Application for Works Approval

Part V Division 3 of the *Environmental Protection Act 1986*

Works Approval Number	W6500/2020/1
Applicant	Mid-West LNG Property Pty Ltd
ACN	639 456 812
File Number	DER2020/000326
Premises	Mid-West LNG Legal description - Lot 500 on Deposited Plan 411758 As defined by the coordinates in Schedule 2
Date of Report	01/04/2021
Decision	Works approval granted

Chris Malley
MANAGER, PROCESS INDUSTRIES

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Table of Contents

1. Decision summary

This Decision Report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and operation of the Premises. As a result of this assessment, Works Approval W6500 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Decision Report, the Delegated Officer has considered and given due regard to the Department of Water and Environmental Regulation's (department) Regulatory Framework and relevant policy documents which are available at https://dwer.wa.gov.au/regulatory-documents.

2.2 Application summary and overview of Premises

On 3 August 2020, Mid-West LNG Property Pty Ltd (the applicant) submitted an application for a works approval to the department under section 54 of the *Environmental Protection Act 1986* (EP Act).

The application is to undertake construction works relating to an LNG plant and power plant at the Premises. The Premises are approximately 13 km south of Mt Magnet.

The Premises relate to the categories and assessed production/design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in Works Approval W6500. The infrastructure and equipment relating to the Premises category and any associated activities which the department has considered in line with *Guidance Statement: Risk Assessments* (DER 2017) are outlined in Works Approval W6500.

2.3 Stages of works

The applicant has applied for two stages of works. The works to be completed under each stage are outlined below. Both stages involve the construction of a LNG plant, LNG storage, a truck loading facility and a gas fuelled power plant.

2.3.1 Construction Stage 1

Construction of stage one is expected to begin by 1 June 2021 and involves the installation of:

- one containerised modular LNG production facility, with a capacity of 48 tonnes per day;
- two modular gas fired power generators of up to 2MW each (retired during stage 2);
- one 1MW diesel emergency back-up generator;
- one 4,500L diesel storage tank;
- one bunded shipping container for chemical storage; and
- one 370m^3 LNG tank.

2.3.2 Construction Stage 2

Construction of stage two of the works is expected to begin by 1 June 2022 and involves the installation of:

- one modular LNG production facility, with a capacity of 250 tonnes per day;
- four modular gas fired power generators of up to 8MW; and
- five 370m3 LNG tanks.

3. Risk assessment

The Delegated Officer assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guidance Statement: Risk Assessments* (DER 2017).

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this Decision Report are detailed in Table 1 below. Table 1 also details the proposed control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 1: Emissions, Sources, Pathways and Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Earthworks	Air / windborne pathway	Limited earth works and construction that will cause dust due to the modular nature of the plant
Noise	Construction of plant Truck movements	Air / windborne pathway	Day time construction
Operation			
NO_x	Combustion of gas in power plant generators	Air/ windborne pathway	Stack heights Distance to receptors Modelling has shown maximum ground level concentrations for NOx and HCHO are below the DWER's *Guideline: Air Emissions Draft* (DWER2019b) guideline levels for NO_2 and HCHO at the boundary of the premises and at the town of Mt Magnet (Golder 2020) Stack testing to verify emissions. PM and CO from gas fired power stations are not expected to pose a risk to receptors given the separation distance (refer to section 3).
HCHO			

3.1.2 Applicant air dispersion modelling

The applicant submitted a preliminary air emissions screening as required by DWER's draft *Guideline: Air Emissions 2019* (DWER 2019b). The screening showed that the air emissions from the gas generators were not insignificant for NO_2 and Formaldehyde.

As part of the resubmission of the application the applicant submitted air emission modelling that was conducted by Golder (Golder 2020a). The modelling was conducted as described in '*Approved Methods for Modelling and Assessment of Air Pollutants in New South Wales*'. The modelling was conducted with all four gas generators operating 24 hours a day 365 days a year at 100% load with 6.5 high stacks.

The results were compared against the criteria in DWER's *Guideline: Air Emissions Draft* (DWER2019b) guideline levels for NO_2 and HCHO and showed the ground level concentrations at Mt Magnet were well within the criteria.

