view for the rail crossing. As shown, adequate sight distance is available.



Figure 21: Approach Sight Distance Measurement





Figure 22: Rail Crossing Looking from Midlands Road

# 4.8.2. Railway Sight Distance

The Main Roads WA *Standard Restricted Access Vehicle Route Assessment Guidelines* (RAV Guidelines) outlines the sight distance requirements for the driver of a RAV, after having stopped at a railway crossing with a Give way or Stop sign. It is outlined in Australian Standard AS1742.7 (2016) – Manual of Uniform Traffic Control Device = Part 7: Railway Crossing formula S3.

The S3 formula determines the minimum distance required for the driver of a vehicle stopped at the railway crossing to be able to see an oncoming train to safely cross. Confirmation of the train speed along the railway has not yet been obtained.

Train speeds have been estimated from the ARC Infrastructure: General Operational Instructions v1.7 website which confirms an empty train speed of 80km/hr for the Mingenew to Strawberry rail line and Strawberry to Irwin rail line (refer **Figure 23** for extract).



### **ARC INFRASTRUCTURE: GENERAL OPERATIONAL INSTRUCTIONS v1.7**

strict: ALL	Cle	ar All Filters									
earch R	esults										
Track Speed	ds Train Hauling Loads	Local Instructions	Operational Instructions								
Section:	(h)	🖂 Na	me From:	Name To:	×.						
strawberry			0								
District	Section	Name F	From	Name To	Km From	Km To	Distance	Footnote	Empty	16t	19t
MR	Millendon Junction - Namgulu	I MINGE	NEW	STRAWBERRY	338.000	363.000	25.000		80	70	6
	Millendon Junction - Namoulu	STRAV	VBERRY	IRWIN	363.000	376.000	13.000		80	70	6

## Figure 23: Rail Speed

Below are the following assumptions to determine S3.

- Railway speed (Vt) (Empty) 80km/h
- RAV 7Truck (L) 36.5m Length
- Driver eye height is 2.4m for Trucks.
- Sum of the perception time and time to depress clutch (J) 2.5 s
- Width of Road Carriage way (Wr) 8.0m
- Width of outer railway track (Wt) 1.3m
- Angle between railed track and road (Z) 90 degrees
- Clearance from the stop line to the nearest rail (Cv) 3.5m
- Clearance from the stop line on the departure side of the crossing (Ct) 5m
- Average acceleration of RAV 7– 0.29m/s<sup>2</sup>

Based on the sight distance parameters above, **Table 11** shows the required minimum sight distance.

# Table 11: Railway Sight Distance

Location	Design Speed Vt	J (s)	Gs	Wr/Wt (m)	Angle	Cv / Ct (m)	Length of design vehicle (RAV 5/6)	Average acceleration of RAV 5/6 m.s <sup>-2</sup>	Required SD (m)	Availabl West	e SD (m) East
Intersecti on 2	80	2.5	1	9.0/1.3	90	3.5 / 5	36.5m	0.29	466m	+470m	466m

As shown, the available sight distance exceeds the minimum requirement. However, although the sight distance is assessed as conforming in the east direction, it is recommended that the sight lines are checked on site as sight distances could potentially be restricted by vegetation and/or existing terrain.

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Figure 24 shows the available sight distance along the railway line.



Figure 24:Railway Sight Distance measurement



# 4.8.3. Stacking Distance

As per MRWA's RAV Route Assessment Guideline the following stacking distance is required:

- **Approach** to the rail: at least the length of the vehicle plus 3m is required between the rail holding line and the through traffic edge line i.e., 36.5m + 3m = 39.5m(based on RAV 7)
- **Departure** from the rail: at least the length of the vehicle between the rail holding line and the intersection holding line i.e., 36.5m (based on a RAV 7).



Figure 25: Stacking Distance

As shown in **Figure 25** there is more than minimum stacking distance available on the approach side and departure side for the intersection 2.



# 5. Intersection Concept Designs

# 5.1. General

Based on the outcomes of this assessment, a 2d concept design has been prepared for the recommended intersection upgrade (refer to **Appendix B – 2d Concept Design**).



# 6. Conclusions

This Transport Impact Statement has concluded the following:

- The estimated traffic generation can be accommodated within the predicted capacity of road network.
- The additional traffic generated by the proposed development is not considered likely to increase the likelihood of crashes to unacceptable levels.
- Midlands Road and Strawberry NE Road has the appropriate RAV7 network for proposed operation at present to allow the proposed haulage access onto the roads.
- There are sufficient sight distances at the Strawberry NE Road exit onto Midlands Road.
- Based on the predicted traffic volume, the existing Strawberry NE Road/Midlands Road intersection need upgrade to have Simple Right Turn (SR) and Basic Left Turn (BAL) treatment.
- An acceleration lane is not considered warranted towards both direction of Strawberry NE Road/Midlands Road intersection.
- The swept path analysis indicates the existing intersection need to be widened enough to cater for lane correct RAV7 (20m) vehicles for the left in and left out movements; and
- The Strawberry NE Road Railway Crossing has appropriate sight and stacking distances. However, the sight distance is assessed as confirming in the east direction, it is recommended that the sight lines are checked on site as sight distances could potentially be restricted by vegetation and/or existing terrain.



# Appendix A – Traffic Counts

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_	8	All Vehicles			Heavy Ve	hicles	_
	ыф EB	WB WB	Both	EB EB		Both	• •
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200	1	1	2	ī	1	2	100.0
3:00	0	. 17	1	-0	0	0	0.0
100	1	G.	1		1	1	100.0
5:00	(有)	6	32	21	2	23	71.9
7.00	39	3H	50	28	- 41	32	64.0
100	26	22	48	14	10	24	50.0
200	27	29	53	12	12	24	47.2
1:00	22	-28	50	13	12	25	50.0
2:00	23	22	52	13	11	24	46.2
100	21	- 30	51	10	14	25	49.0
:00	18	38	56	11	10	21	37.5
i:00	12	41	53	ñ	10	16	30,2
100	9	35	- 44		9	14	31.8
200	2	5 :	7	·	2	3	42.9
100	3	- 4	7	- 1	2	3	42.9
-00	2	1	3		0	1	33.3
100	1	g	1	1	1	1	100.0
TAL	299	356	655	174	126	300	45.8
		$\sim$	Peak	Statistics			
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VOL	40	30	61	29	14	33	
VOL	12.30	15.45	13:15	14	12:45	1245	
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Appendix B – 2d Concept Design



	REV	DATE	REVISION DESCRIPTION	CHK	APP	DRG No.	R
-	FILE R	EF: Y:\Jot	s Active 2023\CE -Roads & Drainage\MRL_Lockier Project TIA_2309009\4. Drawings\4.5 Sketches\2309009 SK	003 & SK0	04		

NB JB

A 13.10.23 ISSUED FOR INFORMATION

REFERENCE DRAWING TITLE





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**INFORMATION ONLY** 

# NOTES:

- 1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS NOTED OTHERWISE
- 2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL UNDERGROUND SERVICES PRIOR TO COMMENCEMENT OF CONSTRUCTION

# $\rightarrow$ > SCALE 1:500 ("INTERTIGATION TO THE TRANSPORTED FOR THE TRAN

# LEGEND

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EXISTING CADASTRAL BOUNDARY EXISTING LINE MARKING EXISTING ROAD CENTRELINE EXISTING COMMS CONCEPT CARRIAGEWAY EDGE

PROJECT INFORMA	TION	LOCKIER PROJECT				
DESIGNED BY:	NB	MIDLANDS ROAD ACCESS ASSESSMENT INTERSECTION 2 GENERAL ARRANGEMENT				
DRAWN BY:	AC					
PROJECT No.	2309009	DRAWING NUMBER:	REV.			
PROJ. MANAGER	-	2309009-SK003		ŀ		

LAST SAVED BY: Adrien DATE: 13 October 2023 1:13 PM



Α	13.10.23	ISSUED FOR INFORMATION	NB	AC		
REV	DATE	REVISION DESCRIPTION	CHK	APP	DRG No.	REFERENCE DRAWING TITLE





MRWA RAV 6 B(20m) OVERALL LENGTH OVERALL WIDTH OVERALL BODY HEIGHT MIN BODY GROUND CLEARANCE TRACK WIDTH LOCK-TO-LOCK TIME TURNING RADIUS TO OUTSIDE FRONT WHEEL





CLIENT



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- 1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS NOTED OTHERWISE
- 2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL UNDERGROUND SERVICES PRIOR TO COMMENCEMENT OF CONSTRUCTION







RAV 6 36.5m TURNING TEMPLATE RIGHT TURN MOVEMENT 1:500

1

PROJECT INFORMA	TION	LOCKIER PROJECT					
DESIGNED BY:	NB	MIDLANDS ROAD ACCESS ASSESSMENT					
DRAWN BY: AC TURNING TEMPLATES							
PROJECT No.	2309009	DRAWING NUMBER:	REV.				
PROJ. MANAGER	_	2309009-SK004	A				
•		LAST SAVED BY: Adrien DATE: 13 October 2023 1:13 PM					

Lloyd George Acoustics PO Box 717 Hillarys WA 6923 T: 9401 7770 www.lgacoustics.com.au



DEPARTMENT OF PLANNING, LANDS AND HERITAGE DATE FILE 14-Dec-2023 SDAU-067-23

# Environmental Noise Assessment -Lockyer Gas Development Project

Lot 3558/25116 Midlands Road, Mount Horner WA

Doc Number: LGP-0000-EN-REP-000005 LGA Reference: 23078242-01B

> Prepared for: Mineral Resources



# Doc Number: LGP-0000-EN-REP-000005

# LGA LGA Reference: 23078242-01B

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This report has been prepared in accordance with the scope of services described in the contract or agreement between Lloyd George Acoustics Pty Ltd and the Client. The report relies upon data, surveys, measurements and results taken at or under the particular times and conditions specified herein. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client. Furthermore, the report has been prepared solely for use by the Client, and Lloyd George Acoustics Pty Ltd accepts no responsibility for its use by other parties.

Date	Rev	Description	Author	Verified
02/10/23	0	Issued to Client	Daniel Lloyd	Terry George
30/11/23	A	Update to 250 TJ/d Plant	Daniel Lloyd	Terry George
08/12/23	В	Enclosure to compressors and engine	Daniel Lloyd	Terry George

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# **Appendices**

Appendix A – Processing Facility Layout
Appendix B – Terminology

# **1. INTRODUCTION**

Lloyd George Acoustics was engaged by Mineral Resources to undertake an environmental noise assessment for a proposed 250 TJ/d gas processing facility to be located at Lot 3558/25116 Midlands Road, Mount Horner WA - refer *Figure 1-1 (source Google Earth)*.



Figure 1-1: Subject Site Location

With regard to noise emissions, consideration is given to noise from the processing plant at neighbouring properties, and compared against the prescribed standards of the *Environmental Protection (Noise) Regulations 1997*.

Appendix B contains a description of some of the terminology used throughout this report.

# 2. CRITERIA

Environmental noise in Western Australia is governed by the *Environmental Protection Act 1986*, through the *Environmental Protection (Noise) Regulations 1997* (the Regulations).

# 2.1. Regulations 7, 8 & 9

This group of regulations provide the prescribed standard for noise as follows:

# "7. Prescribed standard for noise emissions

- (1) Noise emitted from any premises or public place when received at other premises -
  - (a) must not cause, or significantly contribute to, a level of noise which exceeds the assigned level in respect of noise received at premises of that kind; and
  - (b) must be free of
    - (i) tonality; and
    - (ii) impulsiveness; and
    - (iii) modulation,

when assessed under regulation 9.

(2) For the purposes of subregulation (1)(a), a noise emission is taken to significantly contribute to a level of noise if the noise emission ... exceeds a value which is 5 dB below the assigned level at the point of reception."

Tonality, impulsiveness and modulation are defined in regulation 9. Under regulation 9(3), "Noise is taken to be free of the characteristics of tonality, impulsiveness and modulation if -

- (a) the characteristics cannot be reasonably and practicably removed by techniques other than attenuating the overall level of noise emission; and
- (b) the noise emission complies with the standard prescribed under regulation 7(1)(a) after the adjustments in the table [Table 2-1] ... are made to the noise emission as measured at the point of reception."

Where	Noise Emission is Not	Where Noise Emission is Music			
Tonality	Modulation	Impulsiveness	No Impulsiveness	Impulsiveness	
+ 5 dB	+ 5 dB	+ 10 dB	+ 10 dB	+ 15 dB	

\* These adjustments are cumulative to a maximum of 15 dB.

The assigned levels (prescribed standards) for all premises are specified in regulation 8(3) and are shown in *Table 2-2*. The  $L_{A10}$  assigned level is applicable to noises present for more than 10% of a representative assessment period, generally applicable to "steady-state" noise sources. The  $L_{A1}$  is for short-term noise sources present for less than 10% and more than 1% of the time. The  $L_{Amax}$  assigned level is applicable for incidental noise sources, present for less than 1% of the time.

Premises Receiving	Time of Dem	Assigned Level (dB)				
Noise	Time of Day	L <sub>A10</sub>	L <sub>A1</sub>	L <sub>Amax</sub>		
	0700 to 1900 hours Monday to Saturday (Day)	45 + influencing factor	55 + influencing factor	65 + influencing factor		
Noise sensitive	0900 to 1900 hours Sunday and public holidays (Sunday)	40 + influencing 50 + influencing factor factor		65 + influencing factor		
premises: highly sensitive area <sup>1</sup>	1900 to 2200 hours all days (Evening)	40 + influencing 50 + influencing factor factor		55 + influencing factor		
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays (Night)	35 + influencing factor	45 + influencing factor	55 + influencing factor		
Noise sensitive premises: any area other than highly sensitive area	All hours	60	75	80		
Commercial Premises	All hours	60	75	80		
Industrial and Utility Premises	All hours	65	80	90		

# Table 2-2 Baseline Assigned Levels

1. highly sensitive area means that area (if any) of noise sensitive premises comprising -

(a) a building, or a part of a building, on the premises that is used for a noise sensitive purpose; and

(b) any other part of the premises within 15 metres of that building or that part of the building.

As all the land surrounding the proposed processing facility is rural and away from any commercial or industrial land uses, the influencing factor (IF), in relation to noise received at noise sensitive premises, has been calculated as 0 dB. Therefore, it is the baseline levels provided in *Table 2-2* that are applicable.

It must be noted the assigned levels above apply outside the receiving premises and at a point at least 3 metres away from any substantial reflecting surfaces.

The assigned levels are statistical levels and therefore the period over which they are determined is important. The Regulations define the Representative Assessment Period (RAP) as "a period of time of not less than 15 minutes, and not exceeding 4 hours, determined by an inspector or authorised person to be appropriate for the assessment of a noise emission, having regard to the type and nature of the noise emission". An inspector or authorised person is a person appointed under Sections 87 & 88 of the Environmental Protection Act 1986 and include Local Government Environmental Health Officers and Officers from the Department of Water Environmental Regulation. Acoustic consultants or other environmental consultants are not appointed as an inspector or authorised person. Therefore, whilst this assessment is based on a 4-hour RAP, which is assumed to be appropriate given the nature of the operations, this is to be used for guidance only.

# **3. METHODOLOGY**

Computer modelling has been used to predict the noise emissions from the development to all nearby receivers. The software used was *SoundPLAN 9.0* with the CONCAWE algorithms selected, as they include the influence of meteorological conditions. Input data required in the model are listed below and discussed in *Section 3.2.1* to *Section 3.2.4*:

- Meteorological Information;
- Topographical data;
- Ground Absorption; and
- Source sound power levels.

