Government of Western Australia
Department of Water and Environmental Regulation

Decision Report

Works Approval Number	W6339/2019/1
Works Approval Holder	BHP BILLITON NICKEL WEST PTY LTD
ACN	004 184 598
File Number:	DER2019/000639
Premises	Leinster Townsite Landfill Crown Reserve 46801 LEINSTER WA 6437
Date of Report	23/04/2020

Contents

1. Definitions and interpretation

1.1 Definitions

In this decision report, the terms in Table 1 have the meanings defined therein.

Table 1: Definitions

Term	Definition
ACN	Australian Company Number
AER	Annual Environment Report
applicant	BHP BILLITON NICKEL WEST PTY LTD
decision report	refers to this document
Category/ Categories/ Cat.	categories of prescribed premises as set out in Schedule 1 of the EP Regulations
CEO	means Chief Executive Officer of the Department. "submit to / notify the CEO" (or similar), means either: Director General Department administering the Environmental Protection Act 1986 Locked Bag 10 Joondalup DC WA 6919 or: info@dwer.wa.gov.au
Delegated Officer	an officer under delegated section 20 of the EP Act
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DWER	Department of Water and Environmental Regulation
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
mbgl	metres below ground level
occupier	has the same meaning given to that term under the EP Act.
premises	refers to the premises to which this decision report applies, as specified at the front of this decision report.
prescribed premises	has the same meaning given to that term under the EP Act.
PVC	Polyvinyl chloride

Term	Definition
risk event	as described in *Guidance Statement: Risk Assessment*
Rural Landfill Regulations	*Environmental Protection (Rural Landfill) Regulations 2002*
Waste Definitions	*Landfill Waste Classification and Waste Definitions 1996* (as amended)
WMC	WMC Resources Ltd
Works Approval holder	BHP BILLITON NICKEL WEST PTY LTD

2. Purpose and Scope of Assessment

The scope of this decision report is limited to the redevelopment works proposed by BHP Billiton Nickel West Pty Ltd (BHP Nickel West) (the applicant) to expand the lifespan of the existing Category 89 landfill situated within Crown Reserve 46801 (Lot 163 on deposited plan 30116). These works will facilitate the above ground burial of waste following the closure of the existing and planned below ground landfill cells.

The following guidance statements have informed the assessment and decision outlined in this decision report.

- *Guidance Statement: Regulatory Principles (July 2015)*
- *Guidance Statement: Setting Conditions (October 2015)*
- *Guidance Statement: Decision Making (February 2017)*
- *Guidance Statement: Risk Assessment (February 2017)*

3. Application Details

The application for works approval submitted by the applicant was received by the Department of Water and Environmental Regulation (the Department) on 26 November 2019. The submitted application relates to the proposed completion and closure of landfill cells D, E and F, followed by the construction of perimeter bunds to allow for the future above ground burial of waste. There are no proposed changes to the current waste throughputs or waste types currently accepted for burial and/or storage at the premises.

Table 2 lists the documents submitted to the Department in support of the works approval application.

Table 2: Documents and information submitted during the assessment process

Document/information description	Date received
DWER: Application form: works approval	26/11/2019
Works Approval Application Supporting Documentation: for the expansion of the Leinster Landfill • Landfill Operations Plan - Leinster Domestic Landfill (Golder Associates Pty Ltd, October 2019) • Landfill Post Closure and Rehabilitation Plan - Leinster Domestic Landfill (Golder Associates Pty Ltd, August 2019)	26/11/2019
Report: Landfill Monitoring Bores – Bore Installation, Sampling and Hydraulic Testing. (AquaTerra, October 2001)	14/02/2020
Additional figures depicting historic bore locations	14/02/2020
11-Mile Well Borefield – Groundwater Monitoring Results	14/02/2020
TECHNICAL MEMORANDUM - RESPONSE TO DWER QUERY – LEINSTER DOMESTIC LANDFILL (February, 2020)	21/02/2020

4. Overview of Existing Premises

The Leinster Townsite Landfill (the premises) is situated approximately 3 kilometres east of the town of Leinster, in the Shire of Leonora, some 370 km north of the city of Kalgoorlie-Boulder. The landfill was originally constructed by AMC (Agnew Mining Company Pty Ltd) in the 1970s to support the development of the Leinster townsite, receiving waste from local businesses and residents for onsite burial. The facility does not receive waste from the Leinster mine site, with mine waste being disposed to the mines onsite landfill facility.

The premises is currently operated by BHP Nickel West under Registration R1625/2004/1 (Category 89 Putrescible Landfill Facility with a design capacity of more than 20 but less than 5,000 tonnes per year) in accordance with Regulation 5A of the *Environmental Protection Regulations 1987* (WA). The premises operates in accordance with the requirements of the *Environmental Protection (Rural Landfill) Regulations 2002 (WA*) (Rural Landfill Regulations).

In 1998 the premises was registered with the Department by WMC Resources Ltd (WMC) as Leinster Townsite Landfill (R943/1989/1). In 2002, WMC constructed additional cells for the landfill under works approval W3486/2001/1. The premises was then re-registered in 2004 as Leinster Townsite Landfill (R1625/2004/1).

In June 2005, BHP assumed control of the Nickel West asset as part of its acquisition of WMC, and currently utilises the landfill to dispose of waste from members of the public, municipal waste collections and to support BHP Nickel West operations.

In 2006, an amendment to registration R1625/2004/1 was undertaken to amend the location of the premises, which was incorrectly listed as ML255SA instead of crown reserve 46801. As part of this amendment, the registered occupier was also updated from WMC Resources Ltd to WMC Resources Ltd t/as BHP Billiton Nickel West.

