Government of Western Australia
Department of Water and Environmental Regulation

# Works Approval

| | |
|---|---|
| **Works approval number** | W6515/2021/1 |
| **Works approval holder** | MEPAU Perth Basin Pty Ltd (MEPAU) |
| **ACN** | 009 204 031 |
| **Registered business address** | Level 11, Exchange Tower<br>2 The Esplanade<br>PERTH WA 6000 |
| **DWER file number** | DER2021/000104 |
| **Duration** | 03/08/2021 to 31/10/2025 |
| **Date of amendment** | 30/07/2024 |
| **Premises details** | Waitsia Gas Project Stage 2<br>Pye Rd<br>YARDARINO WA 6525<br><br>Legal description –<br>As shown in the Map in Schedule 1 and defined by the coordinates in Schedule 2 |

| Prescribed premises category description (Schedule 1, Environmental Protection Regulations 1987) | Assessed design capacity |
|---|---|
| Category 10: Oil or gas production from wells: premises, whether on land or offshore, on which crude oil, natural gas or condensate is extracted from below the surface of the land or the seabed, as the case requires, and is treated or separated to produce stabilised crude oil, purified natural gas or liquefied hydrocarbon gases. | 1,873,000 tonnes per year of natural gas (export)<br>91.25 petajoules per annum (export) |

This amended works approval is granted to the works approval holder, subject to the attached conditions, on 30 July 2024, by:

Michael Greenslade
Digitally signed by Michael Greenslade
Date: 2024.07.30 14:31:21 +08'00'

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

# Works approval history

| Date | Reference number | Summary of changes |
|---|---|---|
| 03/08/2021 | W6515/2021/1 | Works approval granted |
| 18/10/2022 | W6515/2021/1 | CEO initiated amendment to include the extraction wells and flowlines in the premises boundary following a review of Category 10 |
| 30/08/2023 | W6515/2021/1 | CEO initiated amendment to give effect to the Minister for Environment's determination on appeal 032-21 |
| 30/07/2024 | W6515/2021/1 | Administrative amendments to;<br>• Change name of works approval holder from AWE Perth Pty Ltd to MEPAU Perth Basin Pty Ltd<br>• Extend expiry date from 2 August 2024 to 31 October 2025;<br>• Extend TLO from 90 days to 180 days;<br>• Amend design capacity from 250 terajoules per day (export) to 91.25 petajoules per annum (export) to align with MS 1164 as recently amended; and<br>• Update prescribed premises boundary. |

# 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 the infrastructure;

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

(c) at the corresponding infrastructure location,

as set out in Table 1.

**Table 1: Design and construction requirements**

| | Infrastructure | Design and construction requirements | Infrastructure location |
|---|---|---|---|
| | ***Gas process plant infrastructure*** | | |
| 1 | Export gas compressors | • 4 x 1,860 kW gas engine driven compressors;<br>• Stack exhaust height must be at least 6.5 m above as-built ground level | '2' as depicted in the 'Infrastructure map' in Schedule 1 |
| 2 | Gas engine alternators | • 3 x 2,600 kW gas engine driven generators;<br>• Stack exhaust height must be at least 5.4 m above as-built ground level | '14' as depicted in the 'Infrastructure map' in Schedule 1 |
| 3 | Emergency diesel generator | • 1 x 1,300 kW diesel engine driven generator;<br>• Stack exhaust height must be at least 5.4 m above as-built ground level | '15' as depicted in the 'Infrastructure map' in Schedule 1 |
| 4 | Hot water fired heater | • 1 x 26,000 kW (duty) heater;<br>• Stack exhaust height must be at least 24.5 m above as-built ground level | Not specified |
| 5 | Incinerator | • Stack exhaust height must be at least 22.9 m above as-built ground level | Not specified |
| 6 | Flare | • 1 x emergency flare connected to a flare header and knock-out drum system;<br>• Ignition system must comprise an automatic HEI with manual FFG backup;<br>• Minimum of 3 thermocouple devices must be installed for flame-out detection;<br>• Flare stack height must be at least 15 m above as-built ground level | '4' as depicted in the 'Infrastructure map' in Schedule 1 |
| | ***Containment infrastructure*** | | |
| 1 | Condensate storage tanks | • 4 x storage tanks, each with working capacity of at least 150 $m^3$;<br>• Must be constructed or installed with secondary containment, with bunding that complies with the requirements of AS 1940 | '19' as depicted in the 'Infrastructure map' in Schedule 1 |
| 2 | Amine storage tanks | • 2 x storage tanks, each with working capacity of at least 125 $m^3$;<br>• Must be constructed or installed with secondary | '13' as depicted in the 'Infrastructure map' in Schedule 1 |

| | Infrastructure | Design and construction requirements | Infrastructure location |
|---|---|---|---|
| | | containment, with bunding that complies with the requirements of AS 1940 | |
| 3 | Chemical storage area | • Must be constructed with secondary containment, with bunding that complies with the requirements of AS/NZS 3833 and AS 1940 | '17' as depicted in the 'Infrastructure map' in Schedule 1 |
| | ***Storage ponds*** | | |
| 1 | Temporary construction turkey's nest | • Temporary storage pond(s);<br>• Pond(s) must be constructed with a single HDPE geomembrane liner with a manufacturer specified thickness of at least 0.75 mm (or equivalent);<br>• HDPE geomembrane liners must comply with the requirements specified in condition 2, with the following exception:<br>- Minimum tensile strength at break of 25 kN/m | Not specified |
| 2 | PW evaporation ponds | • 2 x PW storage ponds;<br>• Each pond must be constructed with a minimum surface area of 10,000 $m^3$;<br>• Total surface area must include provision for 500 mm operational freeboard;<br>• Ponds must be constructed with dual HDPE geomembrane liners, each with a manufacturer specified thickness of at least 1.5 mm, with leak detection;<br>• HDPE geomembrane liners must comply with the requirements specified in condition 2 | 'T-2592' and 'Future produced water pond 2' as depicted in the 'Infrastructure map' in Schedule 1 |
| 3 | Contaminated water pond | • 1 x contaminated water storage pond;<br>• Pond must be constructed with a minimum holding capacity of 4,800 $m^3$;<br>• Holding capacity must include provision for 500 mm operational freeboard;<br>• Pond must be constructed with dual HDPE liners, each with a manufacturer specified thickness of at least 1.5 mm, with leak detection;<br>• HDPE geomembrane liners must comply with the requirements specified in condition 2 | 'T-5112' as depicted in the 'Infrastructure map' in Schedule 1 |
| 4 | Groundwater monitoring bores | Must construct at least 1 bore as near as practicable to and up hydraulic gradient of the PW ponds and 1 bore as near as practicable to and down hydraulic gradient of the PW ponds. The bores must be:<br>• sited in accordance with WQPN #30 ("Siting of monitoring bores" section);<br>• installed to meet the requirements of Minimum Construction Requirements for Water Bores in Australia;<br>• surveyed to allow the ground level (to AHD) to be accurately determined;<br>• screened to permit effective monitoring of the shallow groundwater levels and quality | Determined by design and construction requirements |

## High density polyethylene geomembranes

**2.** The works approval holder must ensure all HDPE geomembrane liners for long-term containment facilitates comply with the properties listed in Table 2, and are constructed in accordance with the requirements specified in that table.