Pollutant	Averaging period	Receptor	Maximum ground level concentration	Criteria (DWER2019b)
Nitrogen dioxide	1 hour	Mt Magnet	34 µg/m^3	226 µg/m^3
Nitrogen dioxide	Annual		3.7	56 µg/m^3
HCHO	1 hour		11 µg/m^3	20 µg/m^3

It was requested that the maximum ground level concentration outside the premises boundary be provided with a comparison to 1-hour criteria to determine potential short-term impacts to users of Great Northern Highway or at adjacent industrial premises.

The applicant submitted a report with the results shown in Table 2 that was also conducted by Golder (2020b) with the stack heights increased to 8.6m high.

Table 2: Modelled maximum concentrations of NO_x and Formaldehyde outside the Premises boundary

Pollutant	Averaging period	Maximum Ground level concentration outside the Premises boundary (stack height of 8.6m)	Criteria (DWER2019b)
Nitrogen dioxide	1 hour	87 µg/m^3	226 µg/m^3
HCHO	1 hour	10 µg/m^3	20 µg/m^3

The results show that the maximum ground level concentration outside the premises boundary are below the guideline criteria levels.

The results and inputs for the model have been reviewed by the Delegated Officer and the model inputs have been determined to be conservative and the results show that the emissions are acceptable and unlikely to impact receptors on Great Northern Highway, adjacent premises or in the town of Mt Magnet. The Delegated Officer notes the applicant has committed to the increased stack height of 8.6m.

3.1.3 Receptors

In accordance with the *Guidance Statement: Risk Assessment* (DER 2017), the Delegated Officer has excluded employees, visitors and contractors of the applicant's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 3 and Figure 1 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the Premises *(Guidance Statement: Environmental Siting* (DER 2016)).

Table 3: Human and environmental receptors and distance from the Premises

Human receptors	**Distance from Premises**
Mt Magnet town site	11 km north of the Premises boundary
Environmental receptors	**Distance from Premises**
Specified Ecosystems	No Specified Ecosystems within 10km of Premises
Underlying groundwater (non-potable purposes)	10m – 45m below ground level