The landfill currently consists of closed Cells A, B and C and Cells D, E and F, with a total footprint of approximately 8.9 ha (Figure 1). Historically, the landfill has been developed by excavating below ground cells (Cells A - F) for the disposal and burial of waste. Cells A, B and C are now closed. Cells A to E have been filled up to the ground level and capped with soil. Cell F is currently under operation and being actively filled to ground level.

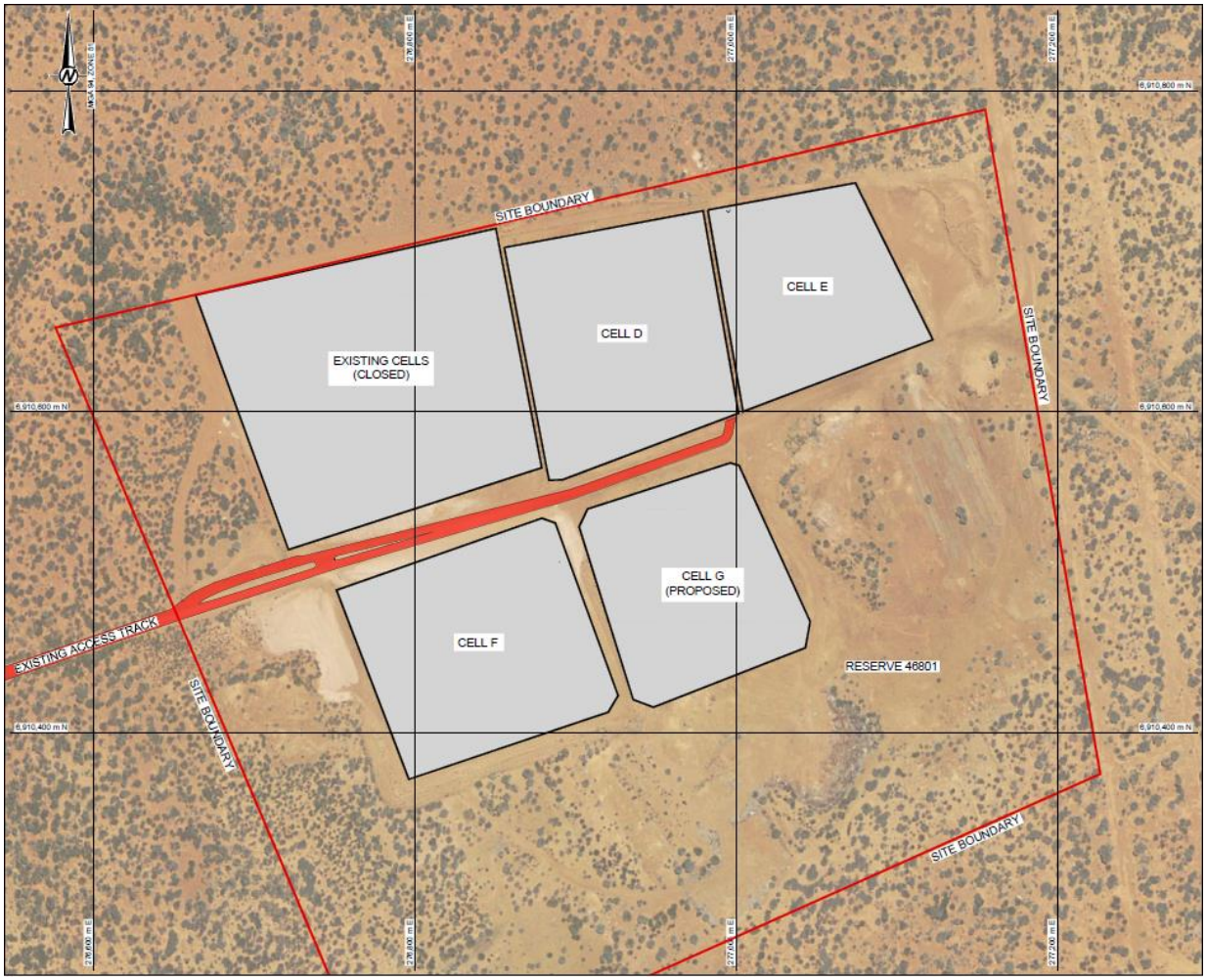

Figure 1: Landfill layout plan

Given that the landfill is reaching capacity, the Applicant proposes to construct perimeter bunds around Cells D, E, F to allow above-ground filling.

The area Cell G (approximately 1.6 ha) has been designated for future waste disposal, but to date has not been developed (excavated or built up). As such, Cell G does not form part of the current application. If this cell is to be developed in the future, a separate works approval application will be submitted.

5. Description of Proposed Activities

The Applicant proposes to build perimeter bunds and associated infrastructure across existing landfill cells D, E, F (as depicted in Figure 1) to facilitate future above ground filling of waste.

The works would include:

- removal of the existing fence around Cells D, E and F;
- construction of 0.5m high, 3m wide perimeter bund walls;
- construction of a stormwater management system, including an unlined V-drain system constructed around the perimeter of the cells; and
- installation of permanent perimeter fencing and vehicle access gates around the cells.