**Table 2: HDPE liner installation requirements**

| | Item | Property/construction requirement |
|---|---|---|
| 1 | Liner properties | HDPE liners must have the following properties:<br>• Formulated density of 0.94 g/cc or more;<br>• Melt index value per ASTM D1238 of less than 1.0 g in 10 minutes;<br>• Carbon black content of 2-3%;<br>• Minimum tensile strength at yield of 22 kN/m;<br>• Minimum tensile strength at break of 40 kN/m;<br>• Minimum elongation at yield of 12%, and at break 700% |
| 2 | Liner fabrication | • Liners must be fabricated to form the shape of the pond embankments;<br>• All seams and joins made on the premises must be continuous;<br>• Panels of the liner must be overlapped by a minimum of 100 mm, prior to heat welding or mechanical joining |
| 3 | Welding materials | • Membrane welding materials must be supplied by the liner manufacturer, and be of the same material as the liner membrane |
| 4 | Seams and joins | • All seams and joins must be constructed and tested as watertight over their full length using a vacuum box test and air pressure test |
| 5 | Shear resistance | • Shear resistance must be tested in accordance with ASTM D5321 |

## Review of lighting design

**3.** The works approval holder must, prior to the commencement of time limited operations:

(a) undertake a review of the lighting design for all lighting infrastructure against the design principles listed in *Appendix A - Best Practice Lighting Design* of the National Light Pollution Guidelines; and

(b) prepare and submit to the CEO a report that details whether lighting at the premises is consistent with the design principles listed in that document.

**4.** Where an item of lighting infrastructure has been identified as being materially inconsistent with the design principles listed in the National Light Pollution Guidelines, the works approval holder must detail proposed measures and timeframes to address the inconsistencies in the report required by condition 3(b).

## Compliance audit and reporting

**5.** The works approval holder must within 28 calendar days of an item of infrastructure specified in condition 1 being constructed:

(a) undertake an audit of their compliance with the requirements of condition 1 for that item of infrastructure; and

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

**6.** The Environmental Compliance Report required by condition 5, must include as a minimum:

(a) certification by a suitably qualified engineer, whether or not the items of infrastructure or components thereof, as specified in condition 1, have been

constructed in accordance with the relevant requirements specified in condition 1;

(b) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in condition 1;

(c) copies of the construction bore logs for each groundwater monitoring bore required to be installed by condition 1; and

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

**7.** Subject to condition 6(a), where an item of infrastructure or component of infrastructure has been certified as not being constructed, or does not comply with the corresponding requirements, or contains material defects, the works approval holder must:

(a) correct the non-compliant or defective works, prior to re-certifying in accordance with condition 6(a); or

(b) provide to the CEO a description of, and explanation for, any departures from the requirements specified in Table 1 that do not require rectification and do not constitute a material defect along with the Environmental Compliance Report required by condition 5.

## Environmental commissioning phase

### Environmental commissioning plan

**8.** The works approval holder must, at least 3 months prior to the commencement of environmental commissioning, provide to the CEO an Environmental Commissioning Plan.

**9.** The plan required by condition 8 must include, but not be limited to:

(a) the stages, processes and expected timeframes of environmental commissioning;

(b) how accidents or malfunctions will be managed;

(c) start up and shut down procedures and how emissions will be managed during start up and shut down; and

(d) procedures for monitoring and managing emissions and discharges during environmental commissioning including, but not limited to:

(i) details of parameters to be included in any monitoring programs, including in stack monitoring of air emissions (for $PM_{2.5}$, $NO_X$, mercury, benzene, toluene and xylene) and air emissions during flaring and start-up events;

(ii) targets and/or trigger levels for each parameter; and

(iii) contingency actions to be implemented if target and/or trigger levels are exceeded.

### Environmental commissioning requirements

**10.** The works approval holder may only commence environmental commissioning once the Environmental Compliance Report required by condition 5 and the Environmental Commissioning Plan required by condition 8 have both been submitted by the works approval holder.

**11.** The works approval holder must notify the CEO:

(a) at least 7 days prior to, the commencement date of environmental commissioning; and

(b) within 7 days after, the completion date of environmental commissioning.

**12.** The works approval holder must, within 90 calendar days of the completion of environmental commissioning, submit to the CEO an Environmental Commissioning Report.

**13.** The report required by condition 12 must include, but not be limited to:

(a) a summary of environmental commissioning activities undertaken, including timeframes and the amount of gas/condensate processed and PW produced;

(b) a summary of the environmental performance of all plant and equipment as installed, including air emissions monitoring conducted on all point sources;

(c) a review of the plant's performance against the design specifications;

(d) where they have not been met, measures proposed to meet the design specification, together with timeframes for implementing the proposed measures; and

(e) records of all flaring and start-up events during environmental commissioning, including the duration of those events and the volume of emissions released during those events, and the fuel type used during each start-up event.

## Time limited operational phase

### Commencement and duration

**14.** The works approval holder may conduct time limited operations for the infrastructure and equipment specified in condition 1:

(a) for a period not exceeding 180 calendar days from the completion date of environmental commissioning; or

(b) until such time as a licence is granted in accordance with Division 3, Part V of the Environmental Protection Act 1986,

whichever is sooner.

### Infrastructure and equipment

**15.** During time limited operations, the works approval holder must ensure the premises infrastructure listed in Table is maintained and operated in accordance with the corresponding operational requirement set out in Table 3.

**Table 3: Infrastructure requirements during time limited operations**

| | Site infrastructure | Operational requirement |
|---|---|---|
| 1 | Gas processing plant | • Flaring must not occur under normal operating conditions, except for pilot and purging requirements;<br>• Flaring emissions must occur at least 15 m above as-built ground level |
| 2 | Mercury removal unit | • Feed gas must be directed through the MRU;<br>• Spent mercury must be removed off-site by a licensed controlled waste carrier |
| 3 | PW system | • Cooled PW must be directed to the PW ponds |
| 4 | PW ponds, contaminated water pond | • An operational freeboard of at least 500 mm must be maintained at all times;<br>• Must conduct weekly inspections for visual integrity, leak assessment and freeboard capacity, monthly if not operating;<br>• Where any inspection identifies that an appropriate level of environmental protection is not being maintained, must take corrective action to mitigate adverse environmental consequences as soon as practicable |

| | Site infrastructure | Operational requirement |
|---|---|---|
| 5 | Secondary containment | • All hydrocarbon and hazardous materials storage areas must comprise bunding that complies with the requirements of AS 1940;<br>• Spills and leaks of hydrocarbons and hazardous materials must be immediately cleaned up and stored in impervious containers for off-site removal by a licensed controlled waste carrier |
| 6 | Surface water and site drainage | • Surface water runoff from sealed operational areas must be diverted to the contaminated water pond;<br>• Surface water collected within secondary containment must be visually inspected, prior to pumping to the contaminated water pond;<br>• Surface water runoff from non-operational areas must be diverted to the non-contaminated water pond or away from operational areas |
| 7 | Emergency diesel generator | • Must not be used for power generation under normal operating conditions |
| 8 | PW line (from WGP to PW pond) | • During discharge to the PW pond, must maintain accurate flow records using a flowmeter;<br>• Must troubleshoot any discrepancies identified in flowmeter records, including visual inspection along the length of the PW line (shown in Schedule 1: Map of emission points);<br>• Where any inspection identifies a spill, leak or rupture of the PW line, must take corrective action to rectify the cause of the spill, leak or rupture and prevent recurrence as soon as practicable;<br>• Must cease discharge to the PW pond until the outcome of any discrepancy has been determined and/or any spill, leak or rupture has been rectified |

**16.** During time limited operations, the works approval holder must ensure the emissions listed in Table 4 are only emitted from the corresponding emission point and location specified in that table.

