Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6358/2020/1
Works approval holder	Wonmunna Iron Ore Pty Ltd
ACN	169 151 777
Registered business address	1 Sleat Rd Applecross WA 6153
DWER file number	DER2019/000649
Duration	27/07/2020 to 26/07/2023
Date of amendment	23/11/2021
Premises details	Wonmunna Iron Ore Project Tenement M47/1424 As defined by the coordinates in Schedule 2

Prescribed premises category description (Schedule 1, ***Environmental Protection Regulations 1987***)	**Assessed production / design capacity**
Category 5 Processing or beneficiation of metallic or non-metallic ore	10 million tonnes per annum
Category 54 Sewage facility: premises	**Temporary WWTP** 30 m^3 per day Permanent WWTP 100 m^3 per day, consisting of: **Permanent WWTP Stage 1** 50 m^3 per day **Permanent WWTP Stage 2** 50 m^3 per day

This revised works approval is granted to the works approval holder, subject to the attached conditions, on 23 November 2021, by:

Melanie Bruckberger
Digitally signed by Melanie Bruckberger
Date: 2021.11.23 09:39:31 +08'00'

Melanie Bruckberger
Senior Environmental Officer – Resource Industries
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Works approval history

Date	Reference number	Summary of changes
27/07/2020	W6358/2020/1	Works approval granted.
20/10/2020	W6358/2020/1	• Works approval transferred from Australian Aboriginal Mining Corporation Pty Ltd to Wonmunna Iron Ore Pty Ltd (a wholly owned subsidiary of Mineral Resources Ltd). • Works approval amended to: ○ change name of premises from First Iron Project to Wonmunna Iron Ore Project. ○ Works approval amended to include changes to proposed Ore Handling Plant to include a lump stacker to provide for stockpiling of lump in addition to fines.
29/04/2021	W6358/2020/1	Works approval amended to: • increase throughput capacity of Category 5 activities from 5 million tonnes per annum to 10 million tonnes per annum. • Add a lump rescreening facility to the ore handling plant
18/05/2021	W6358/2020/1	Works approval amended to allow installation of a Permanent WWTP in two stages (Stage 1, 50 m3/day, which will replace the Temporary WWTP and Stage 2, 50 m3/day, full design capacity 100 m3/day with both stages).
23/11/2021	W6358/2020/1	Works approval amended to allow construction of an 'All In Fines' (AIF) facility to maintain ore production on site

Interpretation

In this works approval:

(a) the words ‘including’, ‘includes’ and ‘include’ in conditions mean “including but not limited to”, and similar, as appropriate;

(b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;

(c) where tables are used in a condition, each row in a table constitutes a separate condition;

(d) any reference to an Australian or other standard, guideline, or code of practice in this works approval:

  (i) if dated, refers to that particular version; and

  (ii) if not dated, refers to the latest version and therefore may be subject to change over time;

(e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act; and

(f) unless specified otherwise, all definitions are in accordance with the EP Act.

NOTE: This works approval requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this works approval.

Works approval conditions

The works approval holder must ensure that the following conditions are complied with:

Construction phase

Infrastructure and equipment

1. The works approval holder must:

(a) construct and/or install the infrastructure and/or equipment;

(b) in accordance with the corresponding design and construction / installation requirements; and

(c) at the corresponding infrastructure location,

as set out in Table 1.

Table 1: Design and construction / installation requirements

Infrastructure	Design and construction / installation requirements	Infrastructure location
ORE HANDLING PLANT		
Compacted earthen pad	1. Production/design capacity of up to 10 Mtpa; 2. Dust control fittings including: a) Sprinklers on crushers and screens; b) Shields/covers on transfer points.	Schedule 1 – Premises Map
ROM Bin		
Vibrating grizzly feeder		
Primary crusher		
Rock breaker		
Four pan feeders (secondary screening and secondary crushing)		
Conveyors		
Primary screen – two triple deck elliptical screens		
Two secondary crushers		
Two radial stackers (fines and lump)		
All in Fines (AIF) facility including two tertiary crushers, two screens and two belt feeders.		
TEMPORARY WWTP		
External balance tank installed on compacted earthen pad	1. Designed and constructed to treat up to 30m^3 per day of wastewater to the	Schedule 1 – Premises