Approximately 2,500 tonnes of waste per annum would be deposited into the landfill from the Leinster townsite, the public and commercial operators. The following waste types (as defined under the Waste Definitions) are proposed to be accepted at the site:

- Clean fill;
- Inert waste type 1;
- Inert waste type 2;
- Construction and demolition waste;
- Putrescible waste;
- Neutralised acid sulfate soil;
- Commercial solid waste;
- Green waste (mulched or crushed); and
- White goods

Some waste, as agreed or directed by BHP, shall be diverted from landfill, temporarily stockpiled on site and may require processing. These wastes may include (but are not limited to):

- Clean fill – stockpiled for use as cover material;
- Greenwaste – stockpiled for mulching or crushing prior to burial, or diversion from landfill and use as mulch; and
- White goods and scrap metal – stockpiled for sale.

The landfill will be operated in accordance with a *Landfill Operation Plan* prepared by Golder Associates Pty Ltd (Golder) and submitted as part of the works approval application package. Once the design volume of each cell lift is reached, the cell will then be capped and rehabilitated as per the submitted *Landfill Post Closure and Rehabilitation Plan* also prepared by Golder.

6. Legislative Context and Other Approvals

The premises was originally registered under R943/1989/1 to WMC Resources Ltd in February 1998. The premises is currently Registered with the Department under registration R1625/2004/1. This registration was amended in May 2004, with new registration R1625/2004/1. A subsequent amendment to R1625/2004/1 was issued in September 2006. As a Registered Category 89 prescribed premises, the ongoing operation of the premises is regulated under the *Environmental Protection (Rural Landfill) Regulations 2002.*

The original works approval for the establishment of the Leinster Township Landfill was issued in December 1991. 11 works approvals have subsequently been issued for the premises. A list of historic approvals for the premises is provided in **Table 3** below.

Table 3: Approval history

Date	Reference number	Summary of changes
11/12/1991	W737/1989/1	Works approval issued to WMC Resources Ltd
21/06/1992	W814/1989/1	Works approval issued to WMC Resources Ltd
24/05/1993	W814/1989/1	Works approval issued to WMC Resources Ltd
16/05/1997	W1931/1989/1	Works approval issued to WMC Resources Ltd
31/07/1997	W2045/1989/1	Works approval issued to WMC Resources Ltd
26/02/1998	R943/1989/1	Premises registration to WMC Resources Ltd

15/02/2000	W2960/1989/1	Works approval issued to WMC Resources Ltd
17/03/2000	W2973/1989/1	Works approval issued to WMC Resources Ltd
05/09/2000	W3133/1989/1	Works approval issued to WMC Resources Ltd
04/12/2000	W3237/1989/1	Works approval issued to WMC Resources Ltd
16/01/2001	W3317/1989/1	Works approval issued to WMC Resources Ltd
22/09/2001	W3486/2001/1	Works approval issued to WMC Resources Ltd
29/03/2004	W3929/1989/1	Works approval issued to WMC Resources Ltd
17/05/2004	R1625/2004/1	Premises registration amended to extend premises boundary and transfer ownership and BHP Billiton Nickel West
21/09/2006	R1625/2004/1	Registration amended
23/04/2020	W6339/2019/1	This works approval assessment

Local Government Approval

On 16 October 2019, the Shire of Leonora provided written consent to the applicant to undertake the proposed prescribed works at the Leinster Townsite Landfill. An electronic copy of the approval was submitted by the applicant as part of their application package.

7. Emissions Sources, Receptors and Pathways

7.1 Emissions

The key emissions identified and assessed by the Delegated Officer as part of the construction and ongoing operation of the premises are:

- Fugitive dust generated by machinery and vehicle movements;
- Fugitive dust from cover stockpiles and unsealed road surfaces;
- Noise from vehicle movements;
- Odour from putrescible waste acceptance and burial;
- Leachate from infiltration of rainfall;
- Contamination of stormwater runoff by deposited waste;
- Landfill gas from putrescible waste decomposition;
- Wind-blown or animal dispersed litter; and
- Smoke and ash and subsequent fire wash waters from accidental fire or arson.

7.2 Environmental Siting and Receptors

Table 4 below lists the potential sensitive receptors in the vicinity of the premises.

Table 4: Human receptors and distance from activity boundary

Receptor number	Residential and sensitive premises	Distance from Prescribed Premises
HR1	Leinster groundwater borefield (provides water to mine and township)	Approximately 2.5 km north-northwest of the premises.
HR2	Leinster single person accommodation, Mansbridge Street, Leinster	Approximately 2.5 km southwest of premises boundary
HR3	Leinster residential area, Gledden Drive, Leinster	Approximately 3 km west of premises boundary
HR4	Leinster town pool	Approximately 3.2 km west of premises boundary
HR5	Leinster oval and sports courts	Approximately 3.3 km west of premises boundary

The applicant has also advised that there is a groundwater pumping station and storage tanks, known as the Midgum Tanks, situated approximately 5 km to the east of the premises boundary. The pumping station is located at the southern extent of the Midgum Pool and Albion Downs. Groundwater from these two borefields, which extends to the north east, are pumped to and stored in these tanks prior to being pumped to site for use in the processing plant. This water is used in processing only, and is considered non-potable.

Table 5 lists the potential environmental receptors in the vicinity of the premises.

Table 5: Environmental receptors and distance from activity boundary

Receptor number	Environmental receptors	Distance from Prescribed Premises
ER1	Threatened and Priority Flora (16517)	2.9 km southwest of premises boundary

The proximity of the identified receptors in relation to the premises boundary (as indicated in red) are illustrated in Figure 2 below.