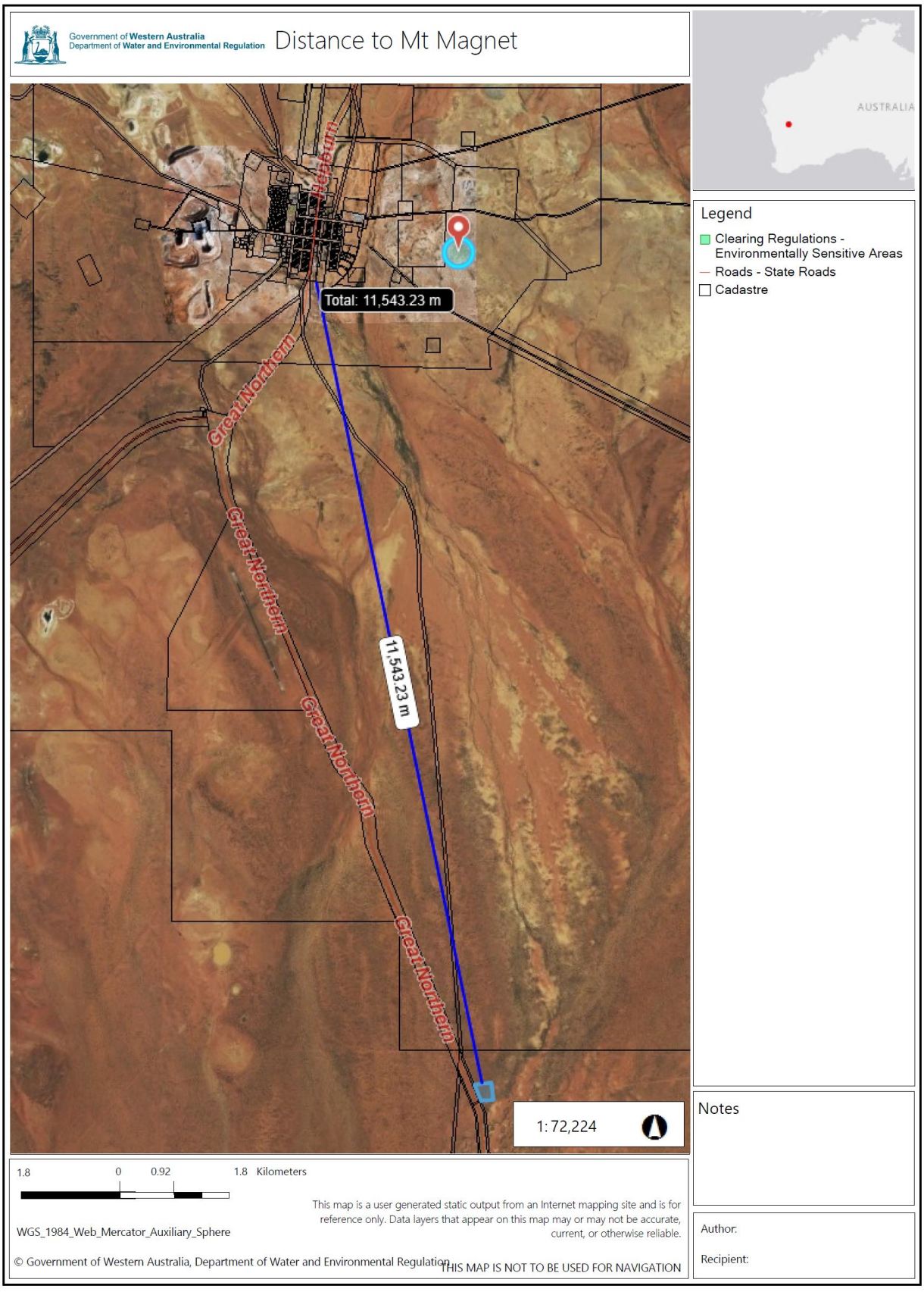

Figure 1: Distance to Mt Magnet

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guidance Statement: Risk Assessments* (DER 2017) for each identified emission source and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the applicant's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 4.

Works Approval W6500 that accompanies this Decision Report authorises construction and time-limited operations. The conditions in the issued Works Approval, as outlined in Table 4 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A licence is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the Premises i.e. power generation activities. A risk assessment for the operational phase has been included in this Decision Report, however licence conditions will not be finalised until the department assesses the licence application.

Table 4: Risk assessment of potential emissions and discharges from the Premises during construction, and operation

Risk Event					**Risk rating** C = consequence L = likelihood	**Applicant controls sufficient?**	**Conditions of works approval**	**Justification for additional regulatory controls**
Source/ Activities	**Potential emissions**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Construction								
Clearing of native vegetation Earth works Installation of infrastructure	Dust	Air/windborne pathway	No human receptors within 11km of the Premises	Day time and limited works	C = Minor L = Rare **Low**	Yes	NA	The separation distance to the nearest receptors and the limited earthworks and construction required means the construction of the Premises is unlikely to impact receptors and no additional controls are required.
	Noise				C = Minor L = Rare **Low**	Yes	NA	
Operation								
Operation of LNG plant and power plant	Air emissions of NO_x and Formaldehyde	Air/windborne pathway	No human receptors within 11km of the Premises	*Stack height* *Process controls*	C = minor L = rare **Low**	Yes	Conditions 1 and 4-8	Modelling of air emission has shown that the ground level concentrations outside the Premises boundary for pollutants of concern are sufficiently below the guideline limits as per Applicant air dispersion modelling The applicant submitted a preliminary air emissions screening as required by DWER's draft *Guideline: Air Emissions 2019* (DWER 2019b). The screening showed that the air emissions from the gas generators were not insignificant for NO2 and Formaldehyde. As part of the resubmission of the application the applicant submitted air emission modelling that was conducted by Golder (Golder 2020a). The modelling was conducted as described in '*Approved Methods for Modelling and Assessment of Air Pollutants in New South Wales'*. The modelling was conducted with all four gas generators operating 24 hours a day 365 days a year at 100% load with 6.5 high stacks. The results were compared against the criteria in DWER's *Guideline: Air Emissions Draft* (DWER2019b) guideline levels for NO2 and HCHO and showed the ground level concentrations at Mt Magnet were well within the criteria. It was requested that the maximum ground level concentration outside the premises boundary be provided with a comparison to 1-hour criteria to determine potential short-term impacts to users of Great Northern Highway or at adjacent industrial premises. The applicant submitted a report with the results shown in Table 5 that was also conducted by Golder (2020b) with the stack heights increased to 8.6m high.