<table>
<tr><th>Infrastructure</th><th>Design and construction / installation requirements</th><th>Infrastructure location</th></tr>
<tr><td>Balance pump
Primary 1 tank
Primary 2 tank
Aeration tank with media
Blower
Clarifier, including airlift Return Activated Sludge (RAS)
Disinfection chamber - including tablet chlorinator
Pump out chamber
Sludge tank
Control panel
Audible and visual pump fault alarm
Irrigation pump
Discharge flow meter
Treated wastewater pipeline</td><td>following standards:
<table><tr><th>Parameter</th><th>Target concentration</th></tr><tr><td>Biochemical Oxygen Demand (BOD)</td><td><20mg/L</td></tr><tr><td>Total suspended solids (TSS)</td><td><30mg/L</td></tr><tr><td>Total nitrogen (TN)</td><td><30mg/L</td></tr><tr><td>Total phosphorus (TP)</td><td><8mg/L</td></tr><tr><td>pH</td><td>6.5 to 8.5</td></tr><tr><td>E.coli</td><td><1,000 cfu/100ml</td></tr><tr><td>Residual chlorine</td><td>0.2 – 2.0 mg/L</td></tr><tr><td>Total dissolved solids</td><td><600mg/L</td></tr></table>2. Alarm system to alert operator upon:
a) Pump/s failure;
b) High tank levels; and
3. Treated wastewater pipeline connected to sprayfield.</td><td>map;
WWTPs layout map</td></tr>
<tr><td colspan="3">TEMPORARY WWTP – SPRAY IRRIGATION FIELD</td></tr>
<tr><td>Spray irrigation field
1200 mm high two-strand steel wire perimeter fence</td><td>1. Spray irrigation field size of 0.82 hectares;
2. Above ground hammer type sprinklers;
3. Individual branch line flush valves;
4. Automated control from WWTP irrigation pump;
5. Perimeter fence installed to allow a 5m spray drift buffer; and
6. Safety signage displayed on perimeter fencing.</td><td>Schedule 1 – Premises map;
WWTPs layout map</td></tr>
<tr><th>Infrastructure</th><th>Design and construction / installation requirements</th><th>Infrastructure location</th></tr>
<tr><td colspan="3">PERMANENT WWTP STAGE 1</td></tr>
<tr><td>External 50 m^3 balance tank installed on compacted earthen pad</td><td>1. Designed and constructed to treat up to 50m^3 per day of wastewater to the following standards:</td><td>Schedule 1 – Premises</td></tr>
</table>

<table>
<tr><th>Infrastructure</th><th>Design and construction / installation requirements</th><th>Infrastructure location</th></tr>
<tr><td>Balance pump
SBR tank with heavy duty submersible aerators and a floating decant weir
Decant pump
Sludge pump
Recirculation pump with online chlorine dosing system and analyser
Ammonium chloride dosing system
Sucrose dosing system
Internal irrigation tank
Sludge tank 50m^3
Control panel
Audible and visual pump fault alarm
Irrigation pump
Discharge flow meter
Treated wastewater pipeline</td><td><table><tr><th>Parameter</th><th>Target concentration</th></tr><tr><td>Biochemical Oxygen Demand (BOD)</td><td><20mg/L</td></tr><tr><td>Total suspended solids (TSS)</td><td><30mg/L</td></tr><tr><td>Total nitrogen (TN)</td><td><30mg/L</td></tr><tr><td>Total phosphorus (TP)</td><td><8mg/L</td></tr><tr><td>pH</td><td>6.5 to 8.5</td></tr><tr><td>E.coli</td><td><1,000 cfu/100ml</td></tr><tr><td>Residual chlorine</td><td>0.2 – 2.0 mg/L</td></tr><tr><td>Total dissolved solids</td><td><1000mg/L</td></tr></table>2. Alarm system to alert operator upon:
c) Pump/s failure;
d) High tank levels;
3. Treated wastewater pipeline connected to sprayfield; and
4. Diversion bunding.</td><td>map;
WWTPs layout map</td></tr>
<tr><td>RO plant</td><td>1. RO plant to be constructed within the vicinity of the Permanent WWTP Stage 1;
2. Up to 15 m^3 per day of RO brine to be mixed with treated effluent within the Permanent WWTP Stage 1 irrigation tank prior to discharge to sprayfield; and
3. RO plant to be constructed with flow meters to measure volumes of potable water and reject brine produced.</td><td>Schedule 1 – Premises map;
WWTPs layout map</td></tr>
<tr><td colspan="3">PERMANENT WWTP STAGE 1 – SPRAY IRRIGATION FIELD</td></tr>
<tr><td>Spray irrigation field
1200 mm high two-strand steel wire perimeter fence</td><td>1. Increase spray irrigation field size of 0.82 hectares up to 1.2 hectares;
2. Above ground hammer type sprinklers;
3. Individual branch line flush valves;
4. Automated control from WWTP irrigation pump;</td><td>Schedule 1 – Premises map;
WWTPs layout map</td></tr>
</table>