# 3.1.1. Meteorological Conditions

Meteorological information utilised is provided in *Table 3-1* and is considered to represent worst-case conditions for noise propagation, which would occur during the night period. At wind speeds greater than those shown, sound propagation may be further enhanced, however background noise from the wind itself and from local vegetation is likely to be elevated and dominate the ambient noise levels.

Parameter	Night (7.00pm to 7.00am) <sup>2</sup>				
Temperature (°C)	15				
Humidity (%)	50				
Wind Speed (m/s)	3				
Wind Direction <sup>1</sup>	All				
Pasquil Stability Factor	F				

# Table 3-1: Modelling Meteorological Conditions

Notes:

1. The modelling package allows for all wind directions to be modelled simultaneously.

2. The conditions above are as defined in Guideline: Assessment of Environmental Noise Emissions; May 2021

# 3.1.2. Topographical Data

Topographical data was adapted from publicly available information (e.g. *Google*) in the form of spot heights and combined with the site plan.

# 3.1.3. Ground Absorption

The ground absorption has been assumed to be 0.0 (0%) for the processing area and 0.75 (75%) elsewhere, noting that 0.0 represents hard reflective surfaces such as water and 1.0 represents absorptive surfaces such as grass. Using a value of 75% allows for times after harvesting, where the ground may not be covered with crops (i.e. soft ground).

# 3.1.4. Source Sound Levels

The source sound power levels of the processing plant assumed in the modelling are provided in *Table 3-2*. The processing plant layout is provided in *Appendix A*.

	Octave Band Centre Frequency (Hz)							Overall	
Description	63	125	250	500	1k	2k	4k	8k	dB(A)
Amine Pumps	75	83	87	96	102	99	91	82	105
Compressor > 1750 KW (enclosed)	57	68	77	80	88	89	84	76	93
Condensation Cooler	89	97	96	97	95	93	88	71	103
Cooler Bed	84	92	91	92	90	88	83	66	98
Electric Pump	58	73	83	86	83	86	86	71	92
Inlet Cooler Fan	59	67	66	67	65	63	58	41	73
Inlet Separator				95					95
Methane Gas Flare Discharge	103	97	111	114	110	114	115		120
Methane Gas Flare Normal	76	70	84	87	83	87	88		93
Reciprocating Engines (enclosed)	64	71	78	83	90	89	79	71	93
Reflux Pumps	63	71	75	84	90	87	79	70	93
Slug Catcher				92					92
Engine Exhaust	72	76	73	76	80	80	71	58	85
Dew Point Controllers (JT Jet)				95					95
Launchers/Receivers				92					92
Workshop	46	61	73	89	92	93	88	76	97

Table 3-2: Source Sound Power Levels, dB

The following is noted in relation to *Table 3-2*:

- Sound power levels provided by Mineral Resources;
- Modelling assumes all plant is operating simultaneously;
- The noise data for all sources representative of its L<sub>10</sub> level (except methane gas discharge);
- The methane gas discharge is representative of the L<sub>1</sub> level; and
- The assumed enclosures for the compressors and engine is to ensure compliance with occupational health and safety standards of 85 dB(A) at 1 metres. This assessment does not assume any specific design or use of the enclosures.

# 4. RESULTS

The noise levels were predicted for two scenarios, being the  $L_{A10}$  levels representative of normal operations and the  $L_{A1}$  level, being during a gas flare discharge. The results are presented in *Table 4-1* and *Figures 4-1 and 4-2* respectively.

Receiver	Predicted L <sub>A10</sub> Noise Level dB	Controlling L <sub>A10</sub> Criterion	Predicted L <sub>A1</sub> Noise Level dB	Controlling L <sub>A1</sub> Criterion	Comment
6 Strawberry North- East Road	30	35	34	45	Compliant with assigned levels at all times
390 Strawberry North- East Road, Lockier	30	35	35	45	Compliant with assigned levels at all times
3983 Burma Road, Mount Horner	23	35	27	45	Compliant with assigned levels at all times
25033 Midlands Road, Milo	22	35	27	45	Compliant with assigned levels at all times
25116 Midlands Road, Mount Horner	35	-	39	-	Premises on same property so Regulations do not apply

Table 4-1: Predicted Noise Levels, dB(A)





# **5. RECOMMENDATIONS & CONCLUSION**

The predicted noise levels presented in *Section 4*, shows that the noise levels from the Lockyer Gas Development Project can comply with the assigned levels prescribed within the *Environmental Protection* (*Noise*) *Regulations 1997*, at all adjacent noise sensitive premises.

Appendix A – Processing Facility Layout


Appendix B – Terminology

The following is an explanation of the terminology used throughout this report:

## • Decibel (dB)

The decibel is the unit that describes the sound pressure levels of a noise source. It is a logarithmic scale referenced to the threshold of hearing.

## • A-Weighting

An A-weighted noise level has been filtered in such a way as to represent the way in which the human ear perceives sound. This weighting reflects the fact that the human ear is not as sensitive to lower frequencies as it is to higher frequencies. An A-weighted sound level is described as L<sub>A</sub>, dB.

## • Sound Power Level (L<sub>w</sub>)

Under normal conditions, a given sound source will radiate the same amount of energy, irrespective of its surroundings, being the sound power level. This is similar to a 1kW electric heater always radiating 1kW of heat. The sound power level of a noise source cannot be directly measured using a sound level meter but is calculated based on measured sound pressure level at known distances. Noise modelling incorporates source sound power levels as part of the input data.

## • Sound Pressure Level (L<sub>p</sub>)

The sound pressure level of a noise source is dependent upon its surroundings, being influenced by distance, ground absorption, topography, meteorological conditions etc. and is what the human ear actually hears. Using the electric heater analogy above, the heat will vary depending upon where the heater is located, just as the sound pressure level will vary depending on the surroundings. Noise modelling predicts the sound pressure level from the sound power levels taking into account ground absorption, barrier effects, distance etc.

## • L<sub>ASlow</sub>

This is the noise level in decibels, obtained using the A-frequency weighting and the S (slow) time weighting. Unless assessing modulation, all measurements use the slow time weighting characteristic.

## LAFast

This is the noise level in decibels, obtained using the A-frequency weighting and the F (fast) time weighting. This is used when assessing the presence of modulation.

## LAPeak

This is the greatest absolute instantaneous sound pressure level in decibels using the A-frequency weighting.

#### L<sub>Amax</sub>

An L<sub>Amax</sub> level is the maximum A-weighted noise level during a particular measurement.

## • L<sub>A1</sub>

The  $L_{A1}$  level is the A-weighted noise level exceeded for 1 percent of the measurement period and is considered to represent the average of the maximum noise levels measured.

## • L<sub>A10</sub>

The L<sub>A10</sub> level is the A-weighted noise level exceeded for 10 percent of the measurement period and is considered to represent the "intrusive" noise level.

#### • L<sub>A90</sub>

The  $L_{A90}$  level is the A-weighted noise level exceeded for 90 percent of the measurement period and is considered to represent the "background" noise level.

#### L<sub>Aeq</sub>

The equivalent steady state A-weighted sound level ("equal energy") in decibels which, in a specified time period, contains the same acoustic energy as the time-varying level during the same period. It is considered to represent the "average" noise level.

## • One-Third-Octave Band

Means a band of frequencies spanning one-third of an octave and having a centre frequency between 25 Hz and 20000 Hz inclusive.

## • Representative Assessment Period

Means a period of time not less than 15 minutes, and not exceeding four hours, determined by an inspector or authorised person to be appropriate for the assessment of a noise emission, having regard to the type and nature of the noise emission.

#### • L<sub>Amax</sub> assigned level

Means an assigned level, which, measured as a L<sub>ASlow</sub> value, is not to be exceeded at any time.

## • L<sub>A1</sub> assigned level

Means an assigned level, which, measured as a L<sub>ASlow</sub> value, is not to be exceeded for more than 1 percent of the representative assessment period.

#### • L<sub>A10</sub> assigned level

Means an assigned level, which, measured as a L<sub>ASlow</sub> value, is not to be exceeded for more than 10 percent of the representative assessment period.

#### • Tonal Noise

A tonal noise source can be described as a source that has a distinctive noise emission in one or more frequencies. An example would be whining or droning. The quantitative definition of tonality is:

- the presence in the noise emission of tonal characteristics where the difference between -
  - (a) the A-weighted sound pressure level in any one-third octave band; and
  - (b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as  $L_{Aeq,T}$  levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as  $L_{A Slow}$  levels.

This is relatively common in most noise sources.

#### • Modulating Noise

A modulating source is regular, cyclic and audible and is present for at least 10% of the measurement period. The quantitative definition of modulation is:

- a variation in the emission of noise that
  - (a) is more than 3 dB L<sub>A Fast</sub> or is more than 3 dB L<sub>A Fast</sub> in any one-third octave band; and
  - (b) is present for at least 10% of the representative assessment period; and
  - (c) is regular, cyclic and audible.

#### Impulsive Noise

An impulsive noise source has a short-term banging, clunking or explosive sound. The quantitative definition of impulsiveness means:

a variation in the emission of a noise where the difference between L<sub>Apeak</sub> and L<sub>Amax</sub> is more than 15 dB when determined for a single representative event.

#### Major Road

Is a road with an estimated average daily traffic count of more than 15,000 vehicles.

#### • Secondary / Minor Road

Is a road with an estimated average daily traffic count of between 6,000 and 15,000 vehicles.

#### • Chart of Noise Level Descriptors



Time

Austroads Vehicle Class

AUSTROADS				
CLASS	AGH VEHICLE			
1	SHSH Crist Very Wilgins, WAS URV, Royce, Matteryce			
2	BORT-ROWING- Role, Gooden, Root			
	HEAVY VEHICLES			
3	SIG AND SUCKOR NO CLOSED			
4	dealer and taxis circuit "3 circle 2 circle gavan			
5	NOR IN PALAND TRICK Nationals 7 net groups	(Jacob)		
6	Teola Autricia Atto 13 cello 3 celli prium			
7	POR ACE AMOUNTO			
8	BAE AND ARBOLEARD In allow the page (*			
9	fan Ansk Antocalaetto 16 celos 3+ celos gedaen in 7+ salan			
	LONG VEHICUS AND HOAD	8485		
10	REALIZED AND ANY THEY AND THE AND THE ANY THE ANY			
11	cicalital lical) Statel. 174 cells 3-or 8-cells (police			
12	folis i neseja faktiv 17+ upiles 7 + upite pospe	61		

• Typical Noise Levels





## **Waste Management Plan**

Lockyer Village

Prepared for Mineral Resources c/- Planning Solutions

29 February 2024

Project Number: WMP23089



DOCUMENT CONTROL						
Version	Description		Date	Author	Reviewer	Approver
1.0	First Approv	ved Release	29/02/2024	AB	DP	AB
Approval for Release						
Name		Position	File Reference			
Ann Brouwer						
Ann Brou	wer	Project Manager – Waste Management Consultant	WMP23089-0	02_Waste I	Managemen	t Plan_1.0
Ann Brou	wer	Project Manager – Waste Management Consultant	WMP23089-0	02_Waste	Vanagemen	t Plan_1.0



## **Executive Summary**

Mineral Resources is seeking development approval for the proposed gas plant and workers accommodation development, located on Strawberry North-East Road, Lockier (the Proposal).

To satisfy the conditions of the development application the Shire of Irwin (the Shire) requires the submission of a Waste Management Plan (WMP) that will identify how waste is to be stored and collected from the Proposal. Talis Consultants has been engaged to prepare this WMP to satisfy the Shire's requirements.

A summary of the bin size, numbers, collection frequency and collection method is provided in the below table.

## Proposed Waste Collection Summary

Waste Type	Generation (L/week)	Bin Size (L)	Number of Bins	Collection Frequency	Collection
Refuse	9,466	1,100	Five	Twice each week	Private Contractor
Recycling	1,722	1,100	One	Twice each week	Private Contractor

A private contractor will service the Proposal onsite, directly from the Bin Storage Area. The private contractor's waste collection vehicle will enter and exit the Proposal in forward gear via the vehicle entry/exit.

A site manager will oversee the relevant aspects of waste management at the Proposal.



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Figure 1: Locality Plan



## 1 Introduction

Mineral Resources is seeking development approval for the proposed gas plant and worker accommodation development, located in the Shire of Irwin (the Proposal).

To satisfy the conditions of the development application the Shire of Irwin (the Shire) requires the submission of a Waste Management Plan (WMP) that will identify how waste is to be stored and collected from the Proposal. Talis Consultants has been engaged to prepare this WMP to satisfy the Shire's requirements.

The Proposal is bordered by vacant land to the north, east, south and west, as shown in Figure 1.

## **1.1 Objectives and Scope**

The objective of this WMP is to outline the equipment and procedures that will be adopted to manage waste (refuse and recyclables) at the Proposal. Specifically, the WMP demonstrates that the Proposal is designed to:

- Adequately cater for the anticipated volume of waste to be generated;
- Provide an adequately sized Bin Storage Area, including appropriate bins; and
- Allow for efficient collection of bins by appropriate waste collection vehicles.

To achieve the objective, the scope of the WMP comprises:

- Section 2: Waste Generation;
- Section 3: Waste Storage;
- Section 4: Waste Collection;
- Section 5: Waste Management; and
- Section 6: Conclusion.



## 2 Waste Generation

The following section shows the waste generation rates used and the estimated waste volumes to be generated at the Proposal.

## 2.1 **Proposed Tenancies**

The anticipated volume of refuse and recyclables is based on the number of accommodation rooms and associated tenancies at the Proposal. The Proposal consists of the following:

- Rooms 24;
- Indoor Dining 125m<sup>2</sup>;
- Bakery 17m<sup>2</sup>;
- Kitchen 52m<sup>2</sup>;
- Office 26m<sup>2</sup>;
- Gym 115m<sup>2</sup>; and
- Recreation 157m<sup>2</sup>.

## **2.2** Waste Generation Rates

In order to achieve an accurate projection of waste volumes for the Proposal, consideration was given to the City of Melbourne's *Waste Guidelines for Waste Management Plans* (2021) and the City of Perth's *Waste Guidelines for New Developments* (Revision 5, effective from June 2019).

Table 2-1 shows the waste generation rates which have been applied to the Proposal.

	Guidalina Pafaransa	Refuse	Recycling
renancy use rype	ancy use Type Guideline Reference		Generation Rate
Rooms	Perth - Hotel/Motel	5L/bed/day	1L/bed/day
Indoor Dining	Perth – Hotel/Motel – Dining Area	667L/100m <sup>2</sup> /day	50L/100m <sup>2</sup> /day
Bakery	Melbourne – Takeaway/Café	150L/100m <sup>2</sup> /day	150L/100m <sup>2</sup> /day
Kitchen	Melbourne – Restaurant	660L/100m <sup>2</sup> /day	200L/100m <sup>2</sup> /day
Office	Melbourne – Office	10L/100m <sup>2</sup> /day	10L/100m <sup>2</sup> /day
Gym	Melbourne – Office	10L/100m <sup>2</sup> /day	10L/100m <sup>2</sup> /day
Recreation	Melbourne – Office	10L/100m <sup>2</sup> /day	10L/100m <sup>2</sup> /day

## Table 2-1: Waste Generation Rates

## 2.3 Waste Generation Volumes

Waste generation is estimated by volume in litres (L) as this is generally the influencing factor when considering bin size, numbers and storage space required.

Waste generation volumes in litres per week (L/week) adopted for this waste assessment are shown in Table 2-2. It is estimated that the rooms and associated tenancies at the Proposal will generate 9,466L of refuse and 1,722L of recyclables each week.