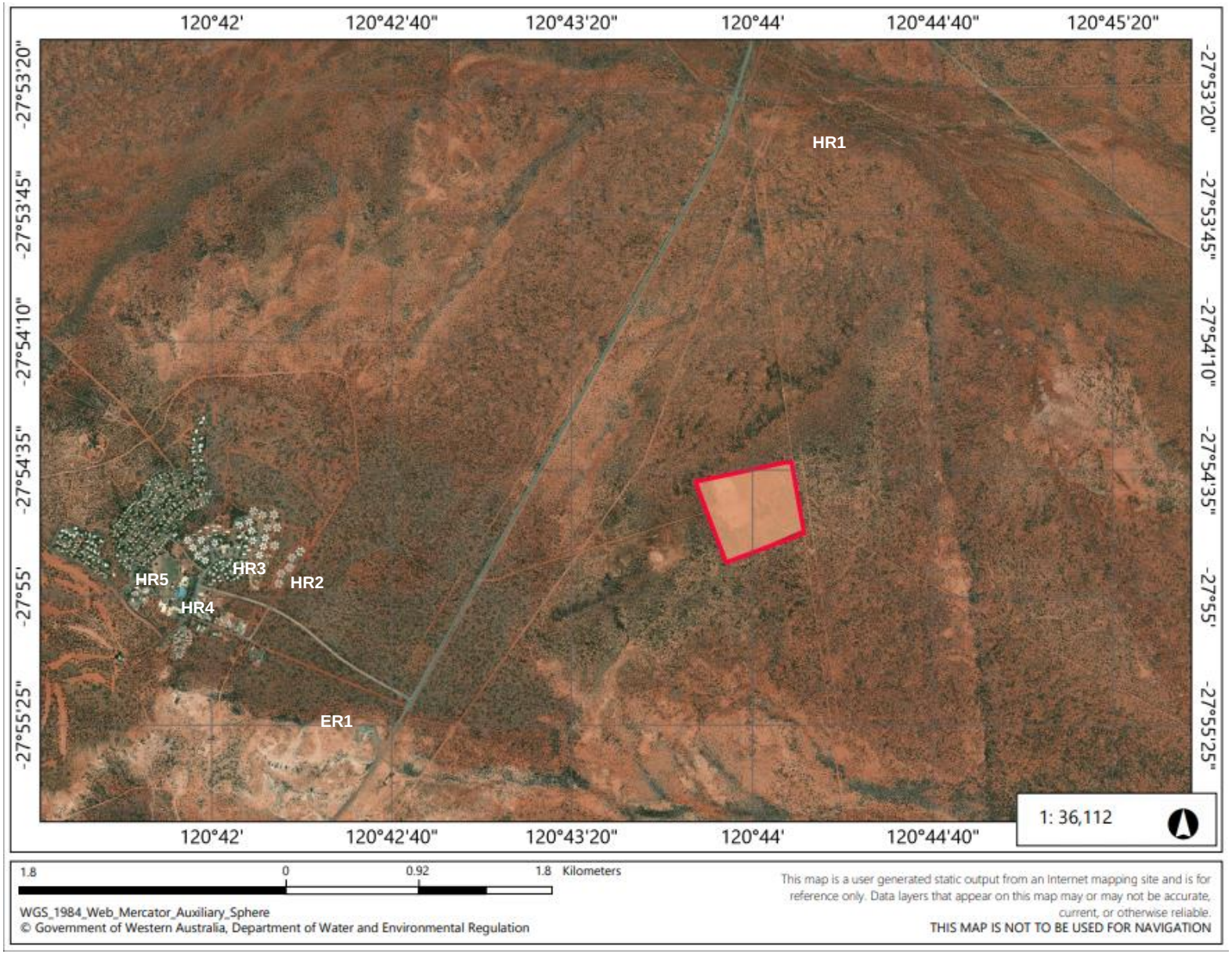

Figure 2: Proximity of identified human and environmental receptors to premises boundary

7.3 Pathways

The pathway of an emission is the way in which the material moves from the source, enters into the environment, and finally how it reaches any human body or other sensitive receptor. Possible pathways applicable to the potential and anticipated emissions from the premises have been identified and are discussed below. These pathways have been considered in the risk assessment tables in Section 9.

7.3.1 Wind

As noise and dust during construction activities and odours from putrescible wastes during operation are considered potential emissions, the prevailing wind direction has been considered. Using information available on the Bureau of Meteorology's website, the closest available weather station for climate data is Leonora (Site Number: 012046), approximately 135 km southeast of Leinster. Based on the historical climate data for Leonora station (1956 - 2014), the prevailing wind direction in winter (July) is variable in the morning and west-north-westerly in the afternoon, with the prevailing wind directions in summer (January) being easterly in the morning and easterly to south-easterly in the afternoon.

7.3.2 Rainfall

Historical climate information from the Bureau of Meteorology for the Leinster Aero (site number 012314) indicates an average annual rainfall of 264.5 mm, with the highest rainfall occurring over the summer months in association with sporadic cyclonic activity in the north of the State.

7.3.3 Geology, hydrogeology and hydrology

The premises is situated on the Leinster-Agnew Road, approximately 2.5 km east of the Leinster Townsite, and approximately 8.3 km southwest of the Leinster airport. The site geology comprises limonite alluvium, with cemented ironstone gravel and laterite of a depth to 5 m, underlain by saprolite ranging in thickness from 20 m to 35 m.

The premises is located approximately 2.5 km southwest of an extensive groundwater borefield (11-Mile Borefield) (Figure 3). The depth to groundwater onsite ranges between approximately 11 m and 13 m below ground level. The applicant has advised that all existing landfill cells are unlined, and were designed with a minimum separation distance of 3 m to groundwater. The depths of the existing landfill cells are detailed in Table 6 below. Cells A-C were closed upon construction of the cells approved under works approval W3486/2001/1 in 2001.