<table>
<tr><th>Infrastructure</th><th>Design and construction / installation requirements</th><th>Infrastructure location</th></tr>
<tr><td></td><td>5. Perimeter fence installed to allow a 5m spray drift buffer;
6. Safety signage displayed on perimeter fencing; and
7. Diversion bunding.</td><td></td></tr>
<tr><th>Infrastructure</th><th>Design and construction / installation requirements</th><th>Infrastructure location</th></tr>
<tr><td colspan="3">PERMANENT WWTP STAGE 2</td></tr>
<tr><td>External 50 m^3 balance tank installed on compacted earthen pad
Balance pump
SBR tank with heavy duty submersible aerators and a floating decant weir
Decant pump
Sludge pump
Recirculation pump with online chlorine dosing system and analyser
Ammonium chloride dosing system
Sucrose dosing system
Internal irrigation tank that is connected to Stage 1
Sludge tank 50m^3
Control panel
Audible and visual pump fault alarm
Irrigation pump
Discharge flow meter
Treated wastewater pipeline</td><td>1. Designed and constructed to treat up to 50m^3 per day of wastewater (Stage 1 and Stage 2 combined to treat up to 100 m^3 per day) to the following standards:
<table>
<tr><th>Parameter</th><th>Target concentration</th></tr>
<tr><td>Biochemical Oxygen Demand (BOD)</td><td><20mg/L</td></tr>
<tr><td>Total suspended solids (TSS)</td><td><30mg/L</td></tr>
<tr><td>Total nitrogen (TN)</td><td><30mg/L</td></tr>
<tr><td>Total phosphorus (TP)</td><td><8mg/L</td></tr>
<tr><td>pH</td><td>6.5 to 8.5</td></tr>
<tr><td>E.coli</td><td><1,000 cfu/100ml</td></tr>
<tr><td>Residual chlorine</td><td>0.2 – 2.0 mg/L</td></tr>
<tr><td>Total dissolved solids</td><td><1000mg/L</td></tr>
</table>
2. Alarm system to alert operator upon:
e) Pump/s failure;
f) High tank levels;
3. Treated wastewater pipeline connected to sprayfield; and
4. Diversion bunding.</td><td>Schedule 1 –
Premises map;
WWTPs layout map</td></tr>
<tr><td>RO plant</td><td>1. RO plant to be constructed within the vicinity of the Permanent WWTP Stage 2;
2. Up to 30 m^3 per day of RO brine to be mixed with treated effluent within the Permanent</td><td>Schedule 1 –
Premises map;</td></tr>
</table>

