Government of Western Australia
Department of Water and Environmental Regulation

# Works Approval

| | |
|---|---|
| **Works approval number** | W6481/2020/1 |
| **Works approval holder** | Comcen Pty Ltd |
| **ACN** | 161 487 930 |
| **Registered business address** | Level 1, 46 Edward Street<br>OSBORNE PARK WA 6017 |
| **DWER file number** | DER2018/001042 |
| **Duration** | 24/05/2021 to 23/05/2024 |
| **Date of issue** | 24/05/2021 |
| **Premises details** | Ant Hill Manganese Project – Stage 1<br>Mining tenement M46/238<br>EAST PILBARA WA 6758 |

| **Prescribed premises category description**<br>**(Schedule 1, *Environmental Protection Regulations 1987*)** | **Assessed production capacity** |
|---|---|
| Category 5: Processing or beneficiation of metallic or non-metallic ore | 1,500,000 tonnes per year |
| Category 89: Putrescible landfill | 400 tonnes per year |

This works approval is granted to the works approval holder, subject to the attached conditions, on 24 May 2021, by:

Alana Kidd

Digitally signed by Alana Kidd
Date: 2021.05.24 12:42:25 +08'00'

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

# 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; and

(d) within the corresponding timeframe,

as set out in Table 1.

**Table 1: Design and construction / installation requirements**

| | Infrastructure | Design and construction / installation requirements | Infrastructure location |
|---|---|---|---|
| 1. | Crushing and screening plant | • Must be installed in the general area as identified in schedule 1.<br>• Dust suppression sprays fitted to minimise the generation of dust.<br>• Infrastructure located outside of 100-year ARI floodplain of water courses or install earthen diversion bunding which is designed to divert uncontaminated stormwater away from infrastructure.<br>• Infrastructure area graded so stormwater is diverted to sediment basins with adequate holding time to remove sediment, prior to release to the environment. | Schedule 1: Figures 1, 2, 5, 7 and 8 |
| 2. | Beneficiation Plants | • Plant processing infrastructure located on bunded hardstands which are graded to sumps fitted with pumps for the recovery of spilt materials. Recovered materials to be pumped back into the circuit for reprocessing.<br>• Infrastructure located outside of 100-year ARI floodplain of water courses or install earthen diversion bunding which is designed to divert uncontaminated stormwater away from infrastructure. | Schedule 1: Figures 1, 2 and 8 |
| 3. | Waste and product stockpiles | • Waste and product stockpile areas graded so stormwater is diverted to sediment basins with adequate holding time to remove sediment, prior to release to the environment.<br>• Waste and product stockpiles located outside of 100-year ARI floodplain of water courses or install earthen diversion bunding which is designed to divert uncontaminated stormwater. | Schedule 1: Figures 2, 5, 7 and 8 |
| 4. | Thickener | • Thickened underflow solids directed to the settling ponds via pipeline.<br>• Thickener overflow (recovered water) directed to the | Schedule 1: Figure 2 |

| | Infrastructure | Design and construction / installation requirements | Infrastructure location |
|---|---|---|---|
| | | Process Water Pond via pipeline. | |
| 5. | Process water pond | • Constructed to provide a working storage volume of 2,500 $m^3$.<br>• Lined with a HDPE liner with a minimum thickness of 1.0 mm (tolerance of up to 5%).<br>• The liner should be fabricated to form the shape of the excavation. All seams and joins made on site should be continuous. Panels of the liner should be overlapped by a minimum of 100 mm, prior to heat welding or mechanical jointing.<br>• Constructed to provide a minimum total freeboard of 500 mm above the normal operating pond. | Schedule 1: Figure 1 and Figure 2 |
| 6. | Pipelines for the transfer of slimes waste, slimes decant water return and process water. | • Pipelines to be constructed out of high-density polyethylene (HDPE) or other alternative wear resistant materials.<br>• Pipelines located above ground where possible and within open bunded trenches with sufficient capacity to ensure liquors are captured for a period equal to the time between routine inspections (minimum once per 12 hour shift).<br>• Pipeline from thickener to settling pond fitted with flow meter. | Schedule 1: Figure 2 |
| 7. | Landfill | • Located so a minimum distance of 3 metres can be maintained between the base of the landfill cell/s and the nearest groundwater level.<br>• Each trench for the burial of waste to be approximately 5 metres (m) wide by 40 m in length and excavated to a depth of 3 m to allow for 2 m of waste and 1 m of soil cover.<br>• A perimeter fence installed around the landfill area which is designed to prevent the entry of livestock.<br>• Install litter screens at the active tipping face to minimise windblown waste escaping the landfill area.<br>• Drainage channel installed upstream of the landfill area which is designed to direct uncontaminated stormwater around the facility.<br>• A drainage pond to be constructed in the temporary waste storage area to capture any contaminated stormwater. | Schedule 1: Figures 1 and 9 |