#### Table 2-2: Estimated Waste Generation

Tenancy Use Type	Number of Rooms / Floor Area (m²)	Waste Generation Rate	Waste Generation (L/week)
	Ref	use	
Rooms	24 Rooms	5L/bed/day	840
Indoor Dining	125m <sup>2</sup>	667L/100m <sup>2</sup> /day	5,836
Bakery	17m <sup>2</sup>	150L/100m <sup>2</sup> /day	179
Kitchen	52m <sup>2</sup>	660L/100m <sup>2</sup> /day	2,402
Office	26m <sup>2</sup>	10L/100m <sup>2</sup> /day	18
Gym	115m <sup>2</sup>	10L/100m <sup>2</sup> /day	81
Recreation	157m <sup>2</sup>	10L/100m <sup>2</sup> /day	110
		Total	9,466
	Recyc	lables	
Rooms	24 Rooms	1L/bed/day	168
Indoor Dining	125m <sup>2</sup>	50L/100m <sup>2</sup> /day	438
Bakery	17m <sup>2</sup>	150L/100m <sup>2</sup> /day	179
Kitchen	52m <sup>2</sup>	200L/100m <sup>2</sup> /day	728
Office	17m <sup>2</sup>	10L/100m <sup>2</sup> /day	18
Gym	115m <sup>2</sup>	10L/100m <sup>2</sup> /day	81
Recreation	157m <sup>2</sup>	10L/100m <sup>2</sup> /day	110
		Total	1,722



## 3 Waste Storage

Waste materials generated within the Proposal will be collected in the bins located in the Bin Storage Area, as shown in Diagram 1, and discussed in the following sub-sections.

Note: the waste generation volumes are best practice estimates and the number of bins to be utilised represents the maximum requirements once the Proposal is fully operational. Bin requirements may be impacted as the development becomes operational and the nature of the tenants and waste management requirements are known.

## **3.1** Internal Transfer of Waste

To promote positive recycling behaviour and maximise diversion from landfill, internal bins will be available throughout the Proposal for the source separation of refuse and recycling.

These internal bins will be collected by the staff/cleaners at least once each day and transferred to the Bin Storage Area for consolidation into the appropriate bins. This internal servicing method may be conducted outside of main operational hours to mitigate disturbances to visitors.

All bins will be colour coded and labelled in accordance with Australian Standards (AS 4123.7) to assist staff and cleaners to dispose of their separate waste materials in the correct bins.

## 3.2 Bin Sizes

Table 3-1 gives the typical dimensions of standard bins sizes that may be utilised at the Proposal. It should be noted that these bin dimensions are approximate and can vary slightly between suppliers.

Dimensions (m)	Bin Sizes			
	240L	660L	1,100L	
Depth	0.730	0.780	1.070	
Width	0.585	1.260	1.240	
Height	1.060	1.200	1.330	
Floor area (m <sup>2</sup> )	0.427	0.983	1.327	

## Table 3-1: Typical Bin Dimensions

*Reference: SULO Bin Specification Data Sheets* 

## **3.3** Bin Storage Area Size

To ensure sufficient area is available for storage of the bins, the amount of bins required for the Bin Storage Area was modelled utilising the estimated waste generation in Table 2-2, bin sizes in Table 3-1 and based on collection of refuse and recyclables twice each week.

Based on the results shown in Table 3-2 the Bin Storage Area has been sized to accommodate:

- Five 1,100L refuse bins; and
- One 1,100L recycling bin.



## Table 3-2: Bin Requirements for Bin Storage Area

Wasto Stroom	Waste Generation	Number of Bins Required			
waste stream	(L/week)	240L	660L	1,100L	
Refuse	9,466	20	8	5	
Recycling	1,722	4	2	1	

The location of the Bin Storage Area is shown in Diagram 1.

## Diagram 1: Bin Storage Area



## **3.4** Bin Storage Area Design

The design of the Bin Storage Area will take into consideration:

- Smooth impervious floor sloped to a drain connected to the sewer system;
- Taps for washing of bins and Bin Storage Area;
- Adequate aisle width for easy manoeuvring of bins;
- No double stacking of bins;
- Doors to the Bin Storage Area self-closing and vermin proof;
- Doors to the Bin Storage Area wide enough to fit bins through;
- Ventilated to a suitable standard;
- Appropriate signage;
- Undercover where possible and be designed to not permit stormwater to enter the drain;
- Located behind the building setback line;
- Bins not to be visible from the property boundary or areas trafficable by the public; and
- Bins are reasonably secured from theft and vandalism.

Bin numbers and storage space within the Bin Storage Area will be monitored by the site manager during the operation of the Proposal to ensure that the number of bins and collection frequency is sufficient.



## 4 Waste Collection

A private waste collection contractor will service the Proposal and provide five 1,100L bins for refuse and one 1,100L bin for recyclables.

The private contractor will collect refuse and recyclables twice each week utilising a rear loader waste collection vehicle.

The private contractor's rear loader waste collection vehicle will service the bins onsite, directly from the Bin Storage Area. The private contractor's rear loader waste collection vehicle will travel with left hand lane traffic flow on the vehicle entry/exit road and turn into the Proposal in forward gear, complete a multipoint turn within the Proposals carpark and pull up directly opposite the Bin Storage Area for servicing.

Private contractor's staff will ferry bins to and from the rear loader waste collection vehicle and the Bin Storage Area during servicing. The private contractor will be provided with key/PIN code access to the Bin Storage Area and security access gates to facilitate servicing, if required.

Once servicing is complete the private contractor's rear loader waste collection vehicle will exit in a forward motion, turning onto the vehicle entry/exit road and moving with traffic flow.

The above servicing method will preserve the amenity of the area by removing the requirement for bins to be presented to the street on collection days. In addition, servicing of bins onsite will reduce the noise generated in the area during collection. Noise from waste vehicles must comply with the Environmental Protection (Noise) Regulations and such vehicles should not service the site before 7.00am or after 7.00pm Monday to Saturday, or before 9.00am or after 7.00pm on Sundays and Public Holidays.

## 4.1 Bulk and Speciality Waste

Adequate space will also be allocated throughout the Proposal for placement of cabinets/containers for collection and storage of bulk and specialty wastes that are unable to be disposed of within the bins in the Bin Storage Area. These may include items such as:

- Refurbishment wastes from fit outs;
- Batteries and E-wastes;
- White goods/appliances;
- Used Cooking Oil;
- Cleaning chemicals; and
- Commercial Light globes.

These materials will be removed from the Proposal once sufficient volumes have been accumulated to warrant disposal. A temporary skip bin could be utilised for collections, if required. Collection will be monitored by the site manager who will organise their transport to the appropriate waste facility, as required.



## 5 Waste Management

A site manager will be engaged to complete the following tasks:

- Monitoring and maintenance of bins and the Bin Storage Area;
- Cleaning of bins and Bin Storage Area, when required;
- Ensure all staff/cleaners at the Proposal are made aware of this WMP and their responsibilities thereunder;
- Monitor staff/cleaner behaviour and identify requirements for further education and/or signage;
- Monitor bulk and speciality waste accumulation and assist with its removal, as required;
- Regularly engage with staff/cleaners to develop opportunities to reduce waste volumes and increase resource recovery; and
- Regularly engage with the private contractors to ensure efficient and effective waste service is maintained.



## 6 Conclusion

As demonstrated within this WMP, the Proposal provides a sufficiently sized Bin Storage Area for storage of refuse and recyclables based on the estimated waste generation volumes and suitable configuration of bins. This indicates that an adequately designed Bin Storage Area has been provided, and collection of refuse and recyclables can be completed from the Proposal.

The above is achieved using:

- Five 1,100L refuse bins, collected twice each week; and
- One 1,100L recycling bin, collected twice each week.

A private contractor will service the Proposal onsite, directly from the Bin Storage Area. The private contractor's waste collection vehicle will enter and exit the Proposal in forward gear via the vehicle entry/exit.

A site manager will oversee the relevant aspects of waste management at the Proposal.

## Figures

Figure 1: Locality Plan









Assets | Engineering | Environment | Noise | Spatial | Waste

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## LOCKYER CONVENTIONAL GAS DEVELOPMENT

## **ENVIRONMENTAL IMPACT ASSESSMENT OVERVIEW**

## Introduction

The Lockyer Conventional Gas Development (**the Project**) is proposed to be developed by Mineral Resources Limited (MinRes), in the mid-west region of Western Australia, approximately 25 km east of Dongara. The Lockyer gas field was discovered by MinRes in October 2021 through the exploration drilling of Lockyer Deep-1 in Exploration Permit 368 (EP 368), shown in **Figure 1**.

Exploration drilling at North Erregulla Deep-1, adjacent to the Lockyer structure, resulted in the discovery of additional prospective conventional gas resources, which will be tied back to the Lockyer Gas Development.

MinRes continues to explore and appraise the gas reservoirs and are proposing to construct a 250 TJ/day gas processing facility. As this is a conventional gas development, no fracking is required.

This Briefing Note provides an overview of the environmental impact assessment approach being undertaken by MinRes to facilitate the Project. MinRes will refer the Project to the Environmental Protection Authority (EPA) under Part IV of the Environmental Protection Act 1986.

It should be noted that all environment risks are being assessed and managed via the Environmental Impact Assessment process as part of the Project Part IV submission to the Environmental Protection Authority. The Part IV environmental impact assessment for the Project will commence in early 2024.

Detailed environmental studies have been prepared by external consultants to assess all relevant EPA factors. A summary assessment table has been provided overleaf to give the reader an understanding of the possible environmental impacts of the Project against the relevant EPA environmental factors.

## **Proposal Overview**

The Lockyer Conventional Gas Development is intended to be progressed via a fast-track project aimed at producing pipeline quality gas for MinRes' mining operations and gas markets in Q4 2025. The Project has the potential to contribute to mitigating a forecasted shortfall in the WA domestic gas market beyond 2026.

The Project area is located predominantly within Exploration Permit 368, with potential to expand activities in Exploration Permit 426. The Project will be located on land previously cleared of native vegetation currently used for broad acre farming activities.

The Project will consist of:

- Production wells indicatively six conventional gas wells as part of the initial development, with successful exploration and appraisal wells completed to enable their use as future producers.
- An upstream gas gathering network connecting the wells to hubs via underground flowlines in a huband-spoke arrangement. Flow from the individual wells (via flowlines) will be aggregated at hubs prior to being directed into larger hub flowlines.
- A Central Processing Facility (CPF) to treat the raw gas to the specification required for export to the Dampier to Bunbury Natural Gas Pipeline (DBNGP), inclusive of all utilities to support the field operations.
- An underground gas export pipeline connecting the CPF to the DBNGP.
- A condensate stabilisation and offloading system to support road transport of liquid product for sale.
- On-site infrastructure to support the operations phase including power generation, warehouse and workshop, control, equipment and switch room infrastructure, offices and accommodation.



Near-site infrastructure will also be developed, secured, or upgraded to support the project execution and operations phases. This will include:

- Road access and railway crossing upgrades (between the primary access road and the CPF site).
- Utilities infrastructure including telecommunications, water bore and groundwater quality monitoring bores and a sewage system.
- Permanent operations camp (within the CPF land area).

## **Environmental Factors**

The following table summarises the Project environmental impact assessment approach against the EPA environmental factors:

Study / Factors	Impact summary (subject to ongoing studies)
Marine Factors	Not applicable - on-shore development.
Flora and vegetation	Minimal clearing of native vegetation, no significant impact to local or regional biological diversity and ecological integrity. Detailed flora and vegetation surveys completed in 2022 and further surveys were completed in September and October 2023 to include the revised CPF location, with final report pending.
Landforms	Not applicable - no material change to landforms.
Subterranean fauna	Not applicable - Minimal excavations for pipelines (<1.5m deep), no dewatering, no pits or voids.
Terrestrial fauna	Fauna surveys were completed in 2022. The revised pipeline alignment and CPF location was surveyed in August 2023, with final report pending.
Terrestrial environmental quality	Not applicable - conventional gas project therefore no fracking. Negligible localised impacts managed through planning, engineering and management measures. Standard waste management practices included in project design and operations.
Inland waters	No dewatering required, minimal groundwater extraction for construction (~0.3 GL 18-24 month), operations (~0.025 GL pa). Groundwater extraction license(s) pending. Inland Waters Impact Assessment completed. No unacceptable risks to surface water. Erosion management during construction and ongoing monitoring during operations will be undertaken.
Air quality	Air quality modelling indicates predicted ground level concentrations for all pollutants are below corresponding ambient air quality criteria.
Greenhouse gas emissions	Significant investment and low reservoir gas $CO_2$ concentrations indicate annual $CO_2$ -e emissions for the 250TJ/day facility are well below 100,000 t/CO <sub>2</sub> -e.
Social surroundings	Visual Impact Assessment indicates that visual impact is generally restricted to the flare tower and thermal oxidiser.
	The region (Shire of Irwin, Mingenew) has been subject to oil and gas exploration and development for ~60 years.
	Shire of Irwin and Shire of Mingenew supportive.
	Positive ongoing engagement with Yamatji Southern Regional Corporation.
	Environmental noise assessment indicates compliance with regulated noise limits at all sensitive receptors.
Human health	Not applicable – no radiation emissions





Figure 1: Perth Basin Exploration Permits and Production Licences



## LOCKYER CONVENTIONAL GAS DEVELOPMENT

## Introduction

The Lockyer Gas Project (**LGP**) is located within the Yamatji Nation Determination Area (Determination Area).

In December 2019, the Federal Court of Australia authorised the Yamatji Nation Claim by authorising the Yamatji Nation Indigenous Land Use Agreement (Agreement). On 7 February 2020, the Federal Court made a determination that native title exists in parts of the Determination Area (Taylor on behalf of the Yamatji Nation Claim v State of Western Australia [2020] FCA 42). The Agreement was executed on 9 February 2020, confirming that Yamatji Nation holds non-exclusive native title rights and interests over select parcels of land within the Determination Area.

The Yamatji Southern Regional Corporation Ltd (**YSRC**) was established on 8 January 2020 following the settlement Agreement with the WA Government. YSRC was established to act as the Regional Entity to implement a best practice governance structure to manage benefits of the Agreement on behalf of the native title holders. The native title holders comprise of the peoples of Hutt River, Mullewa Wadjari, Southern Yamatji and Widi.

Notwithstanding anything in the Yamatji Nation determination, there are no native title rights and interests in the Determination Area in or in relation to:

- a. minerals as defined in the Mining Act 1904 (WA) (repealed) and the Mining Act 1978 (WA);
- b. petroleum as defined in the Petroleum Act 1936 (WA) (repealed) and the Petroleum and
- c. Geothermal Energy Resources Act 1967 (WA); or
- d. geothermal energy resources and geothermal energy as defined in the Petroleum and Geothermal Energy Resources Act 1967 (WA);

except the right to take and use ochre to the extent that ochre is not a mineral pursuant to the *Mining Act 1904* (WA).

The LGP is located on freehold land where native title rights and interests have been extinguished; however, Aboriginal cultural heritage remains a relevant consideration.



## Timeline for Development

The Project will be developed as a fast development to address the looming domestic gas shortage in Western Australia. The timeline for development is shown below.

#### Table 1: Project Milestones

Milestone	Estimated Date
Development Application Approval	March 2024
Construction Commencement	June2024
Commissioning	June 2025
First Gas	November 2025

## Heritage Overview

A search of the ACH Directory on the ACHIS as of November 2023 identified the following ACH places within the LGP area:

- Lockier River (ID: 24381);
- Irwin River (ID: 18907).