Infrastructure	Design and construction / installation requirements	Infrastructure location
	WWTP Stage 2 irrigation tank prior to discharge to sprayfield; and 3. RO plant to be constructed with flow meters to measure volumes of potable water and reject brine produced.	WWTPs layout map
PERMANENT WWTP STAGE 2 – SPRAY IRRIGATION FIELD		
Spray irrigation field 1200 mm high two-strand steel wire perimeter fence	1. Increase spray irrigation field size of 1.2 hectares up to 2.16 hectares; 2. Above ground hammer type sprinklers; 3. Individual branch line flush valves; 4. Automated control from WWTP irrigation pump; 5. Perimeter fence installed to allow a 5m spray drift buffer; 6. Safety signage displayed on perimeter fencing; and 7. Diversion bunding.	Schedule 1 – Premises map; WWTPs layout map

Compliance reporting

2. The works approval holder must within 60 calendar days of an item of infrastructure or equipment required by condition 1 being constructed and/or installed:

(a) undertake an audit of their compliance with the requirements of condition(s) 1; and

(b) prepare and submit to the CEO an Environmental Compliance Report on that compliance.

3. The Environmental Compliance Report required by condition 2, must include as a minimum the following:

(a) certification by a suitably qualified and experienced engineer that the items of infrastructure or component(s) thereof, as specified in condition 1, have been constructed in accordance with the relevant requirements specified in condition 1;

(b) as constructed layout plan for the OHP and WWTPs infrastructure specified in condition 1; and

(c) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person.

Environmental commissioning phase – WWTPs

Environmental commissioning requirements - WWTPs

4. The works approval holder may only commence environmental commissioning of each of the WWTPs listed in condition 1 once the Environmental Compliance Report has been submitted for the WWTPs in accordance with condition 2 of this works approval.

5. Any environmental commissioning activities undertaken for the WWTPs listed in condition 1 may only be carried out:

(a) in accordance with the corresponding commissioning requirements; and

(b) for the corresponding authorised commissioning duration,

as detailed in Table 2.

Table 2: Environmental commissioning requirements – WWTPs

Infrastructure	Commissioning requirements	Authorised commissioning duration
Temporary WWTP	Only irrigate treated wastewater from the Temporary WWTP to the designated irrigation area, as specified by Schedule 1, Figure 1	For a period not exceeding 90 calendar days in aggregate.
Permanent WWTP Stage 1	Only irrigate treated wastewater and RO brine that has been mixed within the Permanent WWTP Stage 1 irrigation tank, to the designated irrigation area, as specified by Schedule 1, Figure 1	For a period not exceeding 90 calendar days in aggregate.
Permanent WWTP Stage 2	Only irrigate treated wastewater and RO brine that has been mixed within the Permanent WWTP Stage 2 irrigation tank, to the designated irrigation area, as specified by Schedule 1, Figure 1	For a period not exceeding 90 calendar days in aggregate.

Monitoring during environmental commissioning - WWTPs

6. The works approval holder must monitor emissions during environmental commissioning in accordance with Table 3.

7. The works approval holder must record the results of all monitoring activity required by condition 6.

Table 3: WWTPs emissions monitoring during commissioning

Discharge points	Monitoring locations	Parameter	Frequency	Averaging period	Unit	Method
WWTPs sprayfield - as depicted in Schedule 1, Figure 2 WWTPs layout map	Temporary WWTP Pipeline leading to the WWTP sprayfield Permanent WWTP Stage 1 and Stage 2 Pipeline leading to the WWTP sprayfield as the irrigation tanks are interconnected	Flow volumes to sprayfield of brine and effluent (separately)	Continuous	24 hours	kL/day	-
		5-Day Biochemical Oxygen Demand (BOD_5)	Fortnightly	Spot sample	mg/L	AS/NZS 5667.10 - 1998 Measurement of pH with a serviced and calibrated field water quality meter is permitted. Measurement of residual free chlorine with field based equipment is permitted. For all other parameters, samples must be submitted to and tested by a laboratory with NATA accreditation.
		Total Suspended Solids (TSS)	Fortnightly		mg/L	
		Total Nitrogen (TN)	Fortnightly		mg/L	
		Total Phosphorus (TP)	Fortnightly		mg/L	
		E.coli	Fortnightly		cfu/100ml	
		Residual Free Chlorine	Daily		mg/L	
		pH	Daily		N/A	
		Total dissolved solids (TDS)	Fortnightly		mg/L	

Environmental commissioning reporting - WWTPs

8. The Works Approval holder must submit to the CEO by no later than 30 days after the end of the commissioning period during which irrigation to land has occurred, a report for the conditions listed in Table 4, and which provides information in accordance with the corresponding requirement set out in Table 4.

