Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6370/2020/1
Works approval holder	Hawthorn Resources Limited
ACN	009 157 439
Registered business address	Level 2, 90 Williams Street MELBOURNE VIC 3000
DWER file number	DER2020/000057
Duration	27/07/2020 to 26/07/2023
Date of issue	23/07/2020
Premises details	Anglo Saxon (Trouser Legs) Gold Mine Kurnalpi-Pinjin Road, Pinjin KOOKYNIE WA 6431 Mining Tenements M31/79 and M31/78

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	**Assessed production capacity**
Category 6 Mine dewatering: premises on which water is extracted and discharged into the environment to allow mining of ore	250,000 tonnes per year

This works approval is granted to the works approval holder, subject to the attached conditions, on 23 July 2020, by:

Gargi Joshi

Digitally signed by Gargi Joshi
Date: 2020.07.23 13:56:40 +08'00'

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

Works approval history

Date	Reference number	Summary of changes
23/07/2020	W6370/2020/1	Works approval granted

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;

(c) at the corresponding infrastructure location; and

(d) within the corresponding timeframe, as set out in Table 1.

Table 1: Construction / installation requirements

	Infrastructure	Design and construction / installation requirements	Infrastructure location	Timeframe
1.	7 km long dewatering pipeline	Constructed from 125 mm nominal bore diameter pressure-rated, single-weld pipe that meets the requirements of the following standards: AS/NZS 2033; AS/NZS 4129; AS/NZS 4130; and AS/NZS 4131. Provided with secondary containment adequate to contain any spill for a period equal to the time between routine inspections. Installed with telemetry system and auto shut-off to detect and control leaks. Installed with flow meters at discharge points to Turkey nest dam and Coles abandoned pit.	Schedule 1: Maps Figure 1: Map of Proposed Dewatering Line	N/A

	Infrastructure	Design and construction / installation requirements	Infrastructure location	Timeframe
2.	Monitoring bore	Well design and construction: Designed and constructed in accordance with *ASTM D5092/D5092M-16: Standard practice for design and installation of groundwater monitoring bores.* Well screens must target the part, or parts, of the aquifer most likely to be affected by contamination[1]. Logging of borehole: Soil samples must be collected and logged during the installation of the monitoring wells. A record of the geology encountered during drilling must be described and classified in accordance with the Australian Standard Geotechnical Site Investigations AS 1726. Any observations of staining / odours or other indications of contamination must be included in the bore log. Well construction log: Well construction details must be documented within a well construction log to demonstrate compliance with *ASTM D5092/D5092M-16.* The construction logs shall include elevations of the top of casing position to be used as the reference point for water-level measurements, and the elevations of the ground surface protective installations. Well development: All installed monitoring wells must be developed after drilling to remove fine sand, silt, clay and any drilling mud residues from around the well screen to ensure the hydraulic functioning of the well. A detailed record should be kept of well development activities and included in the well construction log. Installation survey: The vertical (top of casing) and horizontal position of each monitoring well must be surveyed and subsequently mapped by a suitably qualified surveyor. Well network map: A well location map (using aerial image overlay) must be prepared and include the location of all monitoring wells in the monitoring network and their respective identification numbers.	Schedule 1: Maps Figure 2, Map of Proposed Monitoring Bore Location	Must be constructed, developed (purged), and determined to be operational prior to commencement of time limited operations under condition 4

Note 1: refer to Section 8 of Schedule B2 of the *Assessment of Site Contamination NEPM* for guidance on well screen depth and length.

Compliance reporting

2. The works approval holder must within 30 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 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 person 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 plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in condition1, and

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

Time limited operations phase

Commencement and duration

4. The works approval holder may only commence time limited operations for an item of infrastructure identified in condition 1 where the Environmental Compliance Report for that item of infrastructure as required by condition 2 has been submitted by the works approval holder.