**2.** 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; and

(d) within the corresponding timeframe,

as set out in Table 2.

**Table 2: Critical containment infrastructure design and construction requirements**

| Infrastructure | Design and construction requirements | Infrastructure location |
|---|---|---|
| Settling Ponds | • Lined with a HDPE liner with a thickness of 1.5 mm (tolerance of up to 5%).<br>• The liner should be fabricated to form the shape of the excavation. All seams and joins made on site should be continuous. Panels of the liner should be overlapped by a minimum of 100 mm, prior to heat welding or mechanical jointing.<br>• Constructed to provide a minimum total freeboard of 500 mm above the normal operating pond.<br>• Each pond designed to provide a live operating storage volume of 8,000 $m^3$.<br>• Base of each pond designed to promote the recovery of water from the deposited thickened solids.<br>• Each pond is to be fitted with a floating submersible pump for the recovery of water. The pump is to operate automatically when there is sufficient water contained within the pond.<br>• Recovered water from the settling ponds to be directed to the Thickener via pipeline. | Schedule 1: Figures 1, 2 and 3 |
| NE WRD (co-disposal with lump and fines rejects and dried slimes) | • Constructed within mining tenement M46/238.<br>• Constructed using mine waste rock from the Ant Hill north and south pits.<br>• Floor constructed with mine waste rock with a minimum thickness of 5 metres.<br>• Constructed with infrastructure for the collection and treatment of contaminated (sediment) stormwater prior to discharge to the environment. | Schedule 1: Figures 1, 4, 5, 6, 7 and 8 |

## Construction of groundwater monitoring wells

**3.** The works approval holder must design, construct and install 3 new groundwater monitoring wells in accordance with the requirements specified in Table 3.

**Table 3: Infrastructure requirements – groundwater monitoring wells**

| Infrastructure | Design, construction, and installation requirements | Monitoring well location (s) |
|---|---|---|
| Groundwater monitoring bores | Three groundwater monitoring bores to be installed at locations shown in Schedule 1 Figure 4 to monitor for standing water levels and water quality:<br>• The location of the groundwater monitoring bores shall be determined by a suitably qualified hydrogeologist;<br>• Well screens must target the part, or parts, of the aquifer most likely to be affected by contamination. Where temporary/seasonal perched features are present, wells must be | Schedule 1: Figure 4 |

| Infrastructure | Design, construction, and installation requirements | Monitoring well location (s) |
|---|---|---|
| | nested, and the perched features individually screened;<br>• Designed and constructed in accordance with ASTM D5092/D5092M-16: Standard practice for design and installation of groundwater monitoring bores; and<br>• A bore location map (using aerial image overlay) must be prepared and include the location of all monitoring bores in the monitoring network and their respective identification numbers. | |

**4.** The works approval holder must, within 60 calendar days of the monitoring bores in Table 3 being constructed, submit to the CEO a bore construction report evidencing compliance with the requirements of condition 3.