Table 4: WWTPs environmental commissioning reports

Conditions	Requirement
4, 5, 6 and 7	(a) Statement on the period of commissioning; (b) Volume (in kL) of treated wastewater and RO brine applied daily to the irrigation area, and fortnightly cumulative volumes presented in table format; (c) Treated wastewater monitoring data in tabulated and graphical form including the sampling date; (d) An assessment of the treated wastewater monitoring data against the design target concentrations; and (e) Copies of laboratory analysis reports.

Time limited operations phase

Commencement and duration

9. The works approval holder may only commence time limited operations for an item of infrastructure identified in condition 1:

(a) where an item of infrastructure is not authorised to undertake environmental commissioning, the Environmental Compliance Report as required by condition 2 has been submitted by the works approval holder for that item of infrastructure; and

(b) where an item of infrastructure is authorised to undertake environmental commissioning under condition 4, the Environmental Commissioning Report for that item of infrastructure as required by condition 8 has been submitted by the works approval holder.

(c) Upon the granting of a licence or registration under Part V of the *Environmental Protection Act 1986*, authorising the operation of the infrastructure identified in condition 1, the works approval holder may no longer conduct time limited operations in respect of the infrastructure under the terms of this works approval.

Time limited operations requirements

10. During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in Table 5 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 5.

Table 5: Infrastructure and equipment requirements during time limited operations

	Site infrastructure and equipment	Operational requirements	Infrastructure location
1.	Ore Handling Plant (OHP)	• Record volumes of ore produced during time limited operation • Operate and maintain sprinkler systems on crushing and screening plant • Maintain shields and covers on conveyors and transfer points • Operate water trucks to manage dust emissions from the ore stockpile, hardstand and bare areas.	Figure 1 in Schedule 1
2.	WWTPs	• Maintain the WWTPs infrastructure in good working order. • Record volumes of treated wastewater and RO brine produced during time limited operations discharged to the irrigation field. • RO brine must be mixed in the irrigation tanks of the Permanent WWTP Stage 1 and Permanent WWTP Stage 2 prior to discharging to the irrigation area (cannot be discharged undiluted). • Maintain even distribution of treated wastewater discharge in the irrigation field so as there is no visible runoff outside the irrigation field. • Weekly inspection of pipelines to ensure pipeline integrity. • Weekly visual inspections of vegetation to ensure vegetation health is maintained.	Figure 2 in Schedule 1

Monitoring during time limited operations

11. The works approval holder must monitor treated wastewater emissions during time limited operations in accordance with Table 6.

12. The works approval holder must record the results of all monitoring activity required by conditions 10 and 11. Within 30 days of the end of the time limited operations period, the works approval holder shall submit a report to the CEO detailing the monitoring records with a comparison against target values.

Table 6: WWTPs emissions monitoring during time limited operations

Discharge points	Monitoring locations	Parameter	Frequency	Averaging period	Unit	Method
WWTP**s** sprayfield - as depicted in Schedule 1, Figure 2 WWTPs layout map	Temporary WWTP Pipeline leading to the WWTP sprayfield Permanent WWTP Stage 1 and Stage 2 Pipeline leading to the WWTP sprayfield as the irrigation tanks are interconnected	Flow volume to sprayfield of effluent and brine (separately)	Continuous	24 hours	kL/day	-
		5-Day Biochemical Oxygen Demand (BOD_5)	Monthly	Spot sample	mg/L	AS/NZS 5667.10 - 1998 Measurement of pH with a serviced and calibrated field water quality meter is permitted. Measurement of residual free chlorine with field based equipment is permitted. For all other parameters, samples must be submitted to and tested by a laboratory with NATA accreditation.
		Total Suspended Solids (TSS)	Monthly		mg/L	
		Total Nitrogen (TN)	Monthly		mg/L	
		Total Phosphorus (TP)	Monthly		mg/L	
		E.coli	Monthly		cfu/100ml	
		Residual Free Chlorine	Daily		mg/L	
		pH	Daily		N/A	
		Total dissolved solids (TDS)	Monthly		mg/L	