5. The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 1 (as applicable):

(a) for a period not exceeding 90 calendar days from the day the works approval holder meets the requirements of condition 4 (as applicable) for that item of infrastructure; or

(b) until such time as a licence for that item of infrastructure is granted in accordance with Part V of the *Environmental Protection Act 1986*.

Time limited operations requirements and emission limits

6. During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in Table 2 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 2.

Table 2: Infrastructure and equipment requirements during time limited operations

	Site infrastructure and equipment	Operational requirement	Infrastructure location
1.	7 km long dewatering pipeline	Provided with secondary containment adequate to contain any spill for a period equal to the time between routine inspections. Daily documented visual inspections of the pipeline must be carried out when the pipeline is in use.	Schedule 1: Maps Figure 1: Map of Proposed Dewatering Line
2.	Turkey nest dam	Dimensions (approximate): 30 m x 30 m x 4 m. Capacity (approximate): 0.3 ML. Must be lined with 2 mm thick HDPE. A freeboard marker must be installed on the dam wall. A freeboard of at least 0.3 m must be maintained. A fence must be maintained around the dam to prevent fauna ingress.	Schedule 1: Maps Figure 3: Map of Turkey Nest Location
3.	Coles abandoned pit	The water level in the pit must not exceed 380 m AHD.	Schedule 1: Maps Figure 2: Map of Proposed Dewatering Line

Monitoring during time limited operations

7. The works approval holder must monitor emissions during time limited operations in accordance with Table 3.

Table 3: Emissions and discharge monitoring during time limited operations

Discharge point	Monitoring location	Parameter	Frequency	Unit	Method
Turkey nest dam	Schedule 1: Maps Figure 3: Map of Turkey Nest Location	Volumetric flow	Continuous	m^3	Calibrated flow meter
		Freeboard	Daily	m	Visual
Coles abandoned pit	Schedule 1: Maps Figure 2: Map of Proposed Dewatering Line Coordinates: -30.018263, 122.700287	Volumetric flow	Continuous	m^3	Calibrated flow meter
		Standing water level	Monthly	m AHD	None specified
		In accordance with Schedule 2	In accordance with Schedule 2	In accordance with Schedule 2	Spot sample in accordance with AS/NZS 5667.1 and AS/NZS 5667.10

8. The works approval holder must ensure that all monitoring equipment used to comply with condition 7 is operated and calibrated in accordance with the manufacturer's specifications.

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

10. The works approval holder must monitor groundwater during time limited operations for concentrations of the identified parameters in accordance with Schedule 2.

11. The works approval holder must record the results of all monitoring activity required by condition 10.

12. All sample analysis must be undertaken by laboratories with current accreditation from the National Association of Testing Authorities (NATA) for the relevant parameters, unless otherwise specified in Schedule 2.

Compliance reporting

13. The works approval holder must submit to the CEO a report on the time limited operations within 30 calendar days of the completion date of time limited operations or 30 calendar days before the expiration date of the works approval, whichever is the sooner.

14. The works approval holder must ensure the report required by condition 13 includes the following:

(a) a summary of the time limited operations, including timeframes and amount of mine dewatering discharged to Turkey nest dam and Coles abandoned pit;

(b) a summary of monitoring results obtained during time limited operations under conditions 7 and 10.

(c) a summary of the environmental performance of all infrastructure as constructed or installed (as applicable), which includes records detailing the results of pipeline inspections.

(d) a review of performance and compliance against the conditions of the works approval; and

(e) where the manufacturer's design specifications and the conditions of this works approval have not been met, what measures will the works approval holder take to meet them, and what timeframes will be required to implement those measures.

Records and reporting (general)

15. 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.

16. 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 6;

(c) monitoring programmes undertaken in accordance with conditions 7 and 10; and

(d) complaints received under condition 15.

17. The books specified under condition 16 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 1 have the meanings defined.