## Compliance reporting

**5.** Subject to condition 1, within 30 days of the completion of the works specified in Table 1, the works approval holder must submit to the CEO an Environmental Compliance Report certified by a suitably qualified professional engineer that:

(a) lists and describes the completed works and any associated items of infrastructure and equipment listed in Table 1;

(b) certifies whether or not each item of infrastructure or component of infrastructure specified in Table 1 has been constructed with no material defects and to the requirements specified in Table 1;

(c) contains 'as constructed' plans for each item of infrastructure or component of infrastructure specified in Table 1; and

(d) is signed by a person authorised by the works approval holder and contains the printed name and position of that person within the company.

**6.** Subject to condition 5, 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 5(b); 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 report required by condition 5.

**7.** Subject to condition 2, within 30 days of the completion of an item of infrastructure specified in Table 2, the works approval holder must submit to the CEO a Critical Containment Infrastructure Report certified by the Geotechnical Engineer or their delegate that:

(a) lists and describes the completed works and any associated items of infrastructure and equipment listed in Table 2;

(b) certifies whether or not each item of infrastructure or component of infrastructure specified in Table 2 has been constructed with no material defects and to the requirements specified in Table 2;

(c) contains 'as constructed' plans for each item of infrastructure or component

of infrastructure specified in Table 2; and

(d) is signed by a person authorised by the works approval holder and contains the printed name and position of that person within the company.

**8.** Subject to condition 7, 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 7(b); or

(b) provide to the CEO a description of, and explanation for, any departures from the requirements specified in Table 2 that do not require rectification and do not constitute a material defect along with the report required by condition 7.

## Environmental commissioning phase

### Environmental commissioning requirements

**9.** The works approval holder may only commence environmental commissioning of an item of infrastructure identified in condition 1 once the Environmental Compliance Report has been submitted for that item of infrastructure in accordance with condition 5 of this works approval.

**10.** The works approval holder may only commence environmental commissioning of an item of infrastructure identified in condition 2 once the Critical Containment Infrastructure Report has been submitted for that item of infrastructure in accordance with condition 7 of this works approval

**11.** Any environmental commissioning activities undertaken for an item of infrastructure specified in Table 4 may only be carried out:

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

(b) for the corresponding authorised commissioning duration.

**Table 4: Environmental commissioning requirements**

| Infrastructure | Commissioning requirements | Authorised commissioning duration |
|---|---|---|
| Crushing and screening plant | Not applicable | Not required |
| Beneficiation Plants | Subject to completing the requirements of conditions 5 and 6 | 12 weeks |
| Thickener | Subject to completing the requirements of conditions 5 and 6 | 12 weeks |
| Pipelines for the transfer of wastes (slimes), thickener overflow and process return water | Subject to completing the requirements of conditions 5 and 6 | 12 weeks |
| Settling Ponds | Not applicable | Not required |
| Process water pond | Not applicable | Not required |

| Infrastructure | Commissioning requirements | Authorised commissioning duration |
|---|---|---|
| Landfill | Not applicable | Not required |
| NE WRD | Not applicable | Not required |

**12.** During environmental commissioning and time limited operations, the works approval holder must ensure that the emission(s) specified in Table 5, are discharged only from the corresponding discharge point(s) and only at the corresponding discharge point location(s).

**Table 5: Authorised discharge points during commissioning and time limited operations**

| | Emission | Discharge point | Discharge point location |
|---|---|---|---|
| 1 | Tailings (slimes) | Settling Ponds via discharge outlet | As per Figure 2 in Schedule 1 |
| 2 | Thickener overflow | Process water pond via discharge outlet | As per Figure 2 in Schedule 1 |
| 3 | Dried slimes | NE WRD | As per Figures 1, 4 and 6 in Schedule 1 |
| 4 | Beneficiation plant course and fine reject | NE WRD | As per Figure 1, 4 and 6 in Schedule 1 |

### Environmental commissioning reporting

**13.** The works approval holder must submit to the CEO an Environmental Commissioning Report within 60 calendar days of the completion date of environmental commissioning for each item of infrastructure specified in Table 5.

**14.** The works approval holder must ensure the Environmental Commissioning Report required by condition 13 of this works approval includes the following:

(a) a summary of the environmental commissioning activities undertaken, including ore processed, product produced, slime tailings produced and timeframes;

(b) a summary of the environmental performance of each item of infrastructure as constructed or installed;

(c) a review of the works approval holder's performance and compliance against the conditions of this works approval; and

(d) where they have not been met, measures proposed to meet the manufacturer's design specifications and the conditions of this works approval, together with timeframes for implementing the proposed measures.