Records and reporting

13. The works approval holder must record the following information in relation to complaints received by the works approval holder (whether received directly from a complainant or forwarded to them by the Department or another party) about any alleged emissions from the premises:

(a) the name and contact details of the complainant, (if provided);

(b) the time and date of the complaint;

(c) the complete details of the complaint and any other concerns or other issues raised; and

(d) the complete details and dates of any action taken by the works approval holder to investigate or respond to any complaint.

14. The works approval holder must maintain accurate and auditable books including the following records, information, reports, and data required by this works approval:

(a) the works conducted in accordance with condition 1;

(b) monitoring programmes undertaken in accordance with condition 6 and condition 11; and

(c) complaints received under condition 13.

15. The books specified under condition 14 must:

(a) be legible;

(b) if amended, be amended in such a way that the original version(s) and any subsequent amendments remain legible and are capable of retrieval;

(c) be retained by the works approval holder for the duration of the works approval; and

(d) be available to be produced to an inspector or the CEO as required.

General

16. The licence holder shall ensure any sludge removed from the WWTPs is disposed of in accordance with the Western Australian guidelines for biosolids management, Department of Environment and Conservation (February 2012).

Definitions

In this works approval, the terms in Table 7 have the meanings defined.

Table 7: Definitions

Term	Definition
books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
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.
discharge	has the same meaning given to that term under the EP Act.
emission	has the same meaning given to that term under the EP Act.
environmental commissioning	means the sequence of activities to be undertaken to test equipment integrity and operation, or to determine the environmental performance, of equipment and infrastructure to establish or test a steady state operation and confirm design specifications.
Environmental Commissioning Report	means a report on any commissioning activities that have taken place and a demonstration that they have concluded, with focus on emissions and discharges, waste containment, and other environmental factors.
Environmental Compliance Report	means a report to satisfy the CEO that the conditioned infrastructure and/or equipment has been constructed and/or installed in accordance with the works approval.
EP Act	*Environmental Protection Act 1986* (WA).
EP Regulations	*Environmental Protection Regulations 1987* (WA).
Mtpa	Million tonnes per annum
OHP	Ore Handling Plant
premises	the premises to which this works approval applies, as specified at the front of this works approval and as shown on the premises map (Figure 1) in Schedule 1 to this works approval.

Term	Definition
prescribed premises	has the same meaning given to that term under the EP Act.
RO	Reverse Osmosis
ROM	Run of Mine
SBR	Sequencing Batch Reactor
time limited operations	refers to the operation of the infrastructure and equipment identified under this works approval that is authorised for that purpose, subject to the relevant conditions.
waste	has the same meaning given to that term under the EP Act.
works approval	refers to this document, which evidences the grant of the works approval by the CEO under section 54 of the EP Act, subject to the conditions.
works approval holder	refers to the occupier of the premises being the person to whom this works approval has been granted, as specified at the front of this works approval.
WWTP	Wastewater Treatment Plant

END OF CONDITIONS

Schedule 1: Maps

Premises map

The boundary of the prescribed premises and the proposed location of the OHP and WWTPs is shown in the map below.