Mineral Resources Limited (**MinRes**) has engaged and will continue to engage with the YSRC and relevant knowledge holders to implement appropriate cultural heritage management measures pursuant to the Aboriginal Cultural Heritage Act 1972 (WA). As we develop, MinRes will work together with YSRC and identified knowledge holders to facilitate ongoing consultation and engagement about the LGP; this includes conducting heritage surveys and monitoring opportunities as required.

Since 2021, MinRes has maintained regular consultation with YSRC, including the engagement of Aboriginal Heritage Monitors to complete field assessments for a range of exploration activities within the Lockyer Gas Project footprint. As MinRes begins to transition from exploration to the development and production phases of the project, MinRes will continue to consult directly with YSRC, and members nominated for 'on country' Heritage Surveys and Monitoring.

#### 2023 Monitoring and Heritage Surveys

#### Table 2: Monitoring and Heritage Surveys conducted/scheduled

Survey Date	Scope
27-28 September	Monitoring: Lockyer-4 Well Pad Clearing
19 October	Monitoring: Lockyer-5 Well Pad Clearing
6 December	Monitoring: North Erregulla-2 Well Pad Clearing
12-14 December	Heritage Survey: Lockyer Gas Development (pipelines, CPF)

## **Traditional Owner Engagement**

The MinRes Communities and Heritage department ensure there are ongoing engagements with Traditional Owners to accommodate for both the legal and social licenses that MinRes



requires to operate. This ensures that not only the legal requirements are fulfilled, such as heritage compliance and native title obligations, but that proactive engagement aimed to further strengthen our relationships with Traditional Owners and provide further benefit to the groups, is undertaken. MinRes is committed to continuing to work with Traditional Owners, to develop our assets in a way which is socially and environmentally responsible.

MinRes and the YSRC have been engaging since 2021 on the exploration and development of gas in the northern Perth Basin, specifically the area between Dongara and Mingenew. MinRes have provided Activity Notices to the YSRC on the construction of well pads. Six well pads have been constructed since 2021, which have all been the subject of successful heritage surveys and/or heritage monitoring.

In 2022, MinRes undertook the acquisition of the Rococo 3D seismic survey. This was completed in consultation with the YSRC and a heritage survey was carried out prior to this. The survey was carried out on already disturbed land which involved minimum ground disturbance. Prior to the works commencing, MinRes and the YSRC organised for a cultural heritage induction to be carried out.

This engagement took place at the Mingenew Recreation Centre on the 6<sup>th</sup> of January 2023. A smoking ceremony was held as part of cultural heritage inductions for all Personnel who were participating in the works. These inductions were organised with and coordinated by the YSRC on behalf of the Yamatji Nation native title holders, to assist with the understanding of the Traditional Owner's heritage values for the region and being part of the management measures for the protection of these heritage values while the works were underway.

MinRes have had a positive and active relationship with the Yamatji Nation, with YSRC being supportive of MinRes's activities in the region and its management of the protection of heritage values.

MinRes commits to offering ongoing support to YSRC to continue building relationships with YSRC and its constituency. MinRes have:

- offered support at the YSRC Annual General Meeting held in November 2023;
- developed Lockyer Gas Project information flyers to be distributed to YSRC membership and shared on social media platforms and in YSRC newsletters etc;
- invited YSRC and broader community to attend community meetings i.e. Shire specific town hall information sessions (e.g. Mingenew and Dongara); and
- have also expressed an interest to attend any YSRC organised 'information expo's' as an opportunity for further engagement.

Since 2021, MinRes has maintained regular consultation with YSRC including the engagement of Aboriginal heritage monitors to complete field assessments for a range of exploration activities within the Lockyer Gas Project footprint. Please refer to the below table indicating formal engagement with YSRC in 2023.



Table 3: Formal engagement with YSRC (not including telephone or email correspondence).

Date	Purpose
6 January 2023	Cultural heritage engagement with YSRC, Traditional Owners and MinRes Personnel.
25 August 2023	Meeting with YSRC Heritage Manager to provide a project update/overview, discuss locations of proposed well pads, schedule heritage survey dates.
9 November 2023	Meeting with YSRC Heritage Manager to provide a project update, discuss upcoming heritage surveys and proposed pipeline routes, discuss Cultural Committee availability to meet in 2024.
14 December 2023	Meeting with YSRC Chief Executive Officer and YSCR's Social Reinvestment Officer to provide a project update, discuss MinRes meeting material for 17 January 2024 meeting with YSRC Cultural Committee and address any other matters.

MinRes have a scheduled meeting with YSRC's nominated Cultural Committee on 18 January 2024 to be held in Geraldton that will seek formal support for the Section 38 Part IV EPA Environmental Approval from the YSRC and build on the relationship.

## Next Steps

As we begin to transition from exploration to the development and production phases of the project, MinRes will continue to consult directly with YSRC, and members nominated for 'on country' Heritage Surveys and Monitoring. MinRes will work together with YSRC to discuss opportunities for business development, employment, and other benefits for the local members of the group and will continue to work with the broader community to find other opportunities within the region.



#### Figure 1: Lockyer Gas Project footprint







MEMORANDUM					
ТО	Alastair Trolove – Principal Environment - Energy, Mineral Resources				
FROM	Danae Snell – Environmental Consultant, Eco Logical Australia				
	Rebecca Overs – Principal Environmental Consultant, Eco Logical Australia				
DATE	4 December 2023	PURPOSE	For Information		
SUBJECT	Lockyer Conventional Gas Development Visual Im	pact Assessment -	- Summary of preliminary findings		

Energy Resources Limited (ERL), a wholly owned subsidiary of Mineral Resources Limited (MRL) are currently undertaking an environmental impact assessment for the Lockyer Conventional Gas Development (the Proposal). Eco Logical Australia (ELA) has been engaged to undertake a Visual Impact Assessment (VIA) of the proposed development on the existing views from the surrounding landscape, with particular consideration of sensitive receptors identified through stakeholder consultation and desktop assessment. A detailed VIA is currently being completed which includes the following:

- Identification and mapping of the proposed development design
- Identification of the existing visual landscape characteristics of the site and surrounds (prior to development of the Proposal)
- Assessment of the visual impact of the proposed development, through viewshed analysis and site assessment, and identification of key views of the site.

A detailed VIA report is being prepared. This memorandum provides a preliminary summary of the findings of the viewshed analysis and site assessment. It is understood this summary will be used to support a Development Application for the central processing facility (CPF) associated with the Proposal.

#### PROPOSAL AND SITE DESCRIPTION

ERL is proposing to construct and operate six natural gas production wells, Central and Northern Hub Sites, and a Central Processing Facility located within the Lockyer gas field. The raw gas collected from the wells will be directed via an infield gathering system to the CPF, where it will be treated and then routed to the Dampier Bunbury Natural Gas Pipeline for sale. The Proposal will include a consolidated stabilisation, storage, and offloading system to support road transport of liquid product, and additional on-site infrastructure to support the operation phase including power generation, warehousing, workshops, switch room infrastructure and accommodation buildings.

The Lockyer gas field is located in the Perth Basin approximately 350 km north of Perth, , in the midwest region of Western Australia (Figure 1). The CPF will be located approximately 2 km north of Midlands Road, the main road between Dongara and Mingenew, approximately 18 km west of Mingenew.

The CPF and downstream pipeline network is located within the Shire of Irwin. The site is zoned as general farming land under the Shire of Irwin's local planning scheme and is within the Bundi Yamatji Aboriginal Corporation (BYAC) representative area. The main economic industry within the Shire of Irwin is agricultural farming, with additional industries including fisheries (primarily rock lobsters), mineral sands mining and oil and gas developments. The land surrounding the CPF location is currently used for broadacre agriculture with a mixture of cropping and grazing. The nearest populated centres



include Mingenew and Dongara, located approximately 18 km east and 30 km west from the CPF, respectively.

Infrastructure proposed to be constructed within the CPF, includes the following(Figure 2):

- Amine regeneration system (18 m high)
- Amine contractor tower (18 m high)
- Still column tank (18 m high)
- Thermal oxidiser (39.6 m high)
- HP/LP flare (69.7 m high)
- Other infrastructure (average 5 m high).



#### Legend

- Sensitive receptor
- ----- Road
- ----+ Railway
- Cry Watercourse
- Cadastre
- $\bigcirc$  Contours 10-meter interval (mAHD)
- CPF plant boundary
- Site boundary

## Figure 1 Site location







Legend Site layout Site boundary Cadastre

## Figure 2 Site layout

Datum/Projection: GDA2020 MGA Zone 50

600-23PER5100 Date: 4/12/2023





#### VIEWSHED ANALYSIS - METHODOLGY AND PRELIMINARY RESULTS

A viewshed analysis was performed using a 3-dimensionsal digital elevation model for the site and visualisation software (3DS Max) to determine which locations within the vicinity of the Proposal would have potential views of the site and to determine the viewshed or 'seen area' of key infrastructure to be located within the CPF, based on proposed maximum heights. A viewshed or 'seen area' is defined as 'a portion of the landscape that can be seen from one or more observer positions. The extent of the area that can be viewed is normally limited by landform, vegetation and distance' (WAPC 2007).

Sensitive receptors were overlaid with the viewshed to determine whether these locations would have a view of the proposed development. The preliminary outcomes of the viewshed analysis for key infrastructure components are shown in Figure 3. In summary:

- The HP/LP flare (height 69.7 m) will be at least partly visible from nine of the ten identified sensitive receptors.
- The thermal oxidiser (height 39.6 m) will be at least partly visible from nine of the ten identified sensitive receptors
- Some or all of the amine contractor tower, amine regeneration system and still column tank (height 18 m) will be visible from eight of the ten identified sensitive receptors
- Other CPF infrastructure (average height 5 m) will be visible to varying degrees from seven of the ten identified sensitive receptors

It is noted that vegetation has not been considered at this stage of the viewshed analysis and is likely to play a role at a local scale in decreasing the 'seen area'.

Given the fact that infrastructure is likely to be viewed to varying degrees from a number of sensitive receptors and surrounding public roads, further analysis has been completed to assess the extent and nature of visual impacts at various locations within the landscape. Viewpoint analysis is described in the following section.



#### Legend

- Sensitive receptor
- —— Road
- →→ Railway

#### Distance from CPF plant boundary

- 2.5 km
- CPF plant boundary
- Site boundary
- Cadastre

## Visibility analysis

- CPF plant boundary visibility (average height 5m)
- Amine contactor tower, amine regeneration system and still column tank visibility (height R 18m)
- Thermal oxidiser visibility (height 40m)
- HP/LP flare visibility (height 70m)

## Figure 3: Viewshed analysis



N



#### VIEWPOINT ANALYSIS - METHODOLOGY AND PRELIMINARY RESULTS

Based on the identified sensitive receptors, viewpoints were selected at various locations within approximately 4 km of the site, generally selected to coincide with worst case scenarios including hillcrests or gaps in roadside vegetation. Photos were taken at each of the viewpoint locations in the direction of the proposed CPF. Using 3-dimensional terrain modelling and visualisation software (3DS Max), these photos were overlayed with the location and indicative maximum height of the Proposal infrastructure to demonstrate infrastructure visibility from the various viewpoints. Each viewpoint location and montages of CPF infrastructure is shown in Figure 4 to Figure 12.

It is noted that apart from key infrastructure at heights of 69.7 m (flare), 39.6 m (thermal oxidiser) and 18 m (amine contractor tower, amine regeneration system and still column tank), other CPF infrastructure has been modelled and displayed in the viewpoint analysis figures as 5 m high rectangular block. This provides an average of the height of the majority of the facility (not including the tall towers shown separately). In reality, this infrastructure will not be in a solid block, and therefore likely visibility has been conservatively over estimated in this analysis.

Table 1 provides a summary of whether the proposed development is likely to be visible from each of the viewpoints.

Viewpoint Location	Viewpoint distance from CPF	Summary of likely visibility	
Strawberry NE Road Viewpoint 1 (Figure 4)	2 km	The flare and thermal oxidiser are likely to be partially visible from this location. Other infrastructure is not likely to be visible as it lies below the tree line.	
Strawberry NE Road Viewpoint 2 (Figure 5)	0.85 km	The flare and thermal oxidiser are likely to be partially visible from this location above the tree line. The bulk of the CPF is not likely to be visible as it lies below the tree line. This is the closest modelled viewpoint to the CPF.	
Strawberry NE Road Viewpoint 3 (Figure 6)	1 km	The flare and thermal oxidiser are likely to be visible from this location. Other CPF infrastructure is likely to be partially visible, although it is largely obscured by vegetation or sits in front of the ridgeline lessening the visual impact.	
Strawberry NE Road Viewpoint 4 (Figure 7)	2.25 km	This viewpoint is located on the nearest public road to two residences, SR07 and SR08. The flare is likely to be partially visible from this location, with the top protruding above the hill line. No other CPF infrastructure is likely to be visible above the ridge.	
Burma Road Viewpoint 1 (Figure 8)	3 km	The flare and thermal oxidiser are likely to be partially visible from this location. The thermal oxidiser sits in front of the ridgeline in the horizon, reducing the visual impact. The remainder of the CPF infrastructure is not likely to be visible as it sits within the valley of the undulating surrounding hills.	
Burma Road Viewpoint 2 (Figure 9)	3.75 km	This viewpoint is located on the nearest public road to a residence on Burma Road, SR10. The flare and thermal oxidiser are likely to be partially visible from this location. Each of these towers sit in front of the ridgeline in the horizon, reducing the visual impact of these features.	

#### Table 1: Likely visibility of the CPF infrastructure at selected locations



Viewpoint Location	Viewpoint distance from CPF	Summary of likely visibility
Midlands Road Viewpoint 1 (Figure 10)	2 km	The flare is likely to be partially visible from this location but is mostly obscured by roadside vegetation. The thermal oxidiser and other infrastructure sit behind the ridge/tree line and are unlikely to be visible.
Midlands Road Viewpoint 2 (Figure 11)	2 km	This viewpoint is located on the nearest public road to a residence on Midlands Road, SR02. The flare is likely to be partially visible from this location but is mostly obscured by roadside vegetation. The thermal oxidiser and other infrastructure sit behind the ridge/tree line and are unlikely to be visible.
Midlands Road Viewpoint 3 (Figure 12)	2.5 km	The flare is likely to be partially visible from this location. The thermal oxidiser and other infrastructure sit behind the ridge/tree line and are unlikely to be visible.

While the viewshed analysis indicates that the proposed development may be visible at a number of locations (based on topography alone), the viewpoint analysis demonstrates that existing vegetation and topography largely shields the views of the bulk of the proposed development. Where the proposed development is likely to be visible, the infrastructure is typically far away (i.e.  $\geq 2$  km) and is generally not an overwhelming feature of the view, blending in with the topographical features of the landscape such as hills and tree lines. At a number of locations, the tallest infrastructure (flare and thermal oxidiser) will be noticeable above the existing landscape and tree lines.