## Time limited operations phase

### Commencement and duration

**15.** The works approval holder may conduct time limited operations for an item of infrastructure specified in Table 6 for a period not exceeding the number of calendar days specified in Table 6 from the day the works approval holder meets the requirements of conditions 1 and 2, for that item of infrastructure.

**Table 6: Duration of time limited operations**

| Infrastructure | Authorised time limited operation duration |
|---|---|
| Crushing and screening plant | 180 calendar days |
| Beneficiation Plants | |
| Thickener and Settling Ponds | |
| Process water pond | |
| NE WRD (lump/fines rejects and dried slimes disposal) | |
| Landfill | |

## Time limited operations requirements

**16.** During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in Table 7 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 7.

**Table 7: Infrastructure and equipment requirements during time limited operations**

| | Site infrastructure and equipment | Operational requirement | Infrastructure location |
|---|---|---|---|
| 1. | Crushing and screening plant | • Operate dust controls to manage dust emissions;<br>• Maintain bunding where installed to direct stormwater around Plant infrastructure;<br>• Record the tonnes of ore processed; and<br>• Maintain sedimentation basins as required to maintain capacity. | Schedule 1: Figures 1 and 2 |
| 2. | Beneficiation plants | • Maintain bunding where installed to direct stormwater around Plant infrastructure;<br>• Record the tonnes of ore processed;<br>• Record the tonnes of product and rejects produced;<br>• Record the volume of wet tailings (slimes) discharged; and<br>• Maintain sedimentation basins as required to maintain capacity. | Schedule 1: Figures 1 and 2 |
| 3 | Thickener | • Thickened underflow solids pumped to the settling ponds.<br>• Thickener overflow (recovered water) pumped to the Process Water Pond.<br>• Use of non-toxic flocculant agent in the thickening process. | Schedule 1: Figure 2 |
| 4. | Settling Ponds | • Maintain a minimum total freeboard of 500 mm above the normal operating pond;<br>• Maintain a minimum 500 mm thick sacrificial slimes layer over the HDPE liner when excavating dried waste;<br>• Excavation of dried and compacted slimes using an excavator with GPS instrumentation to ensure the HDPE liner is not compromised;<br>• Record the volume of thickened tailings (slimes) discharged to the settling ponds;<br>• Record the volume of water recovered;<br>• Maintain crest embankment to prevent ingress of stormwater run-off; and<br>• Operate submersible pump with automatic level correction in order to maintain freeboard during operations. | Schedule 1: Figures 1, 2 and 3 |

| | Site infrastructure and equipment | Operational requirement | Infrastructure location |
|---|---|---|---|
| 5. | Process water pond | • Maintain a minimum total freeboard of 500 mm above the normal operating pond.<br>• Calculate the volume of water (thickener overflow) discharged into the pond and record the volume of water recovered from the pond. | Schedule 1: Figures 1 and 2 |
| 6. | NE WRD (lump and fines rejects and dried slimes containment) | • Clean and maintain sedimentation run-off drain and sediment basin as required to maintain capacity;<br>• Fines and lump rejects from beneficiation plants tipped towards the center of the NE WRD while maintaining a minimum of 10 m buffer from the final waste rock slope face.<br>• Maintain a minimum separation distance of 5 metres between the deposited slimes tailings waste and the floor of the NE WRD, and 10 m between the slimes tailings waste and the final NE WRD slope face;<br>• Use mine waste rock to cover the slimes tailings waste with a minimum fill thickness of 2 m to the top surface of the NE WRD; and<br>• Record the quantity of lump rejects, fines rejects and dried slimes waste discharged at the NE WRD; and<br>• Record the location of the deposited slimes waste. | Schedule 1: Figures 1, 4, 5 and 6 |
| 7. | Pipelines for the transfer of wastes (slimes), thickener overflow and process return water | • Maintain pipeline bunding capacity to ensure any lost material is captured for a period equal to the time between routine inspections, | Schedule 1: Figure 2 |
| 8. | Landfill | • Putrescible waste to be covered at least monthly with inert material so that no waste is left exposed;<br>• No liquid or hazardous wastes to be buried onsite;<br>• Maintain the stock proof fence around the landfill perimeter;<br>• Ensure the gates to the Landfill are securely closed when the Landfill is unattended. | Schedule 1: Figures 1 and 9 |