The applicant does not hold any information relating to the construction depth of Cells A-C, and does not propose to utilise or place additional landfill on top of closed cells A-C as they were not constructed or managed by the applicant.

Table 6: Landfill cell depths

Landfill cell	A	B	C	D	E	F
Depth of cell below natural soil surface (m)	Data unavailable	Data unavailable	Data unavailable	4	7.5	7

Groundwater bores have previously been constructed at three locations around the landfill to provide baseline groundwater data around the premises (Figure 4). The monitoring bores were drilled into fresh bedrock, and were designed to monitor the groundwater primarily in the fractured rock aquifers of the saprolite and saprock. These bores were established to serve as long term monitoring bores to detect any leachate plumes which may migrate from the landfill. The boreholes were drilled via reverse circulation drilling technique using a hammer bit, at a nominal diameter of 140 mm.

The design of the monitoring bores was agreed in consultation with WMC Exploration Division. The monitoring bores were cased with nominal 50 mm diameter Class 12 PVC, machine slotted over the material of interest. Gravel pack of nominal grain size 1.6 - 3.2 mm was placed around the slotted interval in each bore and a layer of bentonite pellets placed on top of the gravel pack to serve as an annular seal. The bores were completed with steel lockable caps protruding approximately 700 mm above ground level.

Groundwater levels in the constructed monitoring bores drilled around the proposed landfill ranged between 11.5 mbgl and 13.0 mbgl at time of drilling. Measurements taken on 3 October 2001 indicated that water levels were between 11.9 mbgl and 13.2 mbgl. Based on these groundwater levels, groundwater flow is predominantly in an easterly direction, with a gradient of approximately 0.0005 to 0.001 in the vicinity of the landfill (based on groundwater levels ranging between 469.4 mAHD and 469.8 mAHD). The difference in groundwater head between shallow and deep bores at time of drilling suggests downward heads in the vicinity of the landfill. A difference of 0.56 m was observed between the groundwater level measured in bore TLFMB4 (shallow) and TLFMB5 (deep). Reasonably high yields were encountered in each of the monitoring bores from a depth of 35 to 40 mbgl to the base of the hole. A yield of approximately 1 L/s was measured at bore TLFMB3.

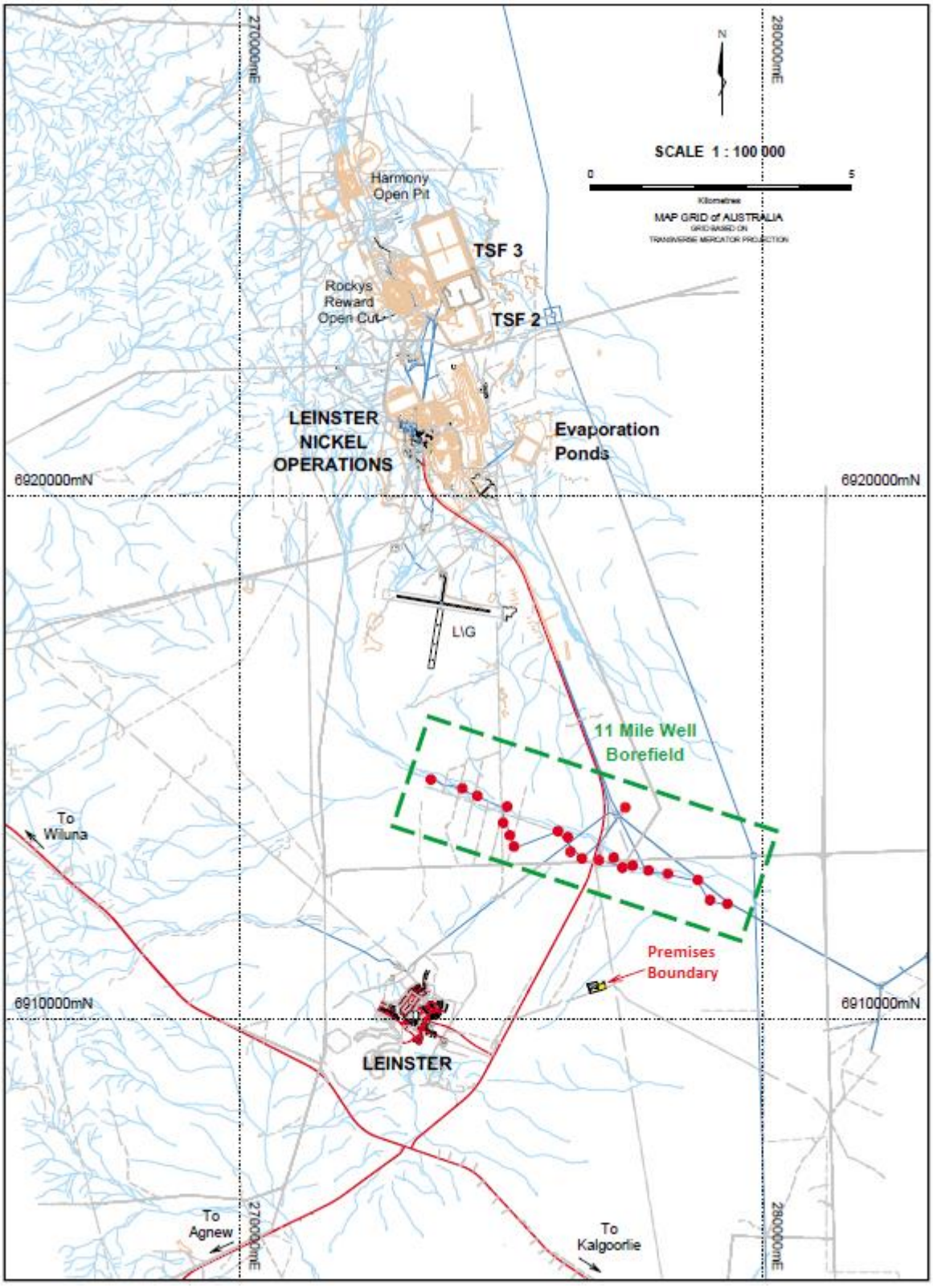

Figure 3: 11-Mile borefield

Figure 4: Existing monitoring bore locations (2001)