ThermalFlareoxidizer(69.7m)(39.6m)

**CPF Plant extent** (Average 5m height of infrastructure)

Figure 4: Indicative CPF Plant visibility Strawberry NE Road Viewpoint 1 (2km from CPF)







Thermal Flare oxidizer (69.7m) (39.6m)

**CPF Plant extent** (Average 5m height of infrastructure)

Figure 5: Indicative CPF Plant visibility Strawberry NE Road Viewpoint 2 (850m from CPF)







FlareThermal(69.7m)oxidizer(39.6m)

**CPF Plant extent** (Average 5m height of infrastructure)

Figure 6: Indicative CPF Plant visibility Strawberry NE Road Viewpoint 3 (1km from CPF)







**Flare** (69.7m)

**CPF Plant extent** (Average 5m height of infrastructure)

Figure 7: Indicative CPF Plant visibility Strawberry NE Road Viewpoint 4 (2.25km from CPF)







**CPF Plant extent** (Average 5m height of infrastructure)

# Figure 8: Indicative CPF Plant visibility Burma Road Viewpoint 1 (3km from CPF)







FlareThermal(69.7m)oxidizer(39.6m)

**CPF Plant extent** (Average 5m height of infrastructure)

Figure 9: Indicative CPF Plant visibility Burma Road Viewpoint 2 (3.75km from CPF)







Thermal oxidizer ( (39.6m)

**Flare** (69.7m)

**CPF Plant extent** (Average 5m height of infrastructure)

Figure 10: Indicative CPF Plant visibility Midlands Road Viewpoint 1 (2km from CPF)







Flare Thermal oxidizer (39.6m)

(69.7m)

**CPF** Plant extent

(Average 5m height of infrastructure)

Figure 11: Indicative CPF Plant visibility Midlands Road Viewpoint 2 (2km from CPF)







Thermal<br/>oxidizerFlare<br/>(69.7m)(39.6m)

**CPF Plant extent** (Average 5m height of infrastructure)

Figure 12: Indicative CPF Plant visibility Midlands Road Viewpoint 3 (2.5km from CPF)







#### REFERENCES

Western Australian Planning Commission (WAPC) 2007. *Visual Landscape Planning in Western Australia: A manual for evaluation, assessment, siting and design.* Available from: <u>https://www.wa.gov.au/system/files/2021-06/ML\_Visual-landscape-planning-in-Western-</u> <u>Australia.pdf</u>



# **Bushfire Consulting**

Bushfire Management Plan Project: BBS 23227



# Barron Building Surveying

City Hive, 184 Marine Terrace Geraldton WA 6530 0476 000 842 <u>chadwick@bbswa.com.au</u> www.bbswa.com.au

# **Property Address**

Lot 3561 Burma Road, 3558 Midlands Road, Mt Horner WA 6525

## Client

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**Mineral Resources** 



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Appendix 2 State Planning Policy SPP3.7 Guidelines for Planning in Bushfire Prone Areas V1.4, Schedule 1

Appendix 3 State Planning Policy SPP3.7 Guidelines for Planning in Bushfire Prone Areas V1.4, E3.6 Private Driveways

#### A. Disclaimer and Limitation

This assessment has been completed in accordance with *AS 3959* and *WA State Planning Policy SPP3.7* for the sole purpose of calculating the potential Bushfire Hazard to the proposed.

A fire event is in most cases, unpredictable and can be influenced by many factors. Some of these factors include, but are not limited to, temperature, wind speed, wind direction, humidity, the slope of the land, vegetation fuel load, growth, planting or the level of implementation and maintenance of fire prevention measures and the construction of additional structures upon the property that are not included as part of this assessment. If you are concerned or notice that factors have changed, a review of this management or assessment should be undertaken.

As permitted by the law and to its greatest extent, Barron Building Surveying (Chadwick Barron) and its associated employees exclude all liability whatsoever for: damage, loss, injury, death or claim to any property and/or person caused by a fire regardless of how that fire was caused and errors and/or omissions in this report with the client expressly acknowledging that such exclusion of liability is reasonable in all circumstances.

This assessment, recommendation and development of Bushfire Management Plan (BMP) does not in any way certify that the proposed structure(s) have been constructed in accordance with the assessed BAL rating. In providing this report as part of a development application or building license the client and landowner acknowledges that they understand, approve and will comply with all requirements to maintain the separation distances detailed in this report. Furthermore, the client/landowner acknowledges and accepts all responsibility in maintaining the required Asset Protection Zone.

This report is valid for 12 months only from the date of issue and supersedes all previous assessment if not noted otherwise.

Author	Company	Revision Notes	Date and Number
Chadwick Barron	Barron Building Surveying	Draft DA Submission v1	November 2023
Chadwick Barron	Barron Building Surveying	DA Submission	6 <sup>th</sup> December 2023

#### **Document Control**

#### B. Executive Conclusion

The seating of the proposed permanent Operation Camp development is only partially located within the Bushfire Prone Area, whereas the remainder of the Plant and Wells areas are not located within the Bushfire Prone Area (as per the DFES mapping). This Bushfire Management Plan has been completed due to precautionary principle of *State Planning Policy SPP3.7 Clause 2.5*.

The management strategy is to reduce the overall bushfire risk to the proposed development area and the surrounding community, which can be achieved by managing the bushfire risk within the development zone. This will be accomplished through the design of onsite fire services for firefighting, installation of Assets Protection Zone (APZ) and enforced by the additional management strategies. The managed strategies are based on an acceptable solution within the *State Planning Policy SPP3.7* guidelines.

The seating of the camp outline and accessways has provided adequate space to install an Asset Protection Zone (APZ) within the development zone/lease area. This will allow a good balance between both potential bushfire risk, land use and economical benefit.

### C. Assessment Methods/Processes

Method of assessment is to determine the type of classifiable vegetation that may have a potential hazard to the proposed development areas, being Lot 3561, 3588 Irwin WA 6525. This will be undertaken by using method one assessment as per *AS 3959* and comprise of an assessment against the *State Planning Policy SPP3.7 Clause 2.5 and 5.4* as an acceptable solution. This will be determined using all reference documents and liaising with stakeholders and other consultants as required.

#### D. Acknowledgement by Stakeholder/Owners

As the Stakeholders for which this Bushfire Management Plan has addressed and has been assessed, We/I understand the proposed development and confirm and agree with the executive conclusion, outputs, and management strategies of this Bushfire Management Plan. I shall comply with this report, and I am aware and understand the requirements set out within this Bushfire Management Plan and must ensure it is fulfilled in its entirety.

STAKEHOLDER/OWNER NAME	OWNER POSTAL ADDRESS	SIGNATURE(S)	DATE

ISSUED DETAILS						
Author/Company		Barron Building Surveying BSC Reg 93 Bushfire Consultant	Person	Chadwick Barron	Signature	Date 06/12/2023

#### 1. Proposal Details

PROPERTY DESCRIPTION			
Address of Development	Lot 3561 & 3558, Irwin WA 6525		
Local Government Area	Shire of Irwin		
Proposal	Proposed Gas Plant Facility and Operation Camp		
Town Planning Scheme	Scheme 5		

#### 1.1 Site Location



Figure 1 Site Location



Figure 2 DFES Mapping Screen Shot Draft Map (Dec 2023)



Figure 3 Site Layout Plan Dec 1 (A3 Page)



#### 2. Environment Considerations

The proposed development is located within the administration area of the Shire of Irwin. The development of the site is for a Proposed Gas Plant and Operation Camp. The site has been investigated for Flora survey and will be complete late 2023 for consideration.

In accordance with the *Bushfire Management Plan – BAL Contour Template* prepared by the *Department of Planning, Lands and Heritage (2018)*, this BMP has considered *Table 1 Environment Consideration* which shows these results from publicly available databases.

Department of Biodiversity, Conservation and Attractions (DBCA)	
RAMSAR Wetlands (DBCA-010)	Not within development envelope.
<ul> <li>Threatened and Priority Flora (DBCA-036)</li> </ul>	Priority species and locally significant vegetation types located within the development envelope.
Threatened Ecological Communities (DBCA-038)	Not within development envelope.
Department of Planning, Lands and Heritage	
Bush Forever Areas 2000 (DOP-071)	Not considered as the development envelope is not located on the Swan coastal plain.
Department of Water and Environmental Resources (DWER)	
<ul> <li>Clearing Regulations – Environmentally Sensitive Areas (DWER-046)</li> </ul>	Not within development envelope.
• Swan Bio-plan Regionally Significant Natural Areas 2010 ( <b>DWER-070</b> )	Not considered as the development envelope is not located on the Swan coastal plain.
Department of Primary Industries and Regional Development (DPIRD)	
<ul> <li>Conservation Covenants Western Australia (DPIRD-023) – This data needs to be requested through the DAFWA Geographic Information Services team and requires permission from the Commissioner for Soil and Land before they can be supplied.</li> </ul>	Not considered, however, this is unlikely as it is land that is set aside for conservation. Data will be requested.

Table 1 Environment Consideration

#### 2.1 Re-vegetation/Landscape Plans

The development/lease area will be managed and cleared under the *Mining and Petroleum Act* and will be completed under a clearing permit regulation. The site area clearing must be kept to a minimum to minimise the effect on the existing shrubland breakaway vegetation to the West.

It is proposed, as an additional management strategy, that the APZ be installed 20m outward of the camp area. The justification is that this will reduce fuel load and decrease the bushfire risk and would be undertaken as per *Environmental Protection Act 1986 (Clearing of Native Vegetation) Regulations 2004, r51 schedule 6 cl 1 & 9*.

#### 3. Bushfire Assessment Results

#### 3.1 Assessment Inputs

The collection of input data is to identify the vegetation classification and Bushfire Hazard Levels for justification of the proposed development. Onsite assessment and data collection has taken place and clarifies the results in *Table 2 Hazard Level Table and BAL Level* with the BMP including hazard levels, BAL contour plans and slope determination. These figures and tables show all classifiable vegetation within 150m of the development areas and the impact on each allotment.

#### 3.1.1 Topography

The allotment is located on coastal plain vegetation on coastal ridges and low wetland areas. The table below shows the slopes as determined by *AS 3959* figures being, up slope or down slope.

Development Area	North	East	South	West
Operational Camp	Downslope >0 to 5 degrees	All upslopes and flat land (0	Downslope >0 to 5 degrees	All upslopes and flat land (0
		degrees)		degrees)

### 3.1.2 Vegetation Classification Assessment

All vegetation within 150m of the site/proposed development has been classified in accordance with *AS* 3959 Clause 2.2.3.1, *Department of Planning Visual Guide for Bushfire Risk Assessment* and the *Fire and Emergency Services Authority Visual Fuel Load Guide*. Each distinguishable type of vegetation has been plotted to show the potential Bushfire Attack Level (BAL Contour) and Bushfire Hazard Levels. There are two main vegetation structures within the fringe of each development area, the vegetation classification has considered the overall predominant vegetation type within the plot. There are vegetation classification differences in AS 3959 compared to the botanical vegetation description and the BMP vegetation types are based on *AS 3959*.

Refer to *Appendix 1* for vegetation photo data related to the locations plotted on *Figure 4 Photo Location Map (A3 Page) and Figure 5 Photo Location Map Aerial.* 

Operational Camp					
Vegetation Plot	Vegetation Classification	Effective Slope under Classified Vegetation affecting the Hazard and BAL levels	Hazard Level		
1	Class G Grassland Snow pasture, including situations with shrubs and trees, if the overstorey foliage cover is less than 10%. Includes pasture and cropland. NOTE: Grassland managed in a minimal fuel condition and non-curing cropland is regarded as low threat vegetation for the purposes of Clause 2.2.3.2.	Downslope >0 to 5 degrees	Moderate		
		BAL Level of seated Buildings	BAL – 12.5		
Vegetation Plot	Vegetation Classification	Effective Slope under Classified Vegetation affecting the Hazard and BAL levels	Hazard Level		
2	Class D Scrub Closed Shrub in poor soil fertility or shallow soils; >30% foliage cover. Shrubs >2 m high. Typical of coastal areas and tall heaths up to 6 metres in height. Shrub dominated by Banksia, Melaleuca or Leptospermum with heights of up to 6 metres.	Downslope >0 to 5 degrees	Extreme		
		BAL Level of seated Buildings	BAL – 12.5		
Vegetation Plot	Vegetation Classification	Effective Slope under Classified Vegetation	Hazard Loval		
		affecting the Hazard and BAL levels			
3	Class G Grassland Snow pasture, including situations with shrubs and trees, if the overstorey foliage cover is less than 10%. Includes pasture and cropland.	affecting the Hazard and BAL levels Downslope >0 to 5 degrees	Moderate		
3	Class G Grassland Snow pasture, including situations with shrubs and trees, if the overstorey foliage cover is less than 10%. Includes pasture and cropland.	affecting the Hazard and BAL levels Downslope >0 to 5 degrees BAL Level of seated Buildings	Moderate BAL – 12.5		
3 Vegetation Plot	Class G Grassland Snow pasture, including situations with shrubs and trees, if the overstorey foliage cover is less than 10%. Includes pasture and cropland. Vegetation Classification	affective Slope under classified Vegetation       affection         Downslope >0 to 5 degrees       BAL Level of seated Buildings         Effective Slope under Classified Vegetation       affecting the Hazard and BAL levels	Moderate BAL – 12.5 Hazard Level		
3 Vegetation Plot 4	Class G Grassland Snow pasture, including situations with shrubs and trees, if the overstorey foliage cover is less than 10%. Includes pasture and cropland. Vegetation Classification Excludable – Clause 2.2.3.2(f) Woodland area on low depression area. Trees 10 to 20m high with grassing under story, some cluster of shrubs.	affective Slope under classified Vegetation         affecting the Hazard and BAL levels         Downslope >0 to 5 degrees         BAL Level of seated Buildings         Effective Slope under Classified Vegetation         affecting the Hazard and BAL levels         All upslopes and flat land (0 degrees)	Moderate BAL – 12.5 Hazard Level Extreme		
3 Vegetation Plot 4	Class G Grassland Snow pasture, including situations with shrubs and trees, if the overstorey foliage cover is less than 10%. Includes pasture and cropland. Vegetation Classification Excludable – Clause 2.2.3.2(f) Woodland area on low depression area. Trees 10 to 20m high with grassing under story, some cluster of shrubs.	Effective Slope under classified Vegetation         affecting the Hazard and BAL levels         Downslope >0 to 5 degrees         BAL Level of seated Buildings         Effective Slope under Classified Vegetation         affecting the Hazard and BAL levels         All upslopes and flat land (0 degrees)         BAL Level of seated Buildings	Moderate BAL – 12.5 Hazard Level Extreme BAL – LOW		
3     Vegetation Plot     4     Vegetation Plot	Class G Grassland Snow pasture, including situations with shrubs and trees, if the overstorey foliage cover is less than 10%. Includes pasture and cropland. Vegetation Classification Excludable – Clause 2.2.3.2(f) Woodland area on low depression area. Trees 10 to 20m high with grassing under story, some cluster of shrubs. Vegetation Classification	Effective Slope under Classified Vegetation         affecting the Hazard and BAL levels         Downslope >0 to 5 degrees         BAL Level of seated Buildings         Effective Slope under Classified Vegetation         affecting the Hazard and BAL levels         All upslopes and flat land (0 degrees)         BAL Level of seated Buildings         Effective Slope under Classified Vegetation         affecting the Hazard and BAL levels	Moderate BAL – 12.5 Hazard Level Extreme BAL – LOW Hazard Level		
3       Vegetation Plot       4       Vegetation Plot       5	Class G Grassland Snow pasture, including situations with shrubs and trees, if the overstorey foliage cover is less than 10%. Includes pasture and cropland. Vegetation Classification Excludable – Clause 2.2.3.2(f) Woodland area on low depression area. Trees 10 to 20m high with grassing under story, some cluster of shrubs. Vegetation Classification Excludable – Clause 2.2.3.2(f) Proposed access road is part of the development to be cleared and managed to Low threat vegetation.	Effective Slope under classified Vegetation         affecting the Hazard and BAL levels         Downslope >0 to 5 degrees         BAL Level of seated Buildings         Effective Slope under Classified Vegetation         affecting the Hazard and BAL levels         All upslopes and flat land (0 degrees)         BAL Level of seated Buildings         Effective Slope under Classified Vegetation         affecting the Hazard and BAL levels         All upslopes and flat land (0 degrees)         All upslopes and flat land (0 degrees)         All upslopes and flat land (0 degrees)	Moderate BAL – 12.5 Hazard Level Extreme BAL – LOW Hazard Level Extreme		