**17.** During the first 30 days of time limited operations, the works approval holder must collect at least 6 individual representative tailings samples to determine the likely behaviour of elements under a range of leaching conditions, and may include, but not be limited to:

(a) testing using the LEAF Test Method 1313 pH-dependent leaching test (US EPA, 2017);

(b) geotechnical characterisation of the tailings including particle size distribution; and

(c) testing for the contaminants listed in Table 8.

All test results shall be collated in excel format and provided in a report to the CEO no more than 90 days after sample collection.

**Table 8: Tailings characterisation parameters**

| Stream | Contaminants | | |
|---|---|---|---|
| Thickened tailings to settling ponds (mg/L) | Ag - Silver | Fe – Iron | Sb – Antimony |
| | Al – Aluminium | Hg – Mercury | Se – Selenium |
| | As – Arsenic | K – Potassium | Si - Silicon |
| | Ba – Barium | Mg – Magnesium | Sn - Tin |
| | B - Boron | Mn - Manganese | Sr - Strontium |
| | C total – Carbon total | Mo – Molybdenum | Tl - Thallium |
| | C carbonate – Carbon carbonate | Na – Sodium | Ti - Titanium |
| | Ca – Calcium | Ni – Nickel | V – Vanadium |
| | Cd – Cadmium | P – Phosphorus | U – Uranium |
| | Co - Cobalt | Pb – Lead | Zn – Zinc |
| | Cr – Chromium | Sulfur total | TDS (total dissolved solids) |
| | Cu – Copper | $SO_4^{-2}$ – Sulphate | Total Nitrogen |
| Thickened tailings to settling ponds (pH units) | pH | | |

## Monitoring during environmental commissioning and time limited operations

**18.** The works approval holder must monitor emissions during environmental commissioning and time limited operations in accordance with Table 9.

**Table 9: Emissions monitoring during commissioning and time limited operation**

| Discharge point | Monitoring location | Parameter | Frequency | Averaging Period | Unit | Method | |
|---|---|---|---|---|---|---|---|
| | | | | | | Sampling | Analysis |
| Seepage from Settling Ponds and NE WRD | 3 new groundwater monitoring bores as per condition 3 | Standing water level (SWL) | At least once prior to the commencement of commissioning then quarterly thereafter | Spot sample | Metres below ground level (mbgl) | AS/NZS 5667.1 AS/NZS 5667.11 | In field non-NATA accredited analysis permitted |
| | | pH | | | pH units | | |
| | | Acrylamide<br>Aluminium<br>Arsenic<br>Antimony<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Cobalt<br>Copper<br>Iron<br>Lead<br>Manganese<br>Mercury<br>Molybdenum<br>Nickel<br>Selenium<br>Tin<br>Vanadium<br>Zinc<br>Total dissolved solids | | | mg/L | | By a NATA accredited laboratory |
| Plant site sediment basin and NE WRD sediment basin | Outlet from the Plant Site sediment basin and the NE WRD sediment basin | Acrylamide<br>Aluminum<br>Arsenic<br>Antimony<br>Barium<br>Boron<br>Cadmium<br>Chromium<br>Cobalt<br>Copper<br>Iron<br>Lead<br>Manganese<br>Mercury<br>Molybdenum<br>Nickel<br>Selenium<br>Tin<br>Vanadium<br>Zinc<br>Total dissolved solids<br>Total suspended solids<br>Total Nitrogen | Within 48 hours of discharging to the environment and weekly intervals thereafter during the period of discharge. | Spot sample | mg/L | AS/NZS 5667.1 AS/NZS 5667.10 | By a NATA accredited laboratory |

## Inspections

**19.** The works approval holder must conduct visual inspections of the infrastructure during commissioning and time limited operations at the frequency specified in Table 10.