**Table 4: Authorised emission points to air**

| Emission | Emission point | Minimum stack height (m) | Maximum stack internal diameter (m) | Emission point location[1] |
|---|---|---|---|---|
| CO, $NO_X$, $SO_2$, $PM_{2.5}$, $PM_{10}$, VOCs (BTEX), Hg | Flare | 15.0 | 0.4 | VI Flare |
| | Incinerator | 22.9 | 1.5 | V Incinerator |
| | Export gas compressors | 6.5 | 0.5 | III Export gas compressor engines |
| | Inlet gas compressors | 6.5 | 0.5 | III Inlet gas compressor engines |
| | Hot water fired heater | 24.5 | 1.8 | IV Fired water heater |
| | Gas engine generator | 5.4 | 0.5 | I Gas engine generators |
| | Diesel engine generator | 5.4 | 0.5 | VII Emergency diesel generator |

Note 1: Emission point location reference Schedule 1: Maps – Map of emission points.

# Monitoring

## General monitoring

**17.** The works approval holder must ensure that:

(a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;

(b) all groundwater sampling is conducted in accordance with AS/NZS 5667.11; and

(c) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured.

**18.** The works approval holder must ensure that quarterly monitoring is undertaken at least 45 days apart.

**19.** The works approval holder must ensure that all monitoring equipment used on the premises to comply with conditions of this works approval is calibrated in accordance with the manufacturer's specifications.

**20.** The works approval holder must, where the requirements for calibration cannot be practicably met, or a discrepancy exists in the interpretation of the requirements, bring these issues to the attention of the CEO accompanied with a report comprising details of any modifications to the methods. Authorised emission points to air

## Groundwater monitoring

**21.** During time limited operations, the works approval holder must monitor and record the results of groundwater in accordance with the requirements of Table 5.

**Table 5: Monitoring of groundwater requirements**

| Parameter | Sampling location | Unit | Frequency | Averaging period |
|---|---|---|---|---|
| Standing water level (SWL) | MW01, MW02 | m (AHD) m (BGL) | Quarterly, commencing within 30 days of PW first being discharged into a PW pond | Spot, in-field measurement |
| pH | | - | | |
| Electrical conductivity | | µS/cm | | |
| Total dissolved solids | | mg/L | | Spot sample |
| Dissolved oxygen (DO) | | | | |
| Total recoverable hydrocarbons (TRH) | | | | |
| BTEXN compounds | | | | |

# Records and reporting (general)

**22.** The works approval holder must record the following information in relation to complaints received by the works approval holder (whether 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 issues raised; and

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

**23.** 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) any maintenance of infrastructure that is performed in the course of complying with condition 15;

(c) records of all flaring and start-up events during environmental commissioning, as required by condition 13(e);

(d) groundwater monitoring, as required by condition 21; and

(e) complaints received under condition 22.

**24.** The books specified under condition 23 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.

# Definitions

In this works approval, the terms in Table 6 have the meanings defined.

**Table 6: Definitions**

| Term | Definition |
|---|---|
| AHD | Annual Height Datum |
| AS 1940 | means the most recent version and relevant parts of the Australian Standard AS 1940 *The storage and handling of flammable and combustible liquids* |
| AS/NZS 3833 | means the most recent version and relevant parts of the Australian and New Zealand Standard AS/NZS 3833 *The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers* |
| AS/NZS 5667.1 | means the Australian Standard AS/NZS 5667.1 Water quality – sampling – guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples, as amended from time to time |
| AS/NZS 5667.11 | means the Australian Standard AS/NZS 5667.11 Water quality – sampling – guidance on sampling groundwater, as amended from time to time |
| ASTM D1238 | means the Active Standard ASTM D1238 *Standard test method for melt flow rates of thermoplastics by extrusion plastometer* |
| ASTM D5321 | means the Active Standard ASTM D5321 / D5321M *Standard test method for determining the shear strength of soil-geosynthetic and geosynthetic-geosynthetic interfaces by direct shear* |
| averaging period | means the time over which a limit or target is measured or a monitoring result is obtained |
| BGL | Means below ground level |
| books | has the same meaning given to that term under the EP Act |
| BTEX, BTEXN | means the volatile organic compounds benzene, toluene, ethylbenzene and xylene |
| CEO | means Chief Executive Officer of the Department<br>CEO for the purposes of notification means:<br>Director General<br>Department administering the *Environmental Protection Act 1986*<br>Locked Bag 10<br>JOONDALUP DC WA 6919<br>info@dwer.wa.gov.au |
| condition | means a condition to which this works approval is subject under s.62 of the EP Act |
| controlled waste carrier | means a person licensed as a carrier under the Environmental Protection (Controlled Waste) Regulations 2004 |
| 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 an activity or sequence of activities undertaken after pre-commissioning has demonstrated the integrity of the plant and equipment. The purpose of commissioning is to test equipment, infrastructure, and processes after the input of raw materials, to confirm design specifications, optimise process conditions, and to monitor/validate emissions or discharges in order to establish a steady-state operation |

| | |
|---|---|
| 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 has been constructed in accordance with the works approval |
| EP Act | *Environmental Protection Act 1986* (WA) |
| EP Regulations | Environmental Protection Regulations 1987 (WA) |
| freeboard | means the distance between the maximum surface water elevations and the top of retaining banks or structures at their lowest point |
| FFG | Flame Front Generator |
| HDPE | High density polyethylene |
| HEI | High-Energy Electric Ignition |
| Hg | Mercury |
| Minimum Construction Requirements for Water Bores in Australia | means the document *Minimum Construction Requirements for Water Bores in Australia*, National Uniform Drillers Licensing Committee (3rd Edition, 2012) |
| MRU | Mercury Recovery Unit |
| National Light Pollution Guidelines | means the document National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds, Commonwealth of Australia (Ver 1.0, January 2020) |
| NATA | National Association of Testing Authorities, Australia |
| NATA accreditation | means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis |
| normal operating conditions | means the operation of infrastructure (including abatement equipment) excluding start up, shut down and upset conditions |
| $NO_X$ | means oxides of nitrogen, calculated as the sum of nitric oxide and nitrogen dioxide and expressed as nitrogen dioxide |
| PM | means total particulate matter including both solid fragments of material and miniscule droplets of liquid |
| $PM_{2.5}$ and $PM_{10}$ | means particles with an aerodynamic diameter of less or equal to 2.5 µm and 10 µm, respectively |
| pre-commissioning | means an activity or sequence of activities undertaken after construction (but prior to commissioning) to test equipment and infrastructure for functionality, and for any installation defects or failures. Examples include hydraulic pump, pipeline and valve testing; hydrostatic testing of vessels, tanks and ponds; electrical component testing; and liner integrity tests for storage facilities and wastewater containment ponds |
| premises | the premises to which this works approval applies, as specified at the front of this works approval and as shown on the map in Schedule 1 to this works approval |
| prescribed premises | has the same meaning given to that term under the EP Act |
| Produced Water (PW) | means water that is produced as a by-product during the extraction of natural gas |
| quarterly | means the 4 inclusive periods from 1 January – 31 March, 1 April – 30 June, 1 July – 30 September, and 1 October – 31 December in the same year |
| shut down | means the period when plant or equipment is brought from normal |