Initial laboratory testing of groundwater samples indicated that the concentrations of all trace elements were typically under the limit of reporting, and were all under the drinking water guideline with the exception of Boron. The concentration of total petroleum hydrocarbons (TPH) was above the limit of reporting in bores TLFMB4 and TLFMB5, with concentrations of TPH (individual fractions) also above the limit of reporting in bores TLFMB1 and TLFMB3. It was postulated that the oils used during drilling, such as hammer oil, may have contributed towards the elevated TPH concentrations.

Concentrations of inorganic parameters were typically within the drinking water guidelines High total dissolved solids (TDS) (2,530 mg/L), hardness (1,200 mg/L), sodium (350 mg/L) and chloride (1,200 mg/L) concentrations recorded in bore TLFMB5 are likely to be a direct result of

the bore being blocked by clay. No health guideline exists for these parameters, however they all exceeded respective aesthetic drinking water guidelines. The concentration of nitrate in bores TLFMB3 and TLFMB4 (51 mg/L) was slightly above the guideline value (50 mg/L). The concentration of iodide in TLFMB5 (0.7 mg/L) was also above the drinking water health guideline (0.1 mg/L). On the basis of the results recorded for bore TLFMB5, it was recommended at the time that this borehole be redeveloped and resampled to confirm the likely source of elevated TPH concentrations and salinity levels recorded during the baseline testing, however no further information on the bore installation was available.

As part of the proposed works, the applicant has indicated that bores TLFMB1, TLFMB4 and TLFMB5 will be will be used for ongoing groundwater quality monitoring. TLFMB4 is currently blocked and not operational, but the applicant proposes to reinstate the bore for monitoring purposes. The applicant also proposed to install and additional bore, TLFMB6 to the south of Cell G (proposed). However, in view of the direction groundwater flow, it has been recommended that this bore be relocated to the eastern edge of the premises in order to better gauge any potential groundwater contamination

An unnamed non-perennial drainage line is situated immediately adjacent to the north-west corner of the premises boundary. This drainage line does not lead to any surface water bodies, with the nearest surface body being Lake Carey, situated approximately 11.6km southwest of the premises boundary. Lake Carey only contains water after periods of heavy rainfall.

7.3.4 Fauna

Native and introduced fauna, including Australian ravens and feral dogs, have been identified as a potential mechanism for the dispersal of waste away from the premises. Scavenging animals may feed directly from tipped waste, as well as remove waste items and carry them away outside the premises boundary.

8. Applicant Controls

The applicant has identified and proposed a number of emission management measures or controls as part of the application. These applicant controls are detailed in **Table 7** below.

Table 7: Applicant controls

Source	Emission	Proposed Controls
Machinery and construction vehicle movements	Fugitive dust	Water cart (as required), vehicle speed restrictions
Unsealed access roads and stockpiles	Fugitive dust	Separation distance
Vehicle noise	Nuisance noise	Separation distance, limited hours of operation
Putrescible waste	Odour	Separation, daily cover placement
Leachate	Dissolved contaminants	Separation of landfill cell to groundwater, cover placement, landfill capping, groundwater monitoring post-closure
Runoff	Dissolved contaminants	Capping of landfill, stormwater management system, retention of contaminated water within cell.

Wind-blown waste	Light-weight waste	Fencing, monitoring and collection of wind-blown waste, implementation of preventative measures to prevent wind-blown waste during high-wind weather events.
Animal dispersed waste	Light-weight waste, food containers, putrescible waste	Perimeter fencing, daily cover placement,
Accidental fire or arson	Smoke, ash and fire debris and wash waters.	Burning of waste prohibited onsite, extinguishing and covering of any fires, perimeter fencing and access gates.

9. Risk assessment

The identification of the emissions sources, pathways and receptors to determine Risk Events are set out in **Table 8** and **Table 9** below, consistent with the *Guidance Statement: Risk Assessments*.

Risk ratings have been assessed for each key emission source and take into account potential source-pathway-receptor linkages. The mitigation measures / controls proposed by the applicant have been considered in determining the risk rating.

The conditions in the issued works approval, as outlined in **Table 8** and **Table 9**, have been determined in accordance with the *Guidance Statement: Setting Conditions*.