Vegetation Plot	Vegetation Classification	Effective Slope under Classified Vegetation affecting the Hazard and BAL levels	Hazard Level
6	Class G Grassland Snow pasture, including situations with shrubs and trees, if the overstorey foliage cover is less than 10%. Includes pasture and cropland. The line of tree vegetation within plot area is less than 10% and combination of Open Shrubland and snow pasture, predominate vegetation for bushfire risk is snow pasture.	Downslope >0 to 5 degrees	Moderate
		BAL Level of seated Buildings	BAL – 12.5 onto roadway
Vegetation Plot	Vegetation Classification	Effective Slope under Classified Vegetation affecting the Hazard and BAL levels	Hazard Level
7	Class G Grassland Snow pasture, including situations with shrubs and trees, if the overstorey foliage cover is less than 10%. Includes pasture and cropland.	All upslopes and flat land (0 degrees)	Moderate
		BAL Level of seated Buildings	BAL – LOW
Vegetation Plot	Vegetation Classification	Effective Slope under Classified Vegetation affecting the Hazard and BAL levels	Hazard Level
8	Class C Shrubland Shrubs <2 m high; greater than 30% foliage cover. Understory's may contain grass. Acacia and Casuarina, areas on rocky breakaway ridge areas.	All upslopes and flat land (0 degrees)	Moderate
		BAL Level of seated Buildings	BAL – 12.5 onto roadway
Vegetation Plot	Vegetation Classification	Effective Slope under Classified Vegetation affecting the Hazard and BAL levels	Hazard Level
9	Class G Grassland Snow pasture, including situations with shrubs and trees, if the overstorey foliage cover is less than 10%. Includes pasture and cropland.	All upslopes and flat land (0 degrees)	Moderate
		BAL Level of seated Buildings	BAL – LOW
Vegetation Plot	Vegetation Classification	Effective Slope under Classified Vegetation affecting the Hazard and BAL levels	Hazard Level
10	Class C Shrubland Shrubs <2 m high; greater than 30% foliage cover. Understory's may contain grass. Acacia and Casuarina, areas on rocky breakaway ridge areas.	All upslopes and flat land (0 degrees)	Moderate
		BAL Level of seated Buildings	BAL – LOW

Vegetation Plot	Vegetation Classification	Effective Slope under Classified Vegetation affecting the Hazard and BAL levels	Hazard Level
11	Class C Shrubland		Moderate
	Shrubs <2 m high; greater than 30% foliage cover. Understory's may contain	All upslopes and flat land (0 degrees)	
	grass. Acacia and Casuarina, areas on rocky breakaway ridge areas.		
		BAL Level of seated Buildings	BAL – 12.5
Vegetation Plot	Vegetation Classification	Effective Slope under Classified Vegetation	Hazard Level
		affecting the Hazard and BAL levels	
12	Class G Grassland		Moderate
	Snow pasture, including situations with shrubs and trees, if the overstorey foliage	All upslopes and flat land (0 degrees)	
	cover is less than 10%. Includes pasture and cropland.		
		BAL Level of seated Buildings	BAL – 12.5
Vegetation Plot	Vegetation Classification	Effective Slope under Classified Vegetation	Hazard Level
		affecting the Hazard and BAL levels	
0	Excludable – Clause 2.2.3.2(f)		Low
	Proposed managed area of development site to contain building, roadways and	Mixed	
	APZ areas.		
		BAL Level of seated Buildings	BAL – LOW



Figure 4 Photo Location Map (A3 Page)

- Photo Location
- Assessment Area 100m
- Assessment Buffer (150m)

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Figure 5 Photo Location Map Aerial (A3 Page)



Figure 6 Vegetation Classification Mapping (A3 Page)

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Figure 7 Slope and Contours (A3 Page)

- Assessment Area 100m
- Assessment Buffer (150m)
- Modified to non vegetated and low threat

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#### 3.2 Bushfire Assessment Outputs

The potential bushfire impact to the proposed development has been determined by classifying the vegetation type and slope beneath the vegetation as per *AS 3959 s2.2.5*.

The potential Bushfire Hazard has been determined as per *Guidelines for Planning in Bushfire Prone Areas Table 3.* The bushfire impact is as per *Table 2 Hazard Level Table and BAL Level.* 

Bushfire contour mapping has been produced to show the impact of bushfire ember attack into the development areas. The fire danger index for this site has been determined in accordance with *AS 3959 Table 2.1 (FDI 80)*. The BAL Contour mapping is shown in Figure 10 Bushfire BAL Contour Development Site (A3 Page). Utilising this mapping will form part of the development of the internal design layout and placement of internal roadways, fire breaks and APZ's which determine the output of the management strategies.

HAZARD LEVEL	CHARACTERISTICS
Extreme	<ul> <li>Class A: Forest</li> <li>Class B: Woodland (05)</li> <li>Class D: Scrub</li> <li>Any classified vegetation with a greater than 10 degree slope</li> </ul>
Moderate	<ul> <li>Class B: Open woodland {06}, Low woodland (07), Low open woodland [08], Open shrubland (09)*</li> <li>Class C: Shrubland</li> <li>Class E: Mallee/Mulga</li> <li>Class G: Grassland, including sown pasture and crops</li> <li>Vegetation that has a low hazard level but is within 100 metres of vegetation classified as a moderate or extreme hazard, is to adopt a moderate hazard level.</li> </ul>
Low	<ul> <li>Low threat vegetation may include areas of maintained lawns, golf courses, public recreation reserves and parklands, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and windbreaks.</li> <li>Managed grassland in a minimal fuel condition (insufficient fuel is available to significantly increase the severity of the bushfire attack). For example, short-cropped grass to a nominal height of 100 millimetres.</li> <li>Non-vegetated areas including waterways, roads, footpaths, buildings and rock outcrops.</li> </ul>

Table 3: BHL and classified vegetation (as per AS-3959)

Figure 8 SPP3.7 Table 3 Hazard Levels



Figure 9 Hazard Level Mapping (A3 Page)

- Assessment Area 100m
- Assessment Buffer (150m)
- Vegetation Plot
- Bushfire Hazard Level

  - Moderate

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Figure 10 Bushfire BAL Contour Development Site (A3 Page)

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Figure 11 Bushfire BAL Contour Camp Locations Buildings (A3 Page)

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#### 4. Identification of Bushfire Hazard Issues

The other identified hazard issues other than bushfire, is that the proposed development area is located within the general farming locality of Irwin which is not provided with scheme water.

#### 5. Assessment against Bushfire Protection Criteria

#### Objectives

- Avoid any increase in the threat of bushfire to people, property, and infrastructure.
- Reduce vulnerability to bushfire.
- Ensure that all level of planning documents consider bushfire protection requirements and include specified bushfire protection measures.
- Achieve an appropriate balance between bushfire risk management measures and other environmental issues.

The bushfire management measures required to achieve the acceptable solutions of the relevant bushfire protection criteria have been discussed through this report and are presented and summarised in *Table 3 SPP3.7 Solution Compliance Table* and described in the *Additional Management Strategies*.

Table 3 SPP3.7 Solution Compliance Table is based on the State Planning Policy SPP3.7 - Guidelines for Planning in Bushfire Prone Areas Version 1.4 Appendix 4, Bushfire Protection Criteria. The details for the acceptable solution of the State Planning Policy SPP3.7, are commented on and show how the development is addressing the bushfire risk.

Table 3 SPP3.7 Solution Compliance Table

ELEMENT 1: LOCATION			
PERFORMANCE PRINCIPLE	PROPOSED ACCEPTABLE SOLUTIONS		
P1	A1.1 Development location		
STATEMENT OF COMPLIANCE			
The proposed habitable land use areas will be located to the North of the development site and will consist of an Operation Camp. The Operation Camp is seated just within the edge of the Bushfire Prone Area as per DFES mapping Figure 2 DFES Mapping Screen Shot Draft Map (Dec 2023). The BMP has assessed the vegetation surrounding the camp area as a precaution principle even though the remaining development areas are not in Bushfire Prone Areas. The Operation Camp has been seated within a BAL 12.5 outcome and Moderate risk level. It is important to mention, vegetation plots 8, 10, and 11 have been identified as the only areas at risk of bushfire according to the DFES mapping. These plots have been specifically mapped to demonstrate the potential outcome relating to these areas. Please refer to the Figure below for a comparison against the assessment method completed as a precautionary measure.			
	Image: Subject Land   Subject Land   Assessment Area 100m   Assessment Buffer (150m)   Vegetation Plot   Bushfire Hazard Level   Image: Subject Land   Assessment Buffer (150m)   Vegetation Plot   Bushfire Hazard Level   Image: Subject Land   Assessment Buffer (150m)   Vegetation Plot   Bushfire Hazard Level   Image: Subject Land   Bushfire Hazard Level   Image: Subject Land   Image: Subject Land		

### **ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT**

PERFORMANCE PRINCIPLE

#### **PROPOSED ACCEPTABLE SOLUTIONS** A2.1 Asset Protection Zone (APZ)

#### STATEMENT OF COMPLIANCE

The BMP has been prepared as a precautionary principle and will install managed land areas within the leased area that will have an APZ installed to manage the bushfire risk to the camp area. Also, Mineral Resources has included an APZ area along the access path, this will allow the accessway to be seated with BAL 12.5 to Low with a Hazard Level of Moderate. Refer to Bushfire BAL Contour Camp Locations Buildings (A3 Page) and Figure 10 Bushfire BAL Contour Development Site (A3 Page) showing the BAL outcomes. Figure 11 & Figure 12 showing the location of the Asset Protection Zones.

### **ELEMENT 3: VEHICULAR ACCESS**

PERFORMANCE PRINCIPLE	PROPOSED ACCEPTABLE SOLUTIONS	
P3i	A3.1 Public roads	

#### STATEMENT OF COMPLIANCE

Construction of the roadway access, located on the South-East corner of the allotment, will be designed and installed to satisfy the requirements of Local Government.

PERFORMANCE PRINCIPLE
P3i

#### **PROPOSED ACCEPTABLE SOLUTIONS** A3.2a Multiple access routes

**STATEMENT OF COMPLIANCE** 

Lot 3558 can be reached via the road located at the South-East corner of Strawberry North-East Road. The road spans 460m and at the intersection with Strawberry North-East Road, there are two options for travel. One can head North towards Allanooka and East Yarragadee, or head South onto Midlands Road towards Irwin or East Mingenew. It is important to note that the main access roadway is not situated in a Bushfire Prone Area.



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Bushfire Prone Areas	
PERFORMANCE PRINCIPLE	PROPOSED ACCEPTABLE SOLUTIONS
P3i	A3.2b Emergency access way
STATEMENT OF COMPLIANCE	nmont
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PERFORMANCE PRINCIPLE	PROPOSED ACCEPTABLE SOLUTIONS
P3i	A3.3 Through-roads
STATEMENT OF COMPLIANCE	
	A3 4a Perimeter roads
STATEMENT OF COMPLIANCE	
N/A	
PERFORMANCE PRINCIPLE	PROPOSED ACCEPTABLE SOLUTIONS
P3iii	A3.4b Fire service access route
STATEMENT OF COMPLIANCE	eu uill be constructed to allow for large usbiels meuomont, due to the site
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	PROPOSED ACCEPTABLE SOLUTIONS
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PERFORMANCE PRINCIPLE P3iv **PROPOSED ACCEPTABLE SOLUTIONS** A3.6 Private driveways

#### STATEMENT OF COMPLIANCE

The length of the driveway leading to the camp areas is located within BAL Low to BAL 12.5 hazard level areas. To increase access for site operations and to achieve an acceptable outcome for vehicle movement, Mineral Resources will implement additional management strategies which comply, by installing passing bays every 200m as per Appendix 3.

The camp areas will be located on a new internal roadway. Access to the site is restricted to Authorised Persons, who are aware of the access route by the provision of routine site induction methods under the Work Safe Regulations. The proposed internal access road is deemed a suitable solution to meet the performance principle for the camp area.

ELEMENT 4: WATER		
PERFORMANCE PRINCIPLE	PROPOSED ACCEPTABLE SOLUTIONS	
	A4.1 Identification of future water supply	
STATEMENT OF COMPLIANCE		
N/A		

PA Ad 2 Provision of water for firefighting nurnoses	
A4.2 Housion of water for mengitting purposes	

STATEMENT OF COMPLIANCE

The proposed development site will be provided with optimal fire services for the operation requirements of the Plant and Camp area and will include provisions for Local Brigade access. It is proposed that the fire services system design be communicated through the relevant authority at construction stage for approval. The design and location will be agreed to by Department Fire and Rescue Services (DFES) and Local Government delegates. This BMP has included strategies for the implementation.

It is noted that Irwin Fire Brigade is located 14 minutes away from the site entry. The fire design system should consider the equipment capability of the Local Brigade and onsite first intervention measures.



#### 6. Responsibilities for Implementation and Management of Bushfire Measures

#### 6.1 Additional Management Strategies

The proposed development has been designed to include management strategies that are acceptable under the *State Planning Policy SPP3.7 Guidelines for Planning in Bushfire Prone Areas Version 1.4.* 

- Developers listed as having responsibility under this Bushfire Management Plan have endorsed it and provided future owners on transfers of land a complete copy of the current Bushfire Management Statement for their information.
- 2. All new habitable buildings that the developers have responsibility for, are designed and constructed in full compliance with the requirements of the WA Building Act 2011 and the referenced Building Code of Australia (BCA), and with any identified additional requirements of the relevant Local Government. For any Class 1, 2, or 3 buildings and associated Class 10a buildings or decks, this will include compliance with AS 3959 Construction of Buildings in Bushfire Prone Areas (2018 as amended) and/or for Class 1 buildings, the National Association of Steel Housing (NASH) Standard Steel Framed Construction in Bushfire Prone Areas, whereby construction standards corresponding to the assessed BAL will be applied.
- 3. Lodge a Section 70A (Transfer of Land Act 1893) notification on the certificate(s) of title of the proposed lot(s). Notice of this notification is to be included on the diagram or plan of survey (deposited plan). The notification is to state 'The lot(s) is/are in a bushfire prone area and (if applicable) are subject to a Bushfire Management Statement'. This shall alert the purchasers of land and successors in title of their responsibilities (*SPP3.7 s6.10 and 'Guidelines' s4.6.4 and s5.3.2*).
- 4. Asset Protection Zone to be installed and managed as per *State Planning Policy SPP3.7 Guidelines for Planning in Bushfire Prone Areas V1.4, Schedule 1* (refer to *Appendix 2*). The Asset Protection Zone shall be of width of no less than 20m around the Operation Camp.
- 5. Asset Protection Zone to be placed and maintained on the Western and Northern side of the internal access roadways to the Operation Camp to no less than 25m off the centre line of the roadway.
- 6. If vegetation planting is to take place within the Asset Protection Zone area, it shall be installed to meet the requirements of *State Planning Policy SPP3.7* (refer to *Appendix 2*).
- 7. Insufficient fuel available to significantly increase the severity of the bushfire attack e.g, short, cropped grass to nominal height of 100mm as per AS 3959 s2.2.3.2 (e) and (f). Where any existing or planned re-vegetation has been assessed as "low threat" (meeting AS 3959 s2.2.3.2 requirements) and excluded from classification, then this area will be managed to continue to meet those requirements and enable the buildings to retain their determined BAL ratings.
- 8. Dedicated fire services system to be provided for the proposed development on Lot 3558 or Lot 3561, accessed for fire-fighting purposes only and constructed in agreement with DFES operation requirements guidelines and Local Government.
- 9. A fire map/plan shall be placed and made available in a visibly marked all-weather accessible sealed container, or on a sign, at the front of the allotment entry and where required to Lot 3558 Water Tank location.
- 10. Clear access path of 6m shall be maintained and managed so firefighting appliances can move within and around the allotment.
- 11. Maintain Asset Protection Zone (APZ) to the distance required as per *Figure 11 Bushfire BAL Contour Camp Locations Buildings (A3 Page)* and *Figure 12 Bushfire Asset Protection Zone Operation Camp (A3 Page)*.
- 12. Internal access road to Operation Camp shall be constructed to incorporate *Appendix 3 State Planning Policy SPP3.7 Guidelines for Planning in Bushfire Prone Areas V1.4, E3.6 Private Driveways.*
#### 6.2 Responsibilities for Implementation and Management of the Bushfire Measures

This section relates to the responsibilities of the developer(s), landowner(s) and Local Government with regards to the initial implementation and ongoing maintenance of the required actions.