| | |
|---|---|
| | operating conditions to inactivity |
| spot sample | means a discrete sample representative at the time and place at which the sample is taken |
| start up | means the period when plant or equipment is brought from inactivity to normal operating conditions |
| suitably qualified engineer | means a person who holds a tertiary academic qualification in engineering and has a minimum 5 years of experience working in their area of expertise |
| time limited operations (TLO) | means operation of the infrastructure identified under this works approval that is authorised for that purpose, subject to the relevant conditions |
| VOCs | Volatile organic compounds |
| works approval | refers to this document, which evidences the grant of the works approval by the CEO under s.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 |
| WQPN #30 | means the document *Water Quality Protection Note #30: Groundwater monitoring bores*, Department of Water (February 2006). Available at: www.water.wa.gov.au/_data/assets/pdf_file/0010/4033/59685.pdf |

**END OF CONDITIONS**

# Schedule 1: Maps

## Premises map

The boundary of the prescribed premises is shown in the map below (red line) and defined by the coordinates in Schedule 2.

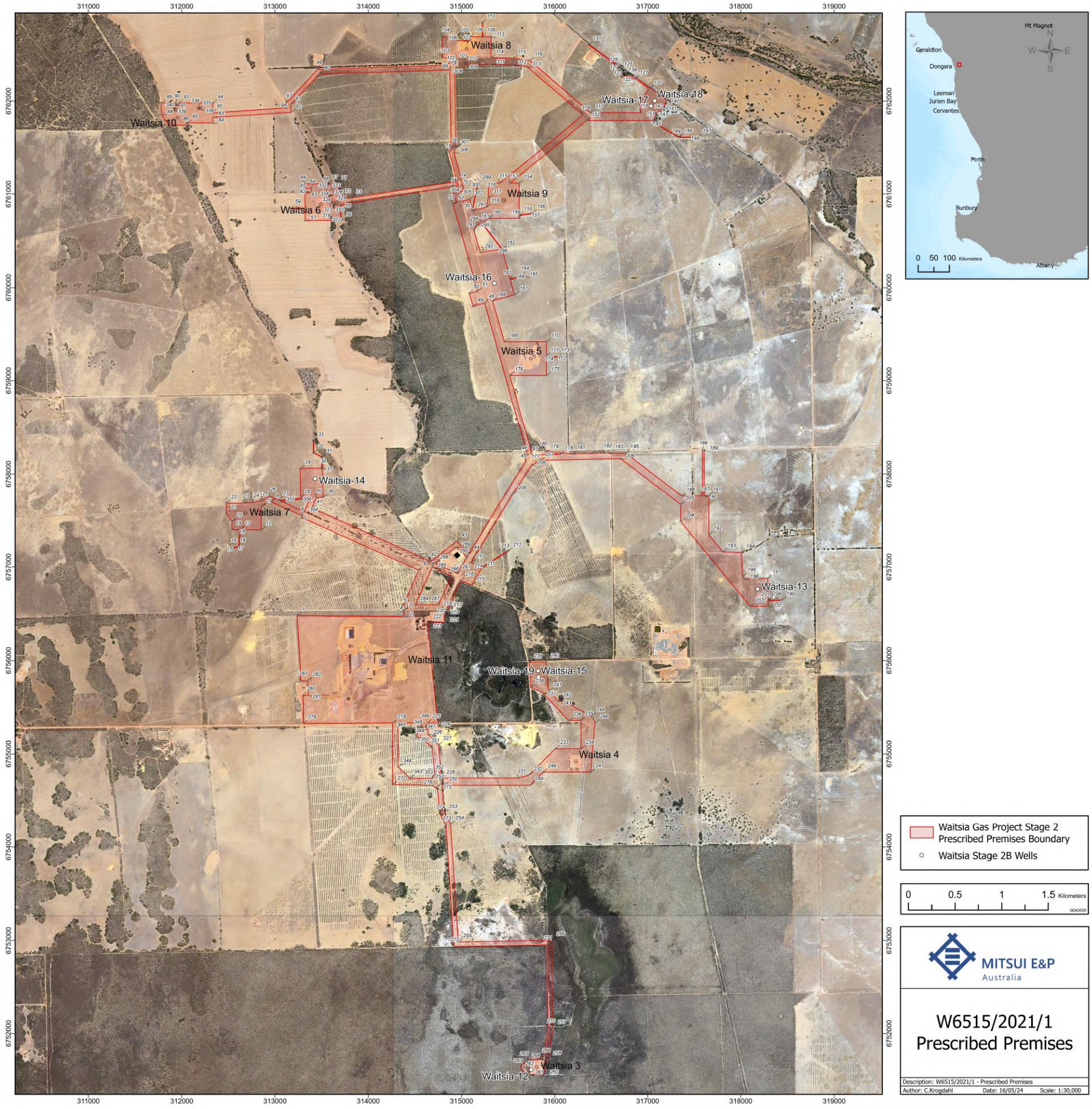
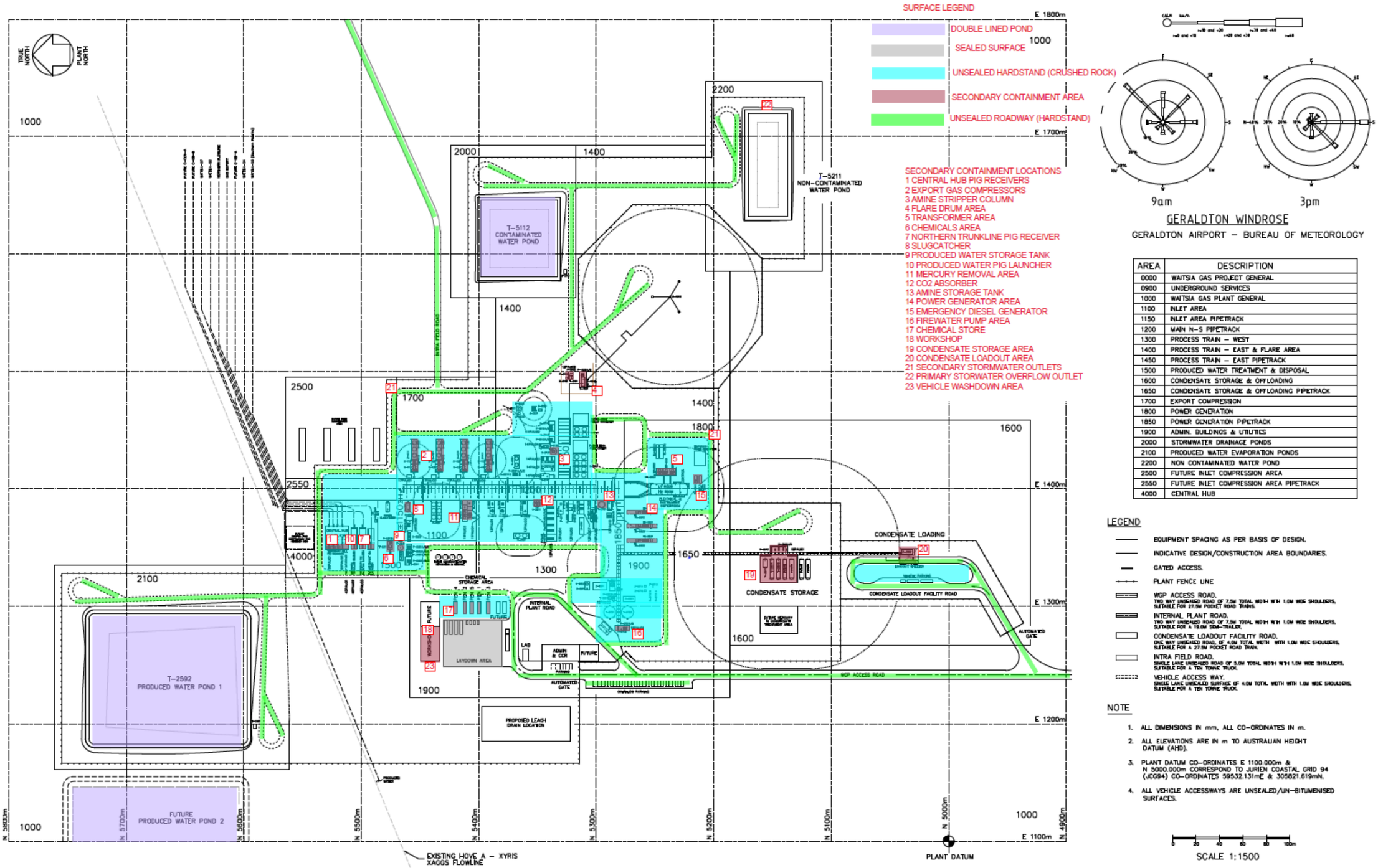