Table 1: Definitions

Term	Definition
AHD	means Australian Height Datum
AS 1726	means the Australian Standard AS1762 *Geotechnical site investigations*, as amended from time to time.
AS/NZS 2033	means the Australian Standard *AS/NZS 2033 (2008) Installation of polyethylene pipe systems,* as amended from time to time.
AS/NZS 4129	means the Australian Standard *AS/NZS 4129 (2020) Fittings for polyethylene (PE) pipes for pressure applications*, as amended from time to time.
AS/NZS 4130	means the Australian Standard *AS/NZS 4131 (2018) Polyethylene (PE) pipes for pressure applications*, as amended from time to time.
AS/NZS 4131	means the Australian Standard *AS/NZS 4131 (2010) Polyethylene (PE) compounds for pressure pipes and fittings*, as amended from time to time.
AS/NZS 5667.1	means the Australian Standard *AS/NZS 5667.1 (R2016) 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 5667.10	means the Australian Standard *AS/NZS 5667.10 (R2016) Water quality – Sampling – Guidance on sampling of waste waters*, as amended from time to time.
AS/NZS 5667.11	means the Australian Standard *AS/NZS 5667.11 (R2016) Water quality – Sampling – Guidance on sampling groundwater*, as amended from time to time.
Assessment of Site Contamination NEPM	means the *National Environment Protection (Assessment of Site Contamination) Measure 1999*, as amended from time to time.
ASTM D5092/D5092M-16	means the ASTM international standard for *Standard practice for design and installation of groundwater monitoring wells (Designation: ASTM D5092/D5092M-16)*, as amended from time to time.
books	has the same meaning given to that term under the EP Act.

Term	Definition
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 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).
HDPE	means high-density polyethylene.
mbgl	means metres below ground level.
NATA	means the National Association of Testing Authorities.
premises	the premises to which this licence applies, as specified at the front of this licence and as shown on the premises map (Figure 1) in Schedule 1 to this works approval.
prescribed premises	has the same meaning given to that term under the EP Act.
quarterly period	means a three-month period commencing from the first day of January, April, July or October.
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.
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.