Risk Assessment – Construction

Table 8: Risk assessment for proposed works during construction

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
Perimeter bund construction, Drainage system construction and installation and monitoring bore installation	Dust	Air/windborne pathway causing potential adverse health and amenity impacts on nearest sensitive human receptors – single persons accommodation	• Dust suppression (water cart) as required; • Vehicle speed restrictions	Slight	Possible	Low	Although the closest human receptors are likely to be situated within a prevailing summer wind direction, the proposed controls are expected to be sufficient at mitigating dust emissions.	Condition 2 requires the works approval holder ensure that no visible dust is emitted from premises
	Noise		• Separation distance to sensitive receptors; • timing or construction activities	Slight	Possible	Low	It is expected that receptors will not be significantly impacted by construction noise emissions.	Condition 9 limits hours of construction to minimise any impact from noise emissions

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the Department's Guidance Statement: Risk Assessments (February 2017)

Risk Assessment - Operation

Table 9: Risk assessment for proposed works during operation

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities*	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
Waste acceptance and burial	Dust	Air/windborne pathway for fugitive dust from vehicle movements and cover placement causing potential amenity impacts on sensitive human receptors – private residences	• Separation distance; • Dust suppression (water cart) as required; • Vehicle speed restrictions	Slight	Possible	Low	The landfill has been in operation for number of years with no reported dust complaints. The current and proposed mitigation measures are considered sufficient to manage dust emissions from the premises.	Regulation 11 of the *Environmental Protection Rural Landfill) Regulations 2002* provides obligations to landfill occupiers in relation to dust suppression

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities*	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
Waste acceptance and burial	Smoke (Fire)	Air/windborne pathway for smoke and particulates from accidental or deliberately lit fires with potential adverse health impacts on human receptors within the Leinster Townsite.	• Fencing to restrict access after operating hours; • Waste compaction and burial;	Moderate	Unlikely	Medium	Spontaneous landfill fire has occurred on the premises previously (June 2014). Batteries and aerosols from municipal waste are potential ignition sources.	Regulation 14 of the *Environmental Protection Rural Landfill) Regulations 2002* provides obligations to landfill occupiers in relation to outbreak of fire at a landfill
	Noise	Air/windborne pathway for vehicle and machinery noise causing potential health and amenity impacts on sensitive human receptors – single person accommodation	• Separation distance; • Limited operating hours	Slight	Possible	Low	Separation distance between premises and residential receptors and the limitation of operations to daylight hours deemed sufficient to mitigate any potential noise impacts.	No specific regulatory control required as the separation distance to receptors is considered sufficient for impacts to be minimal. General provisions of the *Environmental Protection (Noise) Regulations 1997* will apply to landfill operations.
	Windblown/ animal dispersed waste	Air/windborne pathway for vehicle and machinery noise causing potential impacts on native flora and fauna and impacts on local amenity	• Perimeter fencing to limit windblown waste and prevent fauna access; • Collection of windblown waste; • Placement of daily cover material	Slight	Likely	Low	Accumulation of windblown light-weight plastics from elevated tipping face and litter from scavenger activity.	Condition 1 requires the erection of perimeter fencing to reduce windblown waste leaving the premises. General provisions of *Environmental Protection Rural Landfill) Regulations 2002* are applicable to ongoing operations.

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities*	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
Waste acceptance and burial	Leachate infiltration	Infiltration through soil profile to groundwater, with potential health impacts on public and private groundwater users	• Premises location across hydraulic gradient from extraction field • Design of aboveground cells to minimise leachate volumes	Moderate	Unlikely	Medium	The 11-Mile borefield is situated north-northwest of the premises, with geotechnical investigations indicate that groundwater flows in an easterly direction.	Condition 1 requires the recommissioning of inactive monitoring bore TLFMB4 and the installation of TLFMB6 for the purpose of groundwater monitoring.
	Landfill gas emissions	Diffuse gas emissions from waste decomposition under anoxic conditions resulting in potential odour impacts to sensitive human receptors. Explosive risk if landfill gas can accumulate.	• Separation distance to townsite • Compaction and cover of buried waste	Slight	Possible	Low	It is expected that receptors will not be significantly impacted by landfill gas emissions due to their distance, and the ability for landfill gas to disperse into the surrounding landscape.	It is considered that these emissions can be adequately managed under the provisions of the *Environmental Protection Act 1986*
	Contaminated stormwater	Stormwater contaminated by landfill waste residues washing off of premises resulting in negative impacts to aquatic ecosystems	• Installation of stormwater retention bunding at base of raised landfill cells • Placement of daily cover and final capping • Separation distance between premises and sensitive environmental receptors	Slight	Unlikely	Low	The proposed landfill and stormwater management measures proposed are considered sufficient to mitigate risks from contaminated runoff during storm events.	General provisions of the *Environmental Protection Rural Landfill) Regulations 2002* are applicable to ongoing landfill operations

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities*	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
Waste acceptance and burial	Fire debris and washwater	Firefighting washwater contaminated by burnt waste residues washing off of premises resulting in negative impacts to aquatic ecosystems or percolating into soil causing soil and/or groundwater contamination	• Installation of stormwater retention bunding at base of raised landfill cells • Placement of daily cover and final capping • Separation distance between premises and sensitive environmental receptors	Minor	Unlikely	Medium	Proposed stormwater and leachate management provisions deemed adequate for mitigating potential impacts from any contaminated washwater from firefighting activities at the landfill.	Contaminated firefighting water expected to percolate into landfill cell. Provisions of the *Environmental Protection (Controlled Waste) Regulations 2004* applicable to any firefighting washwater collected in stormwater bunds

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the Department's Guidance Statement: Risk Assessments (February 2017)

10. Consultation

The application was advertised by the Department on 03/04/2020 for a period of one week, and no comments were received. Comments were provided by the Local Government Authority as part of the application, and therefore the Department did not seek further comment. The applicant was afforded the opportunity to provide comment on the draft Licence and Decision Report on 10/03/2020. The details of this consultation are provided in Appendix 2: Summary of works approval holder comments

11. 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.