**Figure 1: Prescribed premises boundary**

## Infrastructure map

The location of key WGP infrastructure is shown in the map below.




| AREA | DESCRIPTION |
|---|---|
| 0000 | WAITSIA GAS PROJECT GENERAL |
| 0900 | UNDERGROUND SERVICES |
| 1000 | WAITSIA GAS PLANT GENERAL |
| 1100 | INLET AREA |
| 1150 | INLET AREA PIPETRACK |
| 1200 | MAIN N–S PIPETRACK |
| 1300 | PROCESS TRAIN – WEST |
| 1400 | PROCESS TRAIN – EAST & FLARE AREA |
| 1450 | PROCESS TRAIN – EAST PIPETRACK |
| 1500 | PRODUCED WATER TREATMENT & DISPOSAL |
| 1600 | CONDENSATE STORAGE & OFFLOADING |
| 1650 | CONDENSATE STORAGE & OFFLOADING PIPETRACK |
| 1700 | EXPORT COMPRESSION |
| 1800 | POWER GENERATION |
| 1850 | POWER GENERATION PIPETRACK |
| 1900 | ADMIN, BUILDINGS & UTILITIES |
| 2000 | STORMWATER DRAINAGE PONDS |
| 2100 | PRODUCED WATER EVAPORATION PONDS |
| 2200 | NON CONTAMINATED WATER POND |
| 2500 | FUTURE INLET COMPRESSION AREA |
| 2550 | FUTURE INLET COMPRESSION AREA PIPETRACK |
| 4000 | CENTRAL HUB |

LEGEND

- EQUIPMENT SPACING AS PER BASIS OF DESIGN.
- INDICATIVE DESIGN/CONSTRUCTION AREA BOUNDARIES.
- GATED ACCESS.
- PLANT FENCE LINE
- WGP ACCESS ROAD. TWO WAY UNSEALED ROAD OF 7.5M TOTAL WIDTH WITH 1.0M WIDE SHOULDERS, SUITABLE FOR 27.5M POCKET ROAD TRAINS.
- INTERNAL PLANT ROAD. TWO WAY UNSEALED ROAD OF 7.5M TOTAL WIDTH WITH 1.0M WIDE SHOULDERS, SUITABLE FOR A 19.0M SEMI–TRAILER.
- CONDENSATE LOADOUT FACILITY ROAD. ONE WAY UNSEALED ROAD, OF 4.0M TOTAL WIDTH WITH 1.0M WIDE SHOULDERS, SUITABLE FOR A 27.5M POCKET ROAD TRAIN.
- INTRA FIELD ROAD. SINGLE LANE UNSEALED ROAD OF 5.0M TOTAL WIDTH WITH 1.0M WIDE SHOULDERS, SUITABLE FOR A TEN TONNE TRUCK.
- VEHICLE ACCESS WAY. SINGLE LANE UNSEALED SURFACE OF 4.0M TOTAL WIDTH WITH 1.0M WIDE SHOULDERS, SUITABLE FOR A TEN TONNE TRUCK.