- The requirements are to be set out in a table(s) and provide the following:
  - the required initial and ongoing actions and any associated works that need to be undertaken
  - provision for those proposals that will be staged
  - responsibilities separately identified and assigned to the developer(s), landowner(s) and Local Government, as applicable
  - for each responsible entity, the actions are to be assigned a number
  - the required timing of the actions.

#### Table 4 Implementation Actions

DEVELO	OPER/LESSEE- PRIOR TO ISSUE OF TITLES
No.	Implementation Action
1.	A notification, pursuant to Section 165 of the <i>Planning and Development Act 2005</i> or Section 70A of the <i>Transfer of Land Act 1893</i> , is to be placed on the certificates of title of the lots advising of the existence of a hazard or other factor.
	Notice of this notification is to be included on the diagram or plan of survey (deposited plan), and/or as required by the Western Australian Planning Commission. The notification is to state as follows: "This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is subject to a Bushfire Management Plan. Additional planning and building requirements may apply to development on this land".
	This is to alert potential purchasers of the land and successors in title of their responsibilities regarding bushfire mitigation and hazard management.
2.	Access to Lot 3558 is to be constructed in accordance with the standards agreed to by Local Government and constructed to the Guidelines for Subdivisions Development (IPWEA Subdivision Guidelines), Liveable Neighbourhoods, Austroads Standards and/or any applicable standards for the local government area.
3.	Dedicated fire services system to be provided for the proposed development on Lot 3558 or Lot 3561, accessed for fire-fighting purposes only and constructed in agreement with DFES operation requirements guidelines and Local Government.
4.	A fire map/plan shall be placed and made available in a visibly marked all-weather accessible sealed container, or on a sign, at the front of the allotment entry and where required to Water Tank location and fire services.
DEVELO	OPER/LESSEE – PRIOR TO/AS PART OF DEVELOPMENT APPROVAL
No.	Implementation Action
1.	Access to Lot 3558 is to be constructed in accordance with the standards agreed to by Local Government and constructed to the Guidelines for Subdivisions Development (IPWEA Subdivision Guidelines), Liveable Neighbourhoods, Austroads Standards and/or any applicable standards for the local government area.
2.	Future development is required to address <i>State Planning Policy 3.7 – Guidelines for Planning in Bushfire Prone Areas</i> by installing Asset Protection Zone(s) to the standards stated in this BMP to achieve the intended BAL outcomes.

3.	Dedicated fire services system to be provided for the proposed development on Lot 3558 or Lot 3561, accessed for fire-fighting purposes only and constructed in agreement with DFES operation requirements guidelines and Local Government.
4.	All new buildings to be designed and constructed in full compliance with the requirements of the WA <i>Building Act 2011</i> and the referenced <i>Building Code of Australia (BCA)</i> , and with any identified additional requirements of the relevant Local Government.
	For any Class 1, 2, or 3 buildings and associated Class 10a buildings or decks, this will include compliance with AS 3959 Construction of Buildings in Bushfire Prone Areas (2018 as amended) and/or for Class 1 buildings, the National Association of Steel Housing – (NASH) Standard – Steel Framed Construction in Bushfire Prone Areas, whereby construction standards corresponding to the assessed BAL will be applied.
5.	A fire map/plan shall be placed and made available in a visibly marked all-weather accessible sealed container, or on a sign, at the front of the allotment entry and where required to Water Tank location and fire services.
6.	Asset Protection Zone to be placed and maintained on the Western and Northern side of the internal access roadways to the Operation Camp to no less than 25m off the centre line of the roadway.
7.	All Asset Protection Zone to be installed and managed as per <i>State Planning Policy SPP3.7 Guidelines for Planning in Bushfire Prone Areas V1.4, Schedule 1</i> (refer to <i>Appendix 2</i> ). The Asset Protection Zone shall be of width of no less than 20m around the Operation Camp.
8.	Internal access road to Operation Camp shall be constructed to incorporate Appendix 3 State Planning Policy SPP3.7 Guidelines for Planning in Bushfire Prone Areas V1.4, E3.6 Private Driveways.
·	
OCCUP	IER/LESSEE – ONGOING
OCCUP No.	IER/LESSEE – ONGOING Implementation Action
OCCUP No. 1.	Implementation Action Maintain all required low threat areas (e.g. lots, APZs, etc.) to the standards stated in this BMP to achieve the intended BAL outcomes.
OCCUF No. 1. 2.	PIER/LESSEE – ONGOING         Implementation Action         Maintain all required low threat areas (e.g. lots, APZs, etc.) to the standards stated in this BMP to achieve the intended BAL outcomes.         Comply with the relevant Local Government annual firebreak notice issued under s33 of the Bush Fires Act 1954.
OCCUF No. 1. 2. 3.	PIER/LESSEE – ONGOING         Implementation Action         Maintain all required low threat areas (e.g. lots, APZs, etc.) to the standards stated in this BMP to achieve the intended BAL outcomes.         Comply with the relevant Local Government annual firebreak notice issued under s33 of the Bush Fires Act 1954.         Maintain all Asset Protection Zones to meet the requirements of State Planning Policy SPP3.7 (refer to Appendix 2).
OCCUF No. 1. 2. 3. 5.	PIER/LESSEE – ONGOING         Implementation Action         Maintain all required low threat areas (e.g. lots, APZs, etc.) to the standards stated in this BMP to achieve the intended BAL outcomes.         Comply with the relevant Local Government annual firebreak notice issued under s33 of the Bush Fires Act 1954.         Maintain all Asset Protection Zones to meet the requirements of State Planning Policy SPP3.7 (refer to Appendix 2).         Maintain Asset Protection Zone (APZ) to the distance required as per Figure 11 Bushfire BAL Contour Camp Locations Buildings (A3 Page) and Figure 12 Bushfire Asset Protection Zone Operation Camp (A3 Page).
OCCUF No. 1. 2. 3. 5. 6.	PIER/LESSEE – ONGOING         Implementation Action         Maintain all required low threat areas (e.g. lots, APZs, etc.) to the standards stated in this BMP to achieve the intended BAL outcomes.         Comply with the relevant Local Government annual firebreak notice issued under s33 of the Bush Fires Act 1954.         Maintain all Asset Protection Zones to meet the requirements of State Planning Policy SPP3.7 (refer to Appendix 2).         Maintain Asset Protection Zone (APZ) to the distance required as per Figure 11 Bushfire BAL Contour Camp Locations Buildings (A3 Page) and Figure 12 Bushfire Asset Protection Zone Operation Camp (A3 Page).         Maintain fire services system for the proposed development area on Lot 3558 or Lot 3561 for fire-fighting purposes.
OCCUF No. 1. 2. 3. 5. 6. LOCAL	PIER/LESSEE – ONGOING         Implementation Action         Maintain all required low threat areas (e.g. lots, APZs, etc.) to the standards stated in this BMP to achieve the intended BAL outcomes.         Comply with the relevant Local Government annual firebreak notice issued under s33 of the Bush Fires Act 1954.         Maintain all Asset Protection Zones to meet the requirements of State Planning Policy SPP3.7 (refer to Appendix 2).         Maintain Asset Protection Zone (APZ) to the distance required as per Figure 11 Bushfire BAL Contour Camp Locations Buildings (A3 Page) and Figure 12 Bushfire Asset Protection Zone Operation Camp (A3 Page).         Maintain fire services system for the proposed development area on Lot 3558 or Lot 3561 for fire-fighting purposes.         GOVERNMENT – ONGOING MANAGEMENT
OCCUF No. 1. 2. 3. 5. 6. LOCAL No.	PIER/LESSEE – ONGOING         Implementation Action         Maintain all required low threat areas (e.g. lots, APZs, etc.) to the standards stated in this BMP to achieve the intended BAL outcomes.         Comply with the relevant Local Government annual firebreak notice issued under s33 of the Bush Fires Act 1954.         Maintain all Asset Protection Zones to meet the requirements of State Planning Policy SPP3.7 (refer to Appendix 2).         Maintain Asset Protection Zone (APZ) to the distance required as per Figure 11 Bushfire BAL Contour Camp Locations Buildings (A3 Page) and Figure 12 Bushfire Asset Protection Zone Operation Camp (A3 Page).         Maintain fire services system for the proposed development area on Lot 3558 or Lot 3561 for fire-fighting purposes.         GOVERNMENT – ONGOING MANAGEMENT



Figure 12 Bushfire Asset Protection Zone Operation Camp (A3 Page)

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Figure 13 Bushfire Asset Protection Zone Site (A3 Page)

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#### 7. Bushfire Attack Level Certificate

Bushfire Attack Level (BAL) Certificate Confirmation of Asset Protection Zone Installed Determined in accordance with AS 3959 Property Details and Description of Works						
Address Details	Unit no Street no Lot no Street Name / Plan F 3561 Burma Road				Reference	
	Suburb Irwin				State WA	Postcode 6525
Local Government Area	Shire of Irwir	1				
Main BCA Class of the building		Use(s) of t	he building			
Description of the building or works	Proposed Ga	s Plant Oper	ations Camp			

#### **Determination of Highest Bushfire Attack Level**

AS 3959 Assessment Procedure	Vegetation Classification	Effective Slope	Separation Distance installed APZ	BAL

Method 1	Select Classification	Select Slope	Select BAL
Shield Provision			

#### **Bushfire Consultant Details**

Name		
Company Details		
I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS 3959 (Incorporating Amendments 1, 2 and 3).	Authorized Practitioner Stamp	

Reliance on the assessment and determination of the Bushfire Attack Level contained in this certificate should not extend beyond a period of 12 months from the date of issue of the certificate. If this certificate was issued more than 12 months ago, it is recommended that the validity of the determination be confirmed with the Accredited Practitioner and where required an updated certificate issued.

#### 8. Bushfire Management Confirmation

### Confirmation of Additional Management Strategies have been Implemented

### **Property Details and Description of Works**

Address Details	Unit no	Street no	Lot no 3561 & 3558	Street Name / Pla Burma Road	an Reference	
	Suburb				State	Postcode
	Irwin				WA	6525
Local Government Area	Shire of Irwi	n				
Description of the BMP	Proposed Ga	as Plant Oper	ations Camp.			

#### **Person Details**

Name		
Company Details		
I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Management Plan Additional Strategies have been completed to substantially satisfy the commencement of the Development.	Authorized Practitioner Stamp	





## Barron Building Surveying

City Hive, 184 Marine Terrace Geraldton WA 6530 0476 000 842 <u>chadwick@bbswa.com.au</u> www.bbswa.com.au

## **Property Address**

Lot 3561, & 3588 Mt Horner WA 6525



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This photographic evidence is supplied in support of the Bushfire Assessment - Bushfire Management Plan BBS 23227. Each photo has been taken to identify the vegetation type and slope under the classifiable vegetation plots. Referred to in each photo heading or ID numbers.

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Roadway and Strawberry and Midlands Rd1	_
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## Photo Location No. 1 Plot 9 - Vegetation Classification - Class G Grassland – Sown pasture G-26



## Photo Location No. 2

Plot 9 - Vegetation Classification - Class G Grassland – Sown pasture G-26 Plot 0 Access point driveway point.



Plot 9 - Vegetation Classification - Class G Grassland - Dense sown pasture G-25



Photo Location No. 4 Plot 0 - Vegetation Classification - Class G Grassland - Low open woodland G-08



## Photo Location No. 5 Plot 1 - Vegetation Classification – Tree Highest tree of Tall Gums.



Photo Location No. 6 Plot 0 - Vegetation Classification - Class G Grassland - Low open woodland G-08



Photo Location No. 7 Plot 8 - Vegetation Classification - Class C Shrubland - Open heath C-11



Photo Location No. 8 Plot 0 - Vegetation Classification - Class G Grassland - Low open woodland G-08



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Photo Location No. 10 Plot 2 - Vegetation Classification - Class D Scrub - Closed scrub (Tall heaths) D-13



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Plot 9 - Vegetation Classification - Class G Grassland – Sown pasture G-26 Plot 8 in distance zoom in Photo point.



Photo Location No. 21 Plot 9 - Vegetation Classification - Class G Grassland – Sown pasture G-26 \_ Plot 0 in distance midway



Photo Location No. 22 Plot 10 - Vegetation Classification - Class C Shrubland - Low shrubland C-12



Photo Location No. 23 Plot 11 - Vegetation Classification - Class C Shrubland - Low shrubland C-12



Photo Location No. 24 Plot 10 - Vegetation Classification - Class C Shrubland - Low shrubland C-12



Photo Location No. 25 Plot 10 - Vegetation Classification - Class C Shrubland - Low shrubland C-12



Plot 4 - Vegetation Classification - Excludable - 2.2.3.2(a) >100m from site Locate near Strawberry North eats Road entry.



Plot 4 - Vegetation Classification - Excludable - 2.2.3.2(a) >100m from site Location Near Strawberry Northeast.



## Photo Location No. 28 Plot 4 - Vegetation Classification - Class B Woodland - Woodland B-05



Photo Location No. 29 Plot 2 - Vegetation Classification - Class D Scrub - Closed scrub (Tall heaths) D-13

# 6 Strawberry North-East Rd Milo WA



Photo Location No. 30 Roadway and Strawberry and Midlands Rd

## 6 Strawberry North-East Rd Milo WA



Photo Location No. 31 Roadway and Strawberry and Midlands Rd

## 6 Strawberry North-East Rd Milo WA



Photo Location No. 32 Roadway and Strawberry and Midlands Rd

Guidelines for Planning in Bushfire Prone Areas



#### **ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT**

#### **EXPLANATORY NOTES**

Fine fuel load should be maintained to less than two tonnes per hectare, however this is often a subjective assessment. Reducing fuel load levels does not necessarily require the removal of existing vegetation. A combination of methods can be utilised to reduce fuel load such as raking, weed removal, pruning, mulching and/or the removal of plant material.

A simple method to estimate fuel load is to roughly equate one tonne of fuel load per hectare as 100 grams per square metre. For example, two tonnes per hectare of leaf litter is roughly 200 grams of leaf litter per square metre and eight tonnes per hectare is roughly 800 grams. Eucalyptus leaf litter is approximately 100 grams per handful, so two handfuls of litter per square metre will roughly equate to two tonnes per hectare. Different types of fine fuel, like mulch or pine needles may be more or less than a handful, however the 100 grams per square metre rule of thumb can still be used.