END OF CONDITIONS

Schedule 1: Maps

Premises maps

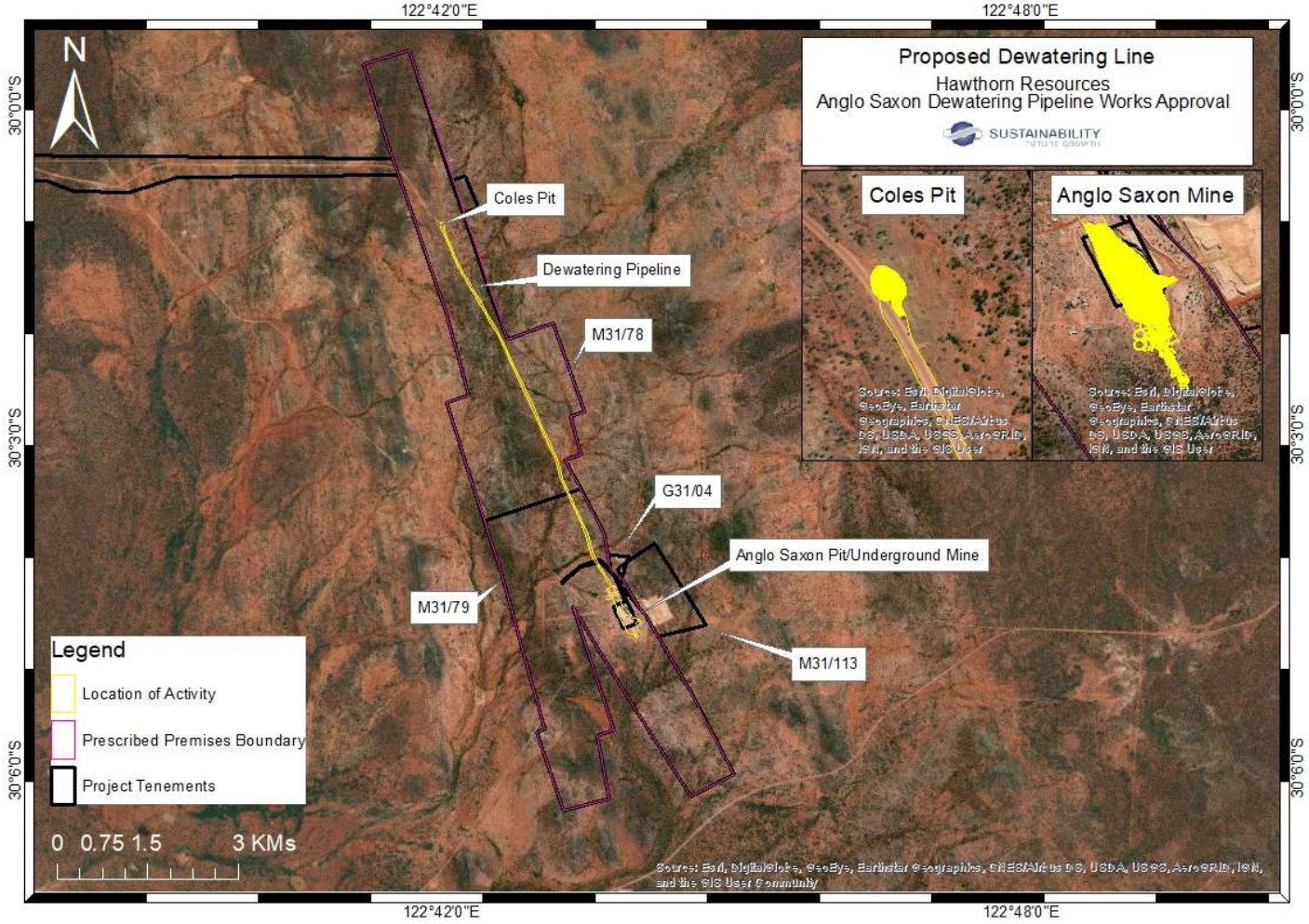

Figure 1: Map of Proposed Dewatering Line

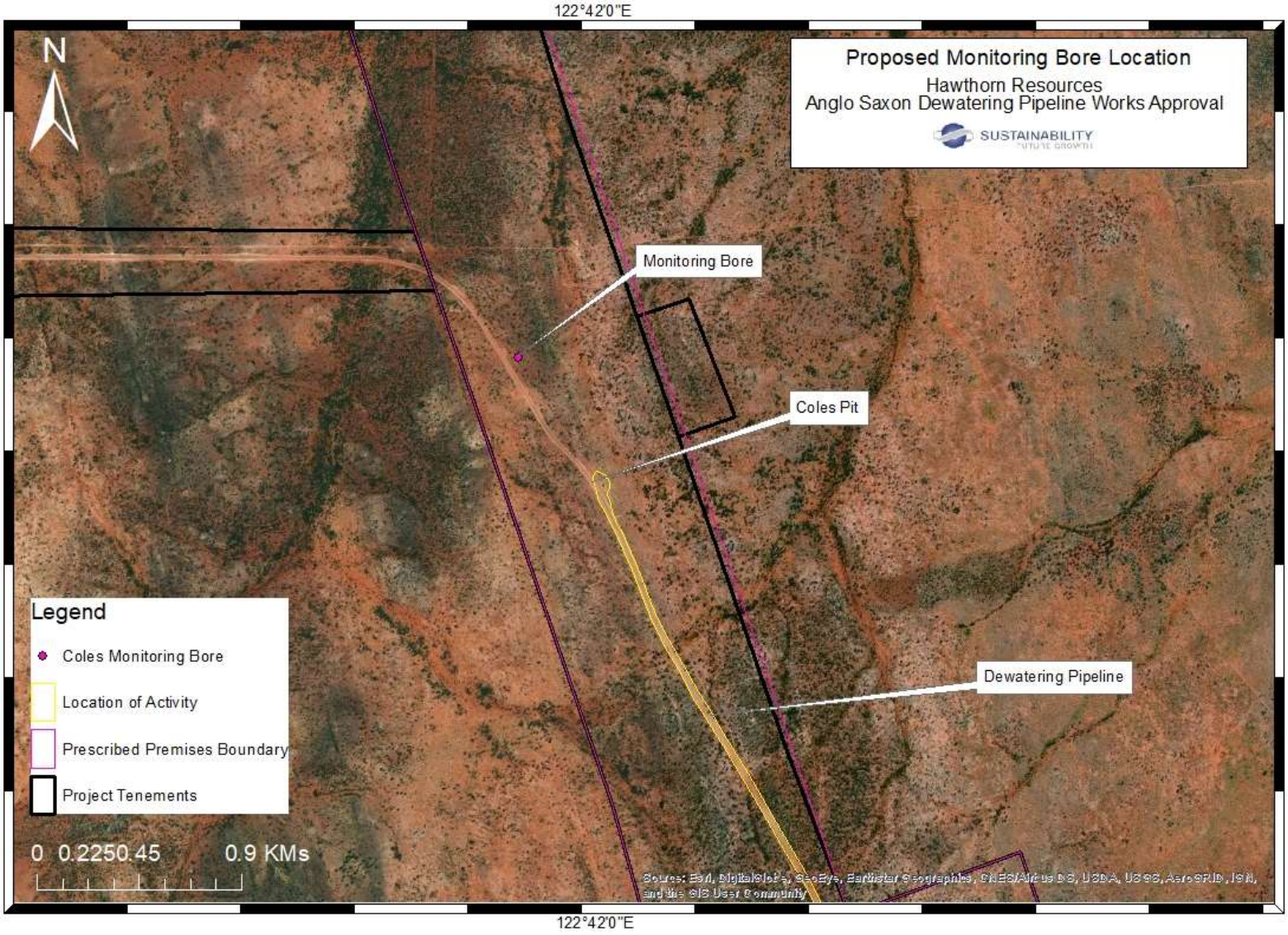

Figure 2: Map of Proposed Monitoring Bore Location

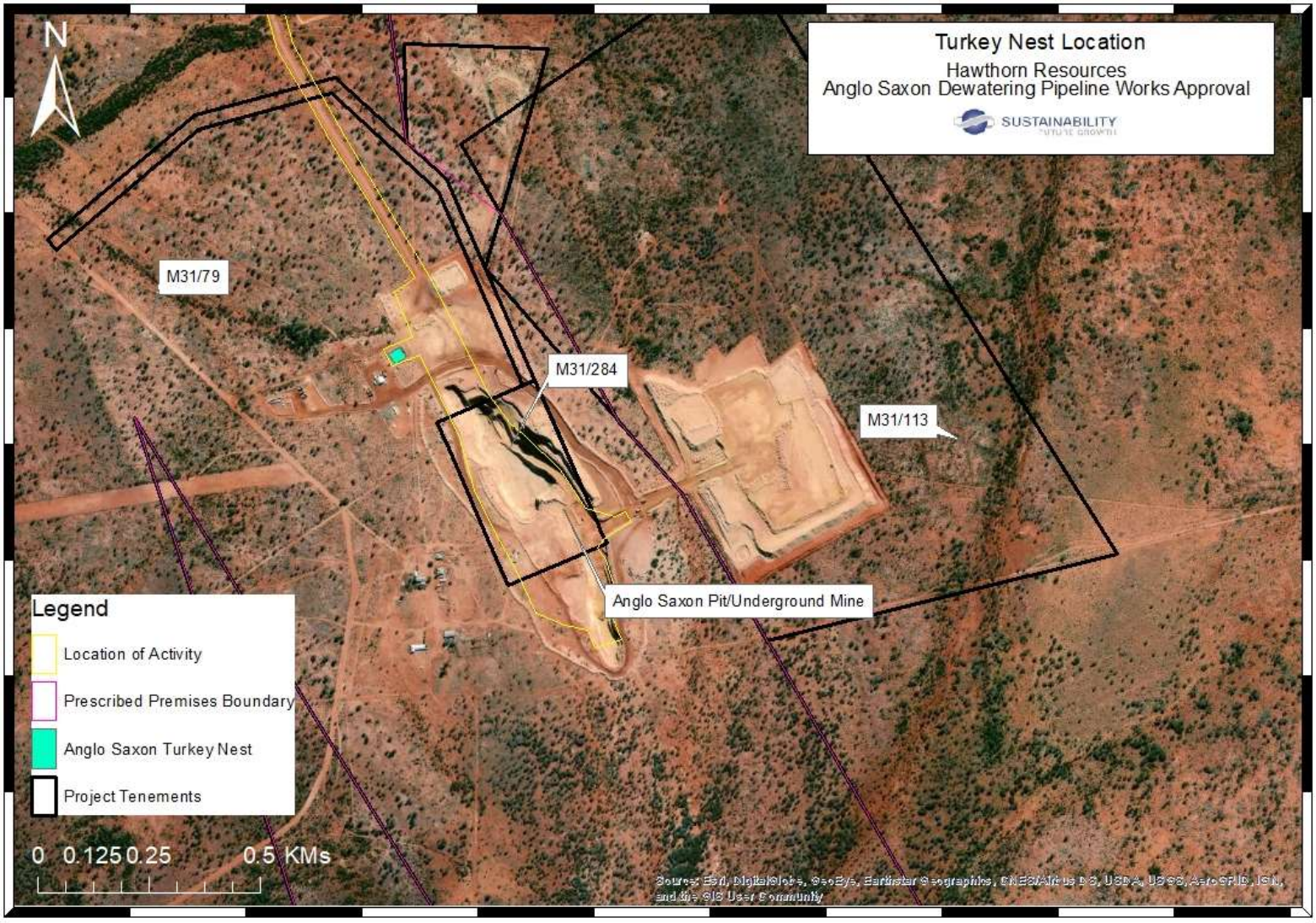

Figure 3: Map of Turkey Nest Location

Schedule 2: Monitoring

Groundwater monitoring

1. The licence holder must monitor groundwater for concentrations of the identified parameter(s) in accordance with Table 1.

Table 1: Groundwater monitoring of ambient concentrations

Parameter	Monitoring location	Unit	Frequency	Method