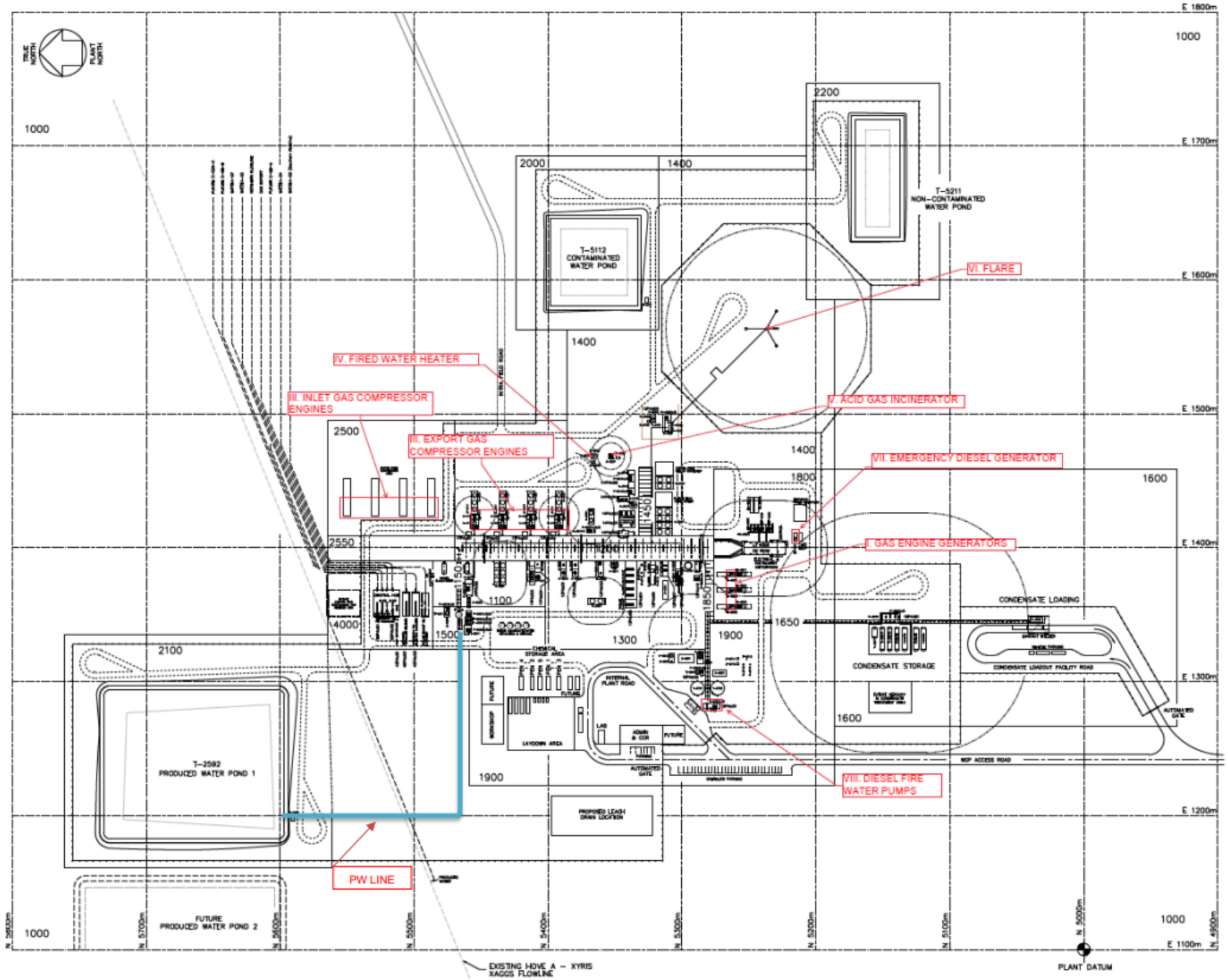
NOTE

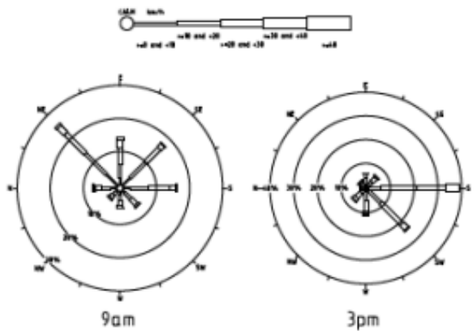
1. ALL DIMENSIONS IN mm, ALL CO–ORDINATES IN m.
2. ALL ELEVATIONS ARE IN m TO AUSTRALIAN HEIGHT DATUM (AHD).
3. PLANT DATUM CO–ORDINATES E 1100.000m & N 5000.000m CORRESPOND TO JURIEN COASTAL GRID 94 (JCG94) CO–ORDINATES 59532.131mE & 305821.619mN.
4. ALL VEHICLE ACCESSWAYS ARE UNSEALED/UN–BITUMENISED SURFACES.

SCALE 1:1500

## Map of emission points

The location of key WGP infrastructure and emission points is shown in the map below.




GERALDTON WINDROSE

GERALDTON AIRPORT – BUREAU OF METEOROLOGY

| AREA | DESCRIPTION |
|---|---|
| 0000 | WAITSIA GAS PROJECT GENERAL |
| 0900 | UNDERGROUND SERVICES |
| 1000 | WAITSIA GAS PLANT GENERAL |
| 1100 | INLET AREA |
| 1150 | INLET AREA PIPETRACK |
| 1200 | MAIN N-S PIPETRACK |
| 1300 | PROCESS TRAIN – WEST |
| 1400 | PROCESS TRAIN – EAST & FLARE AREA |
| 1450 | PROCESS TRAIN – EAST PIPETRACK |
| 1500 | PRODUCED WATER TREATMENT & DISPOSAL |
| 1600 | CONDENSATE STORAGE & OFFLOADING |
| 1650 | CONDENSATE STORAGE & OFFLOADING PIPETRACK |
| 1700 | EXPORT COMPRESSION |
| 1800 | POWER GENERATION |
| 1850 | POWER GENERATION PIPETRACK |
| 1900 | ADMIN, BUILDINGS & UTILITIES |
| 2000 | STORMWATER DRAINAGE PONDS |
| 2100 | PRODUCED WATER EVAPORATION PONDS |
| 2200 | NON CONTAMINATED WATER POND |
| 2500 | FUTURE INLET COMPRESSION AREA |
| 2550 | FUTURE INLET COMPRESSION AREA PIPETRACK |
| 4000 | CENTRAL HUB |

LEGEND

- EQUIPMENT SPACING AS PER BASIS OF DESIGN.
- INDICATIVE DESIGN/CONSTRUCTION AREA BOUNDARIES.
- GATED ACCESS.
- PLANT FENCE LINE
- WGP ACCESS ROAD. TWO WAY UNSEALED ROAD OF 7.0m TOTAL WIDTH WITH 1.0m WIDE SHOULDERS, SUITABLE FOR 27.5m POCKET ROAD TRAIN.
- INTERNAL PLANT ROAD. TWO WAY UNSEALED ROAD OF 7.0m TOTAL WIDTH WITH 1.0m WIDE SHOULDERS, SUITABLE FOR A 19.0m SEMI-TRAILER.
- CONDENSATE LOADOUT FACILITY ROAD. ONE WAY UNSEALED ROAD, OF 4.0m TOTAL WIDTH WITH 1.0m WIDE SHOULDERS, SUITABLE FOR A 27.5m POCKET ROAD TRAIN.
- INTRA FIELD ROAD. SINGLE LANE UNSEALED ROAD OF 5.0m TOTAL WIDTH WITH 1.0m WIDE SHOULDERS, SUITABLE FOR A TEN TONNE TRUCK.
- VEHICLE ACCESS WAY. SINGLE LANE UNSEALED SURFACE OF 4.0m TOTAL WIDTH WITH 1.0m WIDE SHOULDERS, SUITABLE FOR A TEN TONNE TRUCK.

NOTE

1. ALL DIMENSIONS IN mm, ALL CO-ORDINATES IN m.
2. ALL ELEVATIONS ARE IN m TO AUSTRALIAN HEIGHT DATUM (AHD).
3. PLANT DATUM CO-ORDINATES E 1100.000m & N 5000.000m CORRESPOND TO JURIEN COASTAL GRID 94 (JCG94) CO-ORDINATES 595532.131mE & 305821.619mN.
4. ALL VEHICLE ACCESSWAYS ARE UNSEALED/UN-BITUMENSED SURFACES.

SCALE 1:1500

# Schedule 2: Premises boundary coordinates

The premises boundary is defined by the coordinates below and excludes Exclusion Areas 1 - 5 (Note: Coordinates are in GDA94 format).