<table>
<tr><th colspan="5">Risk Event</th><th>Risk rating
C = consequence
L = likelihood</th><th>Applicant controls sufficient?</th><th>Conditions of works approval</th><th>Justification for additional regulatory controls</th></tr>
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<tr><td rowspan="2"></td><td></td><td rowspan="2"></td><td rowspan="2"></td><td></td><td></td><td></td><td></td><td rowspan="2">Table 5: Maximum ground level concentration
<table>
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</table>
The applicant has committed to conducting stack testing following completion of the works. Stack testing of the gas generators stack emission has been included on the works approval to verify the emissions comply with the guideline levels. The applicant has committed to increasing the stack height as an outcome of dispersion modelling therefore the works approval will also specify the minimum 8.6m proposed stack height.</td></tr>
<tr><td>Noise</td><td>NA</td><td>NA</td><td>Yes</td><td>NA</td><td>The separation distance to the nearest receptor means there is no expected risk of noise impacts on receptors. Noise emissions are expected to comply with the assigned levels in the Noise Regulations.</td></tr>
</table>

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guidance Statement: Risk Assessments* (DER 2017).

Note 2: Proposed applicant controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

4. Consultation

Table 6 provides a summary of the consultation undertaken by the Delegated Officer.

Table 6: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website (02/02/2021)	No comments received	NA
Local Government Authority advised of proposal (03/02/2021)	No comments received	NA

5. Applicant's comments

The Applicant was provided with the draft Decision Report and draft issued works approval on 11 March 2021. The Applicant provided on 29 March 2021 comments on the draft documents, which are summarised, along with the Delegated Officer's response, in Appendix 1.

The Applicant requested some changes to the proposal including:

- clarification that the two stage 1 generators will be 1.2 MW and will be decommissioned when the stage 2 generators are operational;
- diesel backup generator increased from 350 kW to 1 MW this is required to allow the plant to continue to run; and
- phase 1 LNG plant actual maximum production capacity clarified to be 48 tonnes per day not 45 tonnes per day.

The Delegated Officer has determined that the changes will not change the emission risk profile of the Premises.

6. Decision

The Delegated Officer has determined to grant a works approval for the construction and time limited operation of the Premises. The risk of all emissions and discharges from the Premises were assessed to be low and the Delegated Officer formed the view that the applicant's controls for design / construction and operation of the Premises were reasonable and appropriate to manage the risk of impacts.

The Delegated Officer has included conditions on the works approval that are commensurate with the assessed low risk, consistent with the applicant's proposed controls and in accordance with the *Guidance Statement: Setting conditions*.

7. Conclusion

Based on the assessment in this Decision Report, the Delegated Officer has determined that a works approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

After the completion of each stage and the submission of the compliance reporting time limited operations is permitted for 180 days for that stage. After the completion of stage one the applicant will be able to apply for a licence for ongoing operations of stage 1 after the time limited operations. After the completion of stage 2 the works approval holder will be permitted to operate stage two infrastructure under the works approval for 180 days in which time the works approval holder can apply to amend the licence for the Premises, if issued, to include stage 2 infrastructure to allow for ongoing operations of stage 2.

References

1. Works Approval Application version 2 for Mid-West LNG Plant (received by DWER on 12 January 2021) including supplementary information (DWER ref DWERDT401197)
2. Golder November 2020a *Report: Mount Magnet LNG plant and power station air quality screening assessment*.
3. Golder November 2020b *Technical Memorandum: Response to DWER information request: Maximum Predicted Pollutant concentrations for the Mount Magnet LNG Plant*
4. Email from Mid-West LNG received by DWER on 11 February 2021 *(A1980082)*
5. Department of Environment Regulation (DER) 2016, *Guidance Statement: Environmental Siting*, Perth, Western Australia.
6. DER 2017, *Guidance Statement: Risk Assessments*, Perth, Western Australia.
7. DER 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
8. DWER 2019, *Guideline: Industry Regulation Guide to Licensing*, Perth, Western Australia.
9. DWER 2019b, *Guideline: Air Emissions (DRAFT)*. Perth, Western Australia.
10. The NSW Environment Protection Authority (NSWEPA) 2005 *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*, Sydney, New South Wales

Appendix 1: Summary of applicant's comments on risk assessment and draft conditions

Condition	Summary of applicant's comment	Delegated Officer's response
1: Design and construction / installation requirements	Two generators in stage 1 to be retired when stage 2 generators become operational	Works approval updated to reflect that the stage 1 generators will be decommissioned when stage 2 generators become operational
	LNG plant updated from 45 to 48 tonnes per day	Works approval updated to reflect change in capacity.
	Back-up generator updated from 350 kw to 1MW	Works approval updated to reflect the increased capacity of the back-up generator.