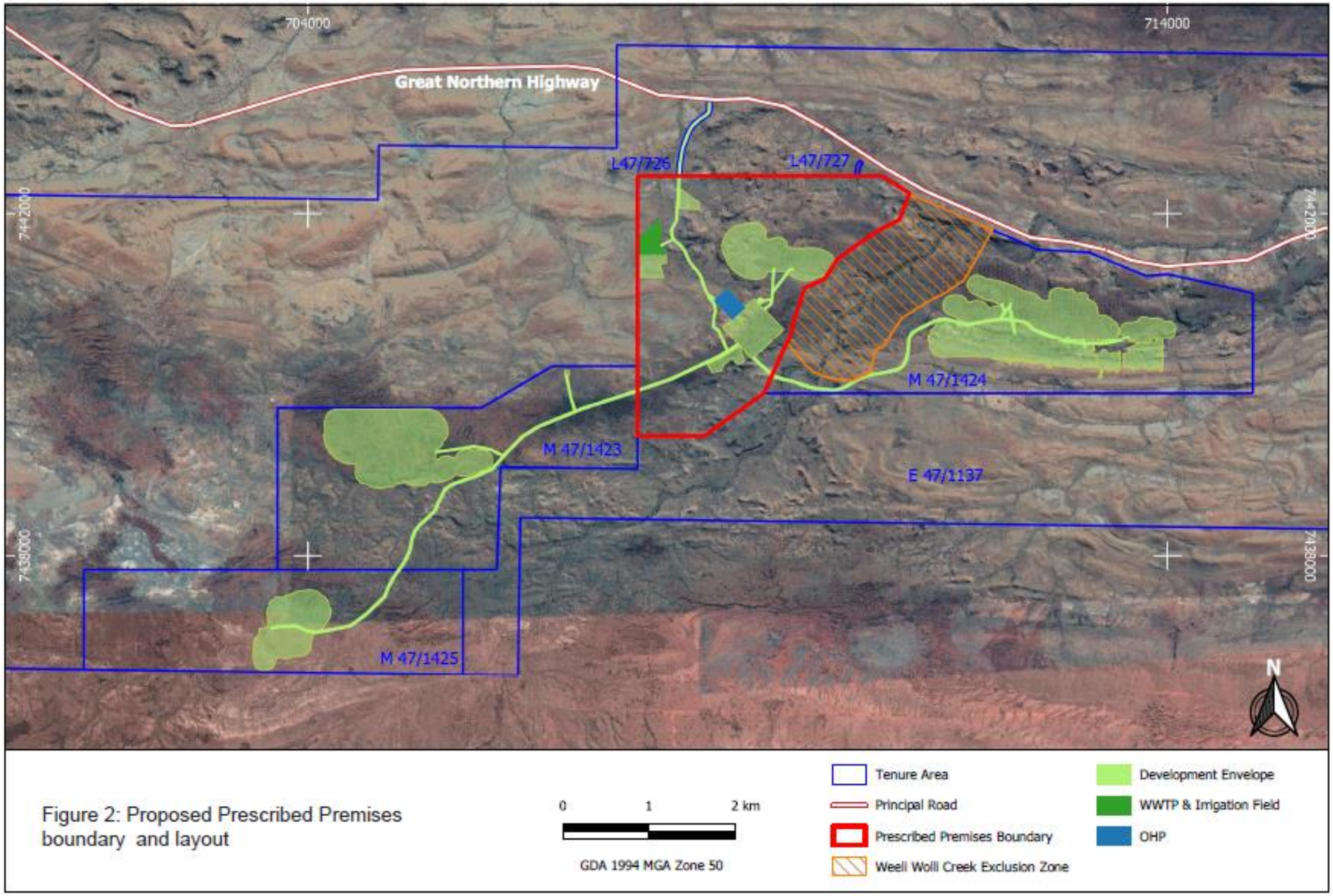

Figure 1: Map of the boundary of the prescribed premises and proposed location of the OHP and WWTPs

WWTP layout

The layout of the WWTPs and sprayfield is shown in Figure 2 below.