| PRESCRIBED PREMISES BOUNDARY | |
|---|---|
| *Northing* | *Easting* |
| 6756479.935 | 313236.2971 |
| 6756469.468 | 314381.5838 |
| 6756530.427 | 314381.5837 |
| 6756530.583 | 314360.7592 |
| 6756566.207 | 314361.4233 |
| 6756965.631 | 314540.7918 |
| 6757530.049 | 313283.9264 |
| 6757548.302 | 313292.1229 |
| 6757698.924 | 312956.7071 |
| 6757697.117 | 312936.1145 |
| 6757647.915 | 312850.8935 |
| 6757396.698 | 312850.8992 |
| 6757396.698 | 312627.9922 |
| 6757209.627 | 312612.4031 |
| 6757203.935 | 312523.2701 |
| 6757208.925 | 312522.9514 |
| 6757214.342 | 312607.7786 |
| 6757396.698 | 312622.9749 |
| 6757396.698 | 312538.0945 |
| 6757488.119 | 312538.1481 |
| 6757575.829 | 312476.6408 |
| 6757682.555 | 312476.6409 |
| 6757682.555 | 312658.9671 |
| 6757690.603 | 312766.9966 |
| 6757712.594 | 312862.9213 |
| 6757759.425 | 312944.0351 |
| 6757715.206 | 313042.5043 |
| 6757735.982 | 313275.1414 |
| 6758059.287 | 313269.6654 |
| 6758063.751 | 313501.5 |
| 6758180.181 | 313501.5 |
| 6758230.185 | 313412.4165 |
| 6758354.656 | 313411.6129 |
| 6758354.676 | 313416.3986 |
| 6758232.621 | 313416.8989 |
| 6758182 | 313506.5 |
| 6758063.849 | 313506.5 |
| 6758063.942 | 313511.2179 |
| 6757746.596 | 313516.6921 |
| 6757740.665 | 313444.2773 |
| 6757631.63 | 313395.3144 |
| 6757058.997 | 314670.5295 |
| 6757275.041 | 314948.6943 |
| 6757144.005 | 315079.7311 |
| 6758136.557 | 315683.7219 |
| 6758205.586 | 15683.72188 |
| 6758205.66 | 315704.1065 |
| 6759834.412 | 315247.5655 |

| PRESCRIBED PREMISES BOUNDARY | |
|---|---|
| *Northing* | *Easting* |
| 6759799.325 | 315122.3899 |
| 6759938.944 | 315083.2546 |
| 6759963.236 | 315169.9165 |
| 6760896.472 | 314908.3293 |
| 6760906.935 | 314946.936 |
| 6761076.516 | 314899.4023 |
| 6760887.723 | 313705.2081 |
| 6760718.148 | 313705.2081 |
| 6760718.148 | 313321.9103 |
| 6760847.5 | 313321.9103 |
| 6760847.5 | 313171.9103 |
| 6760852.5 | 313171.9103 |
| 6760852.5 | 313321.9103 |
| 6761010.7 | 313321.9103 |
| 6761010.7 | 313386.9296 |
| 6761059.262 | 313386.9296 |
| 6761059.262 | 313321.9103 |
| 6761109.921 | 13321.91033 |
| 6761109.922 | 313568.4081 |
| 6761100.164 | 313568.5692 |
| 6761100.029 | 313574.7784 |
| 6761109.922 | 313574.7703 |
| 6761109.921 | 313655.9801 |
| 6760955.847 | 313736.4645 |
| 6760955.847 | 313815.9245 |
| 6761132.821 | 14935.35604 |
| 6761063.363 | 314954.9422 |
| 6761068.427 | 314967.3594 |
| 6761450.18 | 314869.7704 |
| 6761504.016 | 314887.2055 |
| 6762332.168 | 314874.7303 |
| 6762288.713 | 313478.7945 |
| 6761961.066 | 313168.7718 |
| 6761879.278 | 313168.7719 |
| 6761824.221 | 312335.1553 |
| 6761767.655 | 312335.1552 |
| 6761767.655 | 312061.1116 |
| 6761743.89 | 312061.1116 |
| 6761743.89 | 311860.7576 |
| 6761856.408 | 311782.2394 |
| 6761979.921 | 311782.2394 |
| 6761979.921 | 311933.3936 |
| 6761955.19 | 311933.0439 |
| 6761955.19 | 311966.4144 |
| 6761979.921 | 311966.764 |
| 6761979.921 | 312335.1553 |
| 6761874.33 | 312335.1552 |
| 6761926.085 | 313118.7719 |

| PRESCRIBED PREMISES BOUNDARY | |
|---|---|
| *Northing* | *Easting* |
| 6761980.972 | 313118.7718 |
| 6762338.023 | 313456.6169 |
| 6762382.724 | 134841.2045 |
| 6762416.248 | 314873.6693 |
| 6762416.591 | 314923.5422 |
| 6762462.826 | 314923.4266 |
| 6762462.826 | 314794.7989 |
| 6762686.574 | 314795.0096 |
| 6762686.574 | 314945.4462 |
| 6762650.202 | 314945.4462 |
| 6762650.202 | 315095.938 |
| 6762689.78 | 315095.938 |
| 6762689.78 | 315222.5 |
| 6762839.78 | 315222.5 |
| 6762839.78 | 315227.5 |
| 6762689.78 | 315227.5 |
| 6762689.78 | 315316.2742 |
| 6762462.827 | 315316.2497 |
| 6762457.379 | 315551.3738 |
| 6762434.28 | 315730.1997 |
| 6761874.502 | 316388.9954 |
| 6761874.502 | 316929.2133 |
| 6761979.509 | 316913.2077 |
| 6762132.381 | 317015.7585 |
| 6762239.79 | 316864.6718 |
| 6762250.203 | 316742.6577 |
| 6762261.668 | 316720.3535 |
| 6762305.799 | 316714.7952 |
| 6762322.098 | 316706.7523 |
| 6762335.04 | 316693.1354 |
| 6762338.042 | 316679.3085 |
| 6762349.723 | 316670.8737 |
| 6762371.846 | 316658.951 |
| 6762386.208 | 316658.7359 |
| 6762603.065 | 316362.092 |
| 6762608.155 | 316369.9854 |
| 6762379.314 | 316687.9512 |
| 6762362.984 | 316676.3803 |
| 6762345.131 | 316686.8383 |
| 6762343.24 | 316697.7101 |
| 6762329.675 | 316711.3992 |
| 6762269.123 | 316739.3992 |
| 6762258.203 | 316863.4656 |
| 6762011.455 | 317206.8296 |
| 6761928.331 | 317171.0131 |
| 6761867.632 | 317085.4129 |
| 6761794.502 | 317073.4245 |
| 6761794.502 | 317067.2758 |

| PRESCRIBED PREMISES BOUNDARY | |
|---|---|
| *Northing* | *Easting* |
| 6761774.18 | 317067.2758 |
| 6761615.843 | 317341.5231 |
| 6761615.843 | 317540.1833 |
| 6761610.843 | 317540.1834 |
| 6761610.843 | 317340.1833 |
| 6761771.293 | 317062.2758 |
| 6761794.502 | 317062.2758 |
| 6761794.502 | 316343.1342 |
| 6761118.243 | 315523.6487 |
| 6761118.243 | 315616.2361 |
| 6760775.295 | 315616.2361 |
| 6760796.324 | 315764.7546 |
| 6760791.274 | 315764.7546 |
| 6760770.245 | 315616.236 |
| 6760740.736 | 315616.236 |
| 6760740.736 | 315288.0734 |
| 6760687.258 | 315224.3198 |
| 6760411.255 | 315436.6632 |
| 6760091.743 | 315522.8661 |
| 6760130.642 | 315668.0367 |
| 6760125.812 | 315669.3308 |
| 6760086.989 | 315524.442 |
| 6759924.493 | 315567.9828 |
| 6759857.845 | 315334.2448 |
| 6759416.176 | 315459.6016 |
| 6759416.176 | 315910.6724 |
| 6759254 | 315910.6725 |
| 6759254 | 316060.6725 |
| 6759249 | 316060.6725 |
| 6759249 | 315910.6724 |
| 6759054.639 | 315910.6725 |
| 6759054.638 | 315517.9928 |
| 6758205.672 | 315755.9729 |
| 6758211.823 | 316054.3992 |
| 6758227.951 | 315900.7511 |
| 6758250.171 | 315901.449 |
| 6758216.682 | 316190.1275 |
| 6758224.774 | 316539.8792 |
| 6758224.518 | 316600.6788 |
| 6758223.193 | 316605.0671 |
| 6758225.858 | 316763.994 |
| 6757762.846 | 317366.7264 |
| 6757762.861 | 317586.4417 |
| 6758255.054 | 317586.5822 |
| 6758255.049 | 317606.5823 |
| 6757762.846 | 317606.5822 |
| 6757762.846 | 317656.5823 |
| 6757346.877 | 317656.5822 |