Standing water level [1]	Schedule 1: Maps Figure 2: Map of Proposed Monitoring Bore Location	mbgl	Once prior to commencement of time limited operations under condition 4 and each following quarterly period	Spot sample, in accordance with AS/NZS 5667.11
pH [1]		pH unit		
Electrical conductivity [1]		µS/cm		
Total alkalinity as $CaCO_3$ [1]		mg/L		
Chloride				
Calcium				
Magnesium				
Sodium				
Potassium				
Dissolved metals: Aluminium Dysprosium Silver Arsenic Bismuth Erbium Boron Europium Strontium Barium Gadolinium Titanium Beryllium Gallium Cadmium Hafnium Tellurium Cobalt Holmium Uranium Caesium Chromium Indium Copper Lanthanum Rubidium Lithium Lutetium Thorium Cerium Manganese Neodymium Molybdenum Praseodymium Nickel Samarium Lead Terbium Antimony Thulium Selenium Ytterbium Tin Yttrium Thallium Zirconium Vanadium Zinc Iron				
Total metals: Silver Arsenic Boron Barium Cadmium Chromium Copper Manganese Molybdenum Nickel Lead Antimony Selenium				
Total recoverable mercury				
Free cyanide				
Fluoride				
Nitrite				
Nitrate as nitrogen				
Total anions				
Total cations				
Ionic balance				

Note 1: In-field non-NATA accredited analysis permitted.