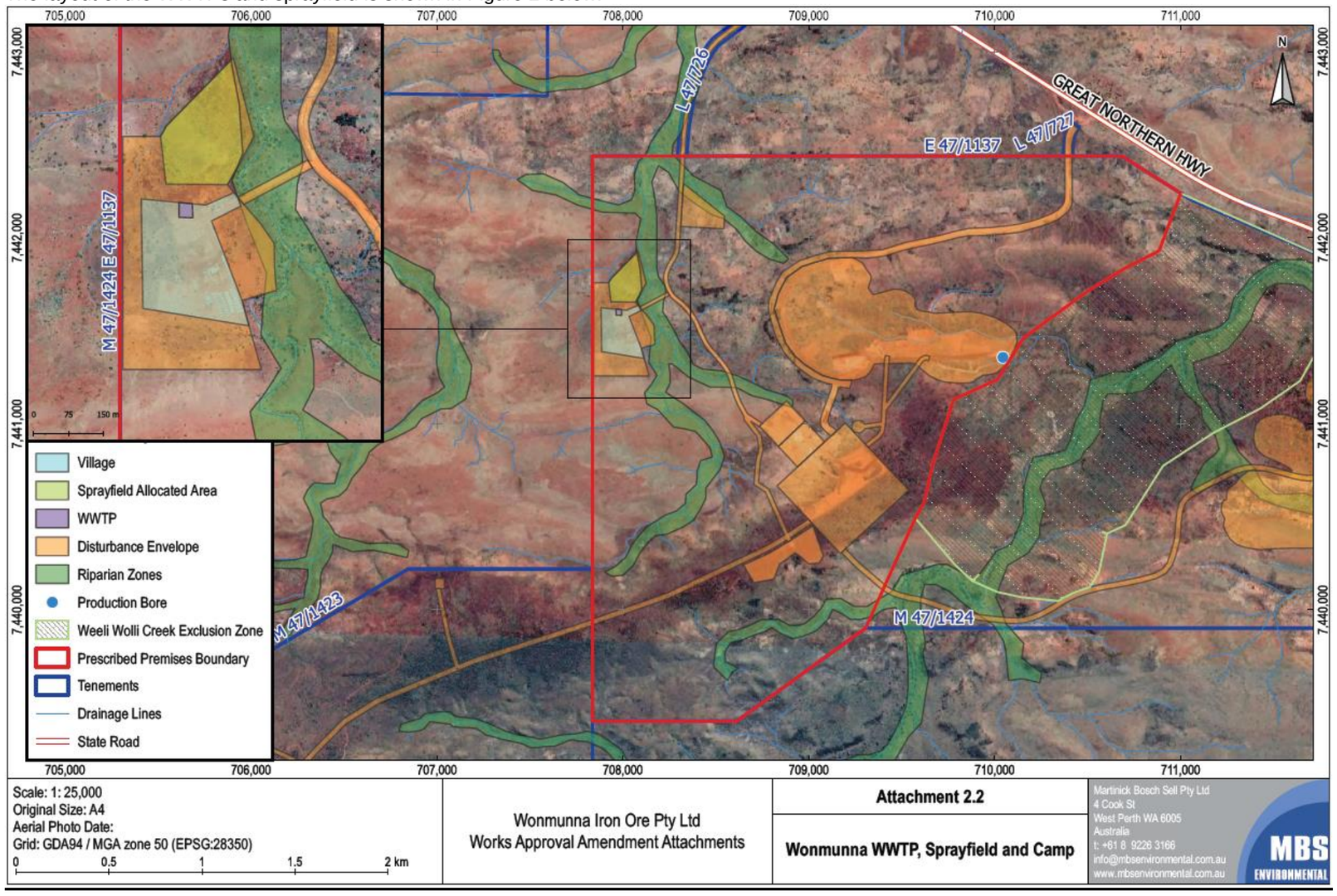

Figure 2: WWTP facility layout

Schedule 2: Premises boundary

The premises boundary is defined by the coordinates in Table 8

Table 8: Premises boundary coordinates (coordinate system GDA 1994 Zone 50)

Easting	Northing
707836.0	7442440.0
710683.4	7442440.0
709669.7	7440795.4
709619.2	7440575.6
709572.5	7440492.2
709305.0	7439901.0
708612.0	7439401.0
707836.0	7439401.0
707836.0	7442440.0
711000.0	7442239.3
710883.7	7441929.8
710699.3	7441836.3
710605.8	7441778.2
710506.0	7441717.6
710155.5	7441462.7
710014.5	7441238.4
709778.7	7441131.3