| PRESCRIBED PREMISES BOUNDARY | |
|---|---|
| *Northing* | *Easting* |
| 6757162.191 | 317805.7853 |
| 6757154.927 | 318006.3262 |
| 6756900.914 | 318019.7855 |
| 6756875.421 | 318040.6661 |
| 6756879.476 | 318287.0575 |
| 6756644.5 | 318293.0695 |
| 6756644.5 | 318436 |
| 6756639.5 | 318436 |
| 6756639.5 | 318293.0695 |
| 6756578.91 | 318294.6666 |
| 6756577.598 | 318102.5108 |
| 6757486.872 | 317355.961 |
| 6757670.236 | 317355.9611 |
| 6758165.41 | 316711.3622 |
| 6758147.548 | 315843.7101 |
| 6758094.586 | 315751.9765 |
| 6757784.248 | 315551.3763 |
| 6757046.657 | 315102.4551 |
| 6756995.846 | 315215.1747 |
| 6757172.972 | 315501.3632 |
| 6757167.609 | 315502.1981 |
| 6756993.369 | 315220.6718 |
| 6756806.638 | 315107.9785 |
| 6756856.41 | 314990.8567 |
| 6756534.986 | 314857.0613 |
| 6756534.998 | 314841.0063 |
| 6756499.181 | 314824.8748 |
| 6756499.18 | 314820.0551 |
| 6756407.725 | 314820.0537 |
| 6756403.31 | 314641.5625 |
| 6756304.498 | 314644.0063 |
| 6755332.491 | 314743.3932 |
| 6755332.491 | 314641.488 |
| 6755211.57 | 314641.488 |
| 6755100.022 | 14753.0353 |
| 6754737.042 | 314787.5146 |
| 6754737.042 | 314809.1527 |
| 6754742.042 | 314805.3455 |
| 6754742.042 | 315612.2404 |
| 6754773.967 | 315722.3062 |
| 6755058.289 | 316006.6282 |
| 6755058.289 | 316285.0278 |
| 6755357.489 | 316284.7772 |
| 6755358.467 | 316149.4273 |
| 6755651.993 | 315870.9123 |
| 6755714.825 | 315741.003 |
| 6755980.784 | 315723.1905 |
| 6755987.179 | 315903.9997 |

| PRESCRIBED PREMISES BOUNDARY | |
|---|---|
| *Northing* | *Easting* |
| 6755672.253 | 315934.1808 |
| 6755564.642 | 316039.6198 |
| 6755564.642 | 316096.2992 |
| 6755408.812 | 316396.838 |
| 6755390.455 | 316413.5811 |
| 6755332.957 | 316436.4113 |
| 6754805.859 | 316389.4638 |
| 6754805.859 | 315874.3135 |
| 6754666.911 | 315735.3659 |
| 6754666.911 | 314815.2626 |
| 6754686.915 | 314813.9254 |
| 6754686.911 | 314789.2088 |
| 6754371.636 | 314816.3699 |
| 6754249 | 314883.4942 |
| 6752984.906 | 314965.4227 |
| 6753001.299 | 315965.0038 |
| 6752053.882 | 315979.1976 |
| 6751722.307 | 315928.5186 |
| 6751684.623 | 315889.013 |
| 6751558.925 | 315889.8134 |
| 6751557.919 | 315727.9769 |
| 6751607.467 | 315632.9677 |
| 6751677.432 | 315644.5851 |
| 6751696.663 | 315698.6053 |
| 6751715.108 | 315698.6053 |
| 6751731.119 | 315727.977 |
| 6751741.898 | 315727.9769 |
| 6751741.898 | 315871.7229 |
| 6751756.597 | 315885.3199 |
| 6752057.193 | 315929.1516 |
| 6752950.994 | 315915.3338 |
| 6752934.089 | 314918.6113 |
| 6754234.711 | 314834.3153 |
| 6754356.73 | 314767.4761 |
| 6754624.896 | 314744.3619 |
| 6754668.182 | 314679.2148 |
| 6754672.916 | 314261.5515 |
| 6755331.13 | 314261.4601 |
| 6755327.56 | 313301.9252 |
| 6755626.313 | 313300.6856 |
| 6755628.159 | 313358.0498 |
| 6755785.456 | 313352.93 |
| 6755785.456 | 313271.3605 |
| 6756594.485 | 314504.4902 |
| 6756997.034 | 314686.4382 |
| 6756901.525 | 314893.0957 |
| 6756594.485 | 314750.7518 |
| 6757038.124 | 314717.0132 |

| PRESCRIBED PREMISES BOUNDARY | |
|---|---|
| *Northing* | *Easting* |
| 6757215.151 | 314944.9449 |
| 6757104.441 | 315055.6554 |
| 6756932.925 | 314951.2843 |
| 6760376.332 | 315198.9658 |
| 6760614.462 | 315131.8316 |
| 6760670.906 | 315163.2926 |
| 6760685.856 | 315219.0895 |
| 6760410.423 | 315430.9953 |
| 6760822.563 | 315121.1073 |
| 6760838.074 | 315116.9514 |
| 6761107.272 | 315178.7243 |
| 6761111.67 | 315174.6288 |
| 6760848.082 | 315114.1778 |
| 6760944.443 | 315086.9152 |
| 6760918.894 | 314995.4151 |
| 6761014.935 | 314968.5984 |
| 6761038.585 | 315026.5964 |
| 6761448.543 | 314921.7974 |
| 6761496.513 | 314937.3314 |
| 6762335.363 | 314928.2923 |
| 6762336.699 | 315024.1011 |
| 6762392.184 | 315023.3689 |
| 6762392.153 | 315316.242 |
| 6762387.46 | 315546.6996 |
| 6762367.513 | 315700.6718 |
| 6761853.901 | 316305.1348 |
| 6761118.243 | 315413.6699 |
| 6761118.243 | 315288.0735 |
| 6760956.326 | 315288.0734 |
| 6760862.308 | 315264.7468 |
| 6754737.042 | 314446.2398 |
| 6754861.808 | 314321.4738 |
| 6755331.131 | 314321.4738 |
| 6755332.237 | 314572.4695 |
| 6755266.14 | 314572.7668 |
| 6755265.919 | 314523.6429 |
| 6755172.278 | 314523.6429 |
| 6755172.278 | 314573.0664 |
| 6755067.898 | 314685.7717 |
| 6754783.605 | 314712.7764 |
| 6754737.042 | 314679.2147 |
| 6757593.915 | 313312.606 |
| 6757707.885 | 313058.8072 |
| 6757735.072 | 313375.9938 |