The landowner or proponent is responsible for maintaining an APZ in accordance with Schedule 1 - Standards for Asset Protection Zones. Ongoing maintenance of an APZ is usually enforced through the local government firebreak notice issued under section 33 of the *Bushfires Act 1954*, and/or through a condition of a development approval, which requires the implementation of measures identified within a BMP.

A copy of the firebreak notice and Schedule 1 should be included in a BMP specifically as a how-to guide for the landowner, and to demonstrate to decision-makers that the measures outlined in the BMP to achieve the appropriate BAL rating through provision and ongoing management of an APZ, can be implemented.

Regardless of whether an Asset Protection Zone exists in accordance with the acceptable solutions and is appropriately maintained, it should be noted that fire fighters are not obliged to protect an asset if they think the separation distance between the dwelling and vegetation is unsafe.

#### Hazard on one side



Hazard on three sides



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Figure 18: Design of Asset Protection Zone

Refer to Schedule 1: Standards for Asset Protection Zones

Guidelines for Planning in Bushfire Prone Areas



### **ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT**

#### **EXPLANATORY NOTES**

#### E2 Landscaping and design of an asset protection zone

Landscaping, design, and maintenance of an APZ in a bushfire prone area can significantly improve the bushfire resilience of a building. An APZ should not be seen as an area entirely cleared of vegetation, but as a strategically designed space that gives holistic consideration to how existing or proposed vegetation or non-combustible features interact with, or affect the building's bushfire resilience.

A well designed APZ provides a greater level of vegetation management within the first few metres of a building with, for example, less vegetation or inclusion of non-combustible materials. The vegetation within the remainder of an APZ can increase further away from the building with carefully considered plant selection and landscaping techniques.

Strategic landscaping measures can be applied, such as replacing weeds with low flammability vegetation (refer to E2 Plant Flammability) to create horizontal and vertical separations between the retained vegetation. The accumulation of fine fuel load from different plants is an important consideration for ongoing maintenance in accordance with Schedule 1. For example, when planting ground covers under deciduous trees within an APZ, the total fine fuel load prescribed in Schedule 1 will include any dead plant material from ground covers and leaf litter from the trees.

Plant density and final structure and form of mature vegetation should be considered in the initial landscaping stages. For example, clumps of sapling shrubs planted at a density without consideration of future growth, may increase the bushfire risk as a clump will quickly grow to exceed  $5m^2$ . It should be noted that in some cases, a single shrub in a mature state may be so dense as to fill a  $5m^2$  clump alone.

The location of plants within an APZ is a key design technique. Separation of garden beds with areas of low fuel or non-combustible material, will break up fuel continuity and reduce the likelihood of a bushfire running through an APZ and subjecting a dwelling to radiant heat or direct flame contact. It is important to note, where mature trees are separated from a building by six metres, but the canopy has grown to extend or overhang a building, maintenance and pruning to remove the overhanging branches should be undertaken without the entirety of the tree being removed.

Mulches used within the APZ should be non-combustible. The use of stone, gravel, rock and crushed mineral earth is encouraged. Wood mulch >6mm in thickness may be used, however it is recommended that it is used in garden beds or areas where the moisture level is higher by regular irrigation. These materials could be sourced from non-toxic construction and demolition waste giving the added benefit of reducing the environmental impact of any 'hard landscaping' actions.

Combustible objects, plants, garden supplies such as mulches, fences made from combustible material, should be avoided within 10 metres of a building. Vines or climbing plants on pergolas, posts or beams, should be located away from vulnerable parts of the building, such as windows and doors. Non-flammable features can be used to provide hazard separation from classified vegetation, such as tennis courts, pools, lawns and driveways or paths that use inorganic mulches (gravel or crushed rock). Consider locating firewood stacks away from trees and habitable buildings.

Incorporation of landscaping features, such as masonry feature walls can provide habitable buildings with barriers to wind, radiant heat and embers. These features can include noise walls or wind breaks. Use of Appendix F of AS 3959 for bushfire resistant timber selection within areas of  $29 kW/m^2$  (BAL-29) or below, or the use of non-combustible fencing materials such as iron, brick, limestone, metal post and wire is encouraged.

In addition to regular maintenance of an APZ, further bushfire protection can be provided at any time by:

- ensuring gutters are free from vegetation;
- installing gutter guards or plugs;
- regular cleaning of underfloor spaces, or enclosing them to prevent gaps;
- trimming and removing dead plants or leaf litter;
- pruning climbing vegetation (such as vines) on a trellis, to ensure it does not connect to a building, particularly near windows and doors;
- removing vegetation in close proximity to a water tank to ensure it is not touching the sides of a tank; and/or
- following the requirements of the relevant local government section 33 fire break notice, which may include additional provisions such as locating wood piles more than 10 metres from a building.

## Bushfire Management Plan BBS\_23227\_Appendix 2\_Page 2 of 5

Guidelines for Planning in Bushfire Prone Areas



#### **ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT**

#### **EXPLANATORY NOTES**

Preparation of a property prior to the bushfire season and/or in anticipation of a bushfire is beneficial even if your plan is to evacuate. As embers can travel up to several kilometres from a bushfire and fall into small spaces and crevices or land against the external walls of a building, best practice recommends that objects within the APZ are moved away from the building prior to any bushfire event. Objects may include, but are not limited to:

- door mats;
- outdoor furniture;
- potted plants;
- shade sails or umbrellas;
- plastic garbage bins;
- firewood stacks;
- flammable sculptures; and/or
- playground equipment and children's toys.

#### **E2** Plant flammability

There are certain plant characteristics that are known to influence flammability, such as moisture or oil content and the presence and type of bark. Plants with lower flammability properties may still burn during a bushfire event, but may be more resistant to burning and some may regenerate faster post-bushfire.

There are many terms for plant flammability that should not be confused, including:

- Fire resistant plant species that survive being burnt and will regrow after a bushfire and therefore may be highly flammable and inappropriate for a garden in areas of high bushfire risk.
- Fire retardant plants that may not burn readily or may slow the passage of a bushfire.
- Fire wise plants that have been identified and selected based on their flammability properties and linked to maintenance advice and planting location within a garden.

Although not a requirement of these Guidelines, local governments may develop their own list of fire wise or fireretardant plant species that suit the environmental characteristics of an area. When developing a recommended plant species list, local governments should consult with ecologists, land care officers or environmental authorities to ensure the plants do not present a risk to endangered ecological communities, threatened, or endangered species or their habitat.

When selecting plants, private landholders and developers should aim for plants within the APZ that have the following characteristics:

- grow in a predicted structure, shape and height;
- are open and loose branching with leaves that are thinly spread;
- · have a coarse texture and low surface-area-to-volume ratio;
- will not drop large amounts of leaves or limbs, that require regular maintenance;
- have wide, flat, and thick or succulent leaves;
- trees that have bark attached tightly to their trunk or have smooth bark;
- · have low amounts of oils, waxes, and resins (which will often have a strong scent when crushed);
- do not produce or hold large amounts of fine dead material in their crowns; and/or
- will not become a weed in the area.

Refer to the WAPC Bushfire and Vegetation Fact Sheet for further information on clearing and vegetation management and APZ landscaping, design and plant selection reference material.

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## **ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT**

### SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT			
Fences within the APZ	<ul> <li>Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).</li> </ul>			
Fine fuel load (Combustible, dead vegetation matter <6 millimetres in thickness)	<ul> <li>Should be managed and removed on a regular basis to maintain a low threat state.</li> <li>Should be maintained at &lt;2 tonnes per hectare (on average).</li> <li>Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch &gt;6 millimetres in thickness.</li> </ul>			
Trees* (>6 metres in height)	<ul> <li>Trunks at maturity should be a minimum distance of six metres from all elevations of the building.</li> <li>Branches at maturity should not touch or overhang a building or powerline.</li> <li>tower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation.</li> <li>Canopy cover within the APZ should be &lt;15 per cent of the total APZ area.</li> <li>Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ.</li> <li>Figure 19: Tree canopy cover - ranging from 15 to 70 per cent at maturity.</li> </ul>			
Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	<ul> <li>Should not be located under trees or within three metres of buildings.</li> <li>Should not be planted in clumps &gt;5 square metres in area.</li> <li>Clumps should be separated from each other and any exposed window or door by at least 10 metres.</li> </ul>			
Ground covers* (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)	<ul> <li>Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above.</li> <li>Can be located within two metres of a structure, but three metres from windows or doors if &gt;100 millimetres in height</li> </ul>			



## **ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT**

### SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Grass	<ul> <li>Grass should be maintained at a height of 100 millimetres or less, at all times.</li> <li>Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.</li> </ul>
Defendable space	• Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
LP Gas Cylinders	<ul> <li>Should be located on the side of a building furthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building.</li> <li>The pressure relief valve should point away from the house.</li> <li>No flammable material within six metres from the front of the valve.</li> <li>Must sit on a firm, level and non-combustible base and be secured to a solid structure.</li> </ul>

\* Plant flammability, landscaping design and maintenance should be considered – refer to explanatory notes

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Guidelines for Planning in Bushfire Prone Areas

#### **EXPLANATORY NOTES**

#### E3.6 Private driveways

In areas serviced by reticulated water, where the road speed limit is not greater than 70 km/h, and where the distance from the public road to the further part of the habitable building is no greater than 70 metres, emergency service vehicles typically operate from the street frontage.

In the event the habitable building cannot be reached by hose reel from the public road, then emergency service vehicles will need to gain access within the property. Emergency service vehicles will also need to gain access within the property, where access to reticulated water (fire hydrants) is not possible. In these situations, the driveway and battle-axe (if applicable) will need to be wide enough for access for an emergency service vehicle and a vehicle to evacuate.

Turnaround areas should be available for both conventional two-wheel drive vehicles of residents and Type 3.4 fire appliances. Turn-around areas should be located within 30 metres of habitable buildings. Circular and loop driveway design may also be considered. Note that the design requirements for a turn-around area for a private driveway or battle-axe differ to a cul-de-sac.



Bushfire Management Plan BBS\_23227\_Appendix 3\_Page 1 of 1

As requested, please find a summary of submissions received for the conventional gas development at Lots 3558 and 3561 (25116) Midlands Road, Mount Horner. The SDAU received 14 submissions between 13 March 2024 to 18 April 2024 with the following responses to the proposed development being:

- No Support 42.86% (6)
- Support with changes 42.86% (6)
- Support 14.29% (2)

#### Do Not Support Development

Of the submitters voting against the development, the main objection was to the workers accommodation village being constructed on-site in lieu of constructing accommodation in the township of the local communities.

#### Local Context:

- The Applicant report does not appropriately describe the context or features of the local communities or indicate the significant contribution the region provides to Western Australia's food and fibre production.
- Description within planning report of area as "broadacre agricultural pasture lands interspersed with areas of scrubland" is inaccurate. High-value crops dominate the surrounding landscape. Fails to mention Mingenew is the location of the southern hemisphere's largest inland grain receival point.
- Feedback from local community is not incorporated into development application.
- A Social Impact Assessment has not been undertaken for the local towns or Mid-West region, and the Applicants report lacks sufficient information on social outcomes and provides no commitments.

#### Lockyer Village:

- Serviced towns are located within 20 minutes of the development site, and a regional centre within 50 minutes that could provide accommodation for the development workforce in lieu of the proposed accommodation village.
- The proposed accommodation is a FIFO (fly-in-fly-out) facility providing no benefit to the local towns. Should liaise with local Councils to mutually benefit from integrating with local community.
- WAPC Position Statement: Workforce Accommodation (2018) states "where practicable, workforce accommodation should be provided in established towns". Towns near to the site are well established with facilities to accommodate the proposed workforce however this has not been considered or proposed.

#### Investment in local communities:

- Mineral Resources should invest in local communities contributing to housing and upgrades to recreation spaces, further justification for the lack of investment should be provided.
- Recent scheme amendments to the zoning of the Mingenew townsite allows for workforce accommodation within the town centre. The operational workforce could provide economic and social benefits to the local community if located within the townsite as opposed to the development site.
- Lack of commitment to upskilling or training local people.

• No measure provided to illustrate economic benefit to the region.

#### Environmental concerns:

- Local communities rely on groundwater and rainwater which is already exposed to gas extraction from wells in close proximity to the development site.
- Local environmental damage has occurred through other similar recent developments, therefore concerned with further pollution and environmental damage, and impact to local townsites through cumulative industrialisation developments.

#### **Covid Provisions:**

• The development does not meet the requirements under Part 17 of the *Planning and Development Act 2005*, making no reference to the need to facilitate development in response to the economic effects of the Covid-19 pandemic.

#### Support Development with changes

Of the submitters supporting the development with changes, the concerns were based around lack of stakeholder engagement to the landowners nearest to the development, the proposed FIFO type accommodation for the project workforce without exploring the opportunity to utilise the facilities of established local communities which would provide economic and social benefits to these communities, and increased traffic and transport safety issues due to increased activity in particular during the construction phase.

#### Stakeholder Engagement:

• Applicant's report details engagement undertaken with local community however as a landowner directly impacted by development have not received any communications or had the opportunity to raise concerns with regards to visual impact and road safety due to increased road activity in the area.

#### Lockyer Village:

- Support development that encourages growth of local towns however do not support standalone workers accommodation which caters for FIFO workers and does not benefit local communities or townsites. Vacant land within townsites could be used for workers and families.
- Local Planning Strategies identify these type of developments as providing economic and social benefits to local communities however this proposal provides no benefits due to FIFO accommodation.
- FIFO industry well-known for mental health issues. Mineral Resources look to provide an industry benchmark for this development typology however only relates to infrastructure and not the health and well-being of its workforce, as missed opportunity to give back to local communities and provide family style accommodation to workforce within established local communities. There are many benefits to country living not explored by the developer.
- The construction of a temporary workers accommodation that will be removed once resource has been depleted is not considerate of local community or environment. Believed to be a more frugal option.

#### Traffic and Transport:

- Access road off Strawberry North East Road is hazardous due to poor visibility when approaching from the northern side on the entrance. The large sweeping corner impedes visibility and the proposed road trains would be slow exiting the facility.
- The sealed portion of Strawberry North east Road should be extended to the junction of Burma Road, for safety reasons, due to increased traffic during the construction period of the development. This section of road will be used for services and contractors as it is the shortest route to Geraldton.

#### Visual Impact:

- Visual Impact (VI) report does not provide true interpretation of sensitive receptors (SR). The VI report acknowledges a number of visual SR however the view shed provided is not from these positions:
  - SR10 (figure 9) taken from down the road from the driveway at a lower elevation and different orientation
  - SR10 (figure 8) taken an additional 1 kilometre down the hill from SR10 at a lower elevation and acute angle.
  - The ridges that may provide some masking of the facility in figures 8 and 9 are not applicable when viewing the facility from SR10 due to the topography of the land.

#### **Environment - Flaring:**

- Have had issues with flaring in the past from previous similar types of developments.
- Would appreciate providing Information on frequency and duration of flaring.

#### Employment:

- Job creation through construction phase however these jobs are no longer available once project has been constructed therefore only providing 40 real jobs.
- Opportunity for local communities to supply necessary provisions for accommodation village not considered. Should be given fair and equitable opportunity to provide food and services.

#### Support Development

The two submissions in support of the development were for reasons of economic opportunity the development could potentially offer the local communities, in particular employment opportunities for locals and local Aboriginal peoples.

It should be noted that a number of objectors welcome opportunity for industry in the local community however express their concern over the lack of investment in the local communities by Mineral Resources and therefore overall objected to the development.

Please note that we may also consider late public submissions, therefore if any other matters arise, you will be contacted accordingly.