Stephen Checker

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Stephen Checker
MANAGER WASTE INDUSTRIES
REGULATORY SERVICES
an officer delegated by the CEO under section 20 of the EP Act

Appendix 1: Key documents

Document title	Availability
Works Approval W6339/2019/1 - Leinster Township Landfill	Available at www.dwer.wa.gov.au
Works Approval application form and supporting documentation (November, 2019)	DWER records, file number DER2019/000639
DER, July 2015. *Guidance Statement: Regulatory Principles.* Department of Environment Regulation, Perth.	Accessed at www.dwer.wa.gov.au
DER, October 2015. *Guidance Statement: Setting Conditions.* Department of Environment Regulation, Perth.	
DER, August 2016. *Guidance Statement: Licence duration.* Department of Environment Regulation, Perth.	
DER, February 2017. Guidance Statement: Land Use Planning. Department of Environment Regulation, Perth.	
DER, February 2017 Guidance Statement: Risk Assessments. Department of Environment Regulation, Perth.	
DWER, June 2019. Guideline: Decision Making. Department of Water and Environmental Regulation, Perth.	
DWER, June 2019. Guideline: Industry Regulation Guide to Licensing. Department of Water and Environmental Regulation, Perth.	

Appendix 2: Summary of works approval holder comments

The works approval holder was provided with the draft decision report on 10 March 2020 for review and comment. The works approval holder responded on 30/03/2020. The following comments were received on the draft decision report.

Condition	Summary of Licence Holder comment	DWER response
Cover Page Duration	XX to XX –Nickel West request the maximum allowable timeframe for the duration of the works approval	Noted, standard 3 year duration will be applied to works approval
Table 1, item 2 – infrastructure location	Perimeter of Cells (D, E, and F), depicted in Schedule 1, Figure 2, whilst actively being filled – The storm water drains will not extend around the entire perimeter of Cells D, E and F. The drains will be designed as shown on Figure 3.1 and 3.2 of the application supporting document. Suggest amending this wording to reference the design drawings where the drains are shown.	Amended, wording changed to reflect design, with design drawings inserted as schedule 2
Table 1, item 4 Perimeter Fencing – infrastructure location	Premises boundary as depicted in Schedule 1, Figure 1: Premises map - The intention is not to fence the entire premises, only the cells which are active. Suggest amending this wording to: Perimeter of Cells (D, E, and F), depicted in Schedule 1, Figure 2, whilst actively being filled	Amended, table altered to require fencing of active cells
Compliance Reporting , Condition 3	The works approval holder must within 60 calendar days of an item of infrastructure required by condition 1 being constructed or installed: a)…. and b)…. – The current intent is to construct the perimeter bund walls for Cells D, E initially. The walls for Cell F will then be constructed when required. Nickel West also do not wish to provide a separate compliance report for each item of infrastructure listed in Table 1. Rather one report for all items of infrastructure 60 calendar days post the commissioning of Cell D / E and in the future Cell F. As such Nickel West request an amendment to the wording of this condition to the below or similar: Subject to Condition 1, within 60 days of the commissioning of each Cell (D,E and F). The works approval holder must: a) Undertake an audit of their compliance with the requirements of condition 1; and b) Prepare and submit to the CEO an Environmental Compliance Report on that compliance.	Amended, wording altered to reflect staged nature of works

Condition	Summary of Licence Holder comment	DWER response
Page 6, condition 9	The works approval holder must ensure that works undertaken at the premises only occur between the hours of 07:00 to 19:00, and on the days Monday through to Saturday (excluding public holidays) – Please provide clarity for this condition. Does this condition apply to construction works approved under this works approval? This works approval does not specifically apply to the operation of the landfill post construction. The landfill will be operated in accordance with Environmental Protection (Noise) Regulations.	Amended, wording altered to clarify that condition relates only to approved works and not daily operations.
Figure 2, page 10	Location of monitoring bore TLFMB6 – Advice received from Golders indicates that having the TLFMB6 north east will not be useful in triangulating groundwater flow direction. NiW propose to locate the monitoring bore on the south east, refer attached amended W6339 - Leinster Townsite Landfill - Figure 2.pdf	Amended, figure altered to indicate proposed bore location
Table 3, page 11, Timeframe	Must be construction, developed (purged) and determined to be operational within 90 days from the date of this granted works approval? Given works on the landfill may not be undertaken immediately after this issuance of the approval, Nickel West requests the wording be amended to: *Must be constructed, developed (purged) and determined to be operational within 60 days post the commissioning of the works granted under this approval.* This will also allow for the reporting for the monitoring bores to be aligned with the commissioning report for the Cells.	Amended, requirements changed to provide flexibility to works approval holder
Definitions, page 7	Annual period – Annual period The annual period will not referenced in the works approval document, as such request that it is removed from the definitions section	Removed, superfluous definition
Section 4 – Overview of Existing Premises, page 6 first sentence	….Town of Leinster, in the Shire of Laverton….. - Landfill is located in the Shire of Leonora. Please amend.	Amended, typo
Section 7.3.3 Geology, hydrogeology and hydrology, page 12, first sentence	Leister - Typo in the spelling of Leinster. Please amend.	Amended, typo
Table 6, page 12 and associated text above	Depth to Groundwater - The table states that the quoted depths are the ‘depth to groundwater’. The depths are actually the depth of the cells from the surface. Please	Amended, text and table corrected

Condition	Summary of Licence Holder comment	DWER response
	amend the table and above text to reflect this.	
Table 9.	Boundary Fencing- The intention is not to fence the entire premises, only the cells which are active. Suggest amending this wording to: *Perimeter of Cells (D, E, and F),whilst actively being filled.*	Amended, text changed to reflect proposed fencing