**Table 10: Inspections of infrastructure**

| Infrastructure (refer to Schedule 1 Maps) | Type of inspection | Frequency |
|---|---|---|
| Pipelines for the transfer of tailings (slimes), thickener overflow, slimes decant return water and process return water | Integrity check/ loss of containment | daily |
| Settling Ponds | To confirm required freeboard capacity is available | daily |
| Process Water Pond | To confirm required freeboard capacity is available | daily |
| NE WRD | Integrity check/ loss of containment<br>Evidence of seepage occurring from the embankment walls | daily |

## Time Limited Operations compliance reporting

**20.** The works approval holder must submit to the CEO a report on the time limited operations within 60 calendar days of the completion date of time limited operations or 60 calendar days before the expiration date of the works approval, whichever is the sooner.

**21.** The works approval holder must ensure the report required by condition 20 includes the following:

(a) a summary of the time limited operations, including timeframes and amount of ore processed;

(b) quantity of product produced;

(c) volume of thickened slimes waste discharged to settling ponds and thickener overflow to the process water pond;

(d) volume of slimes decant water recovered;

(e) volume of water recovered from the process water pond;

(f) water balance at the Premises;

(g) monitoring results recorded in accordance with conditions 18;

(h) a summary of the environmental performance of all plant and equipment as installed, which at minimum includes records detailing the:

(i) operations of the infrastructure; and

(ii) testing the infrastructure.

(i) a review of performance against the works approval; and

(j) where they have not been met, measures proposed to meet the manufacturer's design specification and conditions of this works approval, together with timescales for implementing the proposed measures.

## 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 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.

**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 conditions 1 and 2;

(b) any maintenance of infrastructure that is performed in the course of complying with conditions of this works approval;

(c) monitoring programmes undertaken in accordance with condition 18; and

(d) 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 11 have the meanings defined.

**Table 11: Definitions**

| Term | Definition |
|---|---|
| AEP | means annual exceedance probability |
| 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/NZS 5667.10 | means the Australian Standard AS/NZS 5667.10 Water quality – sampling – guidance on sampling of waste waters. |
| AS/NZS 5667.11 | means the Australian Standard AS/NZS 5667.11 Water quality – sampling – guidance on sampling groundwater. |
| ASTM | means American Society for Testing and Materials |
| books | has the same meaning given to that term under the EP Act. |
| CEO | means Chief Executive Officer.<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 |
| critical containment infrastructure | means the items of infrastructure listed in condition 2. |
| Critical Containment Infrastructure Report | means a report to satisfy the CEO that works of critical containment infrastructure have been constructed in accordance with the works approval. |
| 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 | means a report to satisfy the CEO that the conditioned |

| Term | Definition |
|---|---|
| Compliance Report | 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). |
| monthly period | means a one-month period commencing from the first day of a month until the last day of the same month. |
| NE WRD | means the north east portion of the Waste Rock Dump as shown on the Premises maps (Figures 1 and 4). |
| 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 | means the 4 inclusive periods from 1 January to 31 March, 1 April to 30 June, 1 July to 30 September, and 1 October to 31 December. |
| Suitably qualified geotechnical engineer | Means a person who:<br>1. hold a Bachelor of Engineering recognised by the Australian institute of Engineers; and<br>2. has a minimum of five years of experience working in geotechnical engineering including experience in the design of tailings storage facilities. |
| Suitably qualified hydrogeologist | Means a person who:<br>1. hold a Bachelor degree in science majoring in environmental science or a related field (such as geology or hydrology) which is recognised by the International Association of Hydrogeologists Australia<br>2. has a minimum of five years of experience. |
| 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. |
| weekly | Means a seven-day period commencing from the Tuesday until the Monday of the following week. |
| 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 map

The boundary of the prescribed premises is shown in the map below (Figure 1).

**Figure 1: Map of the boundary of the prescribed premises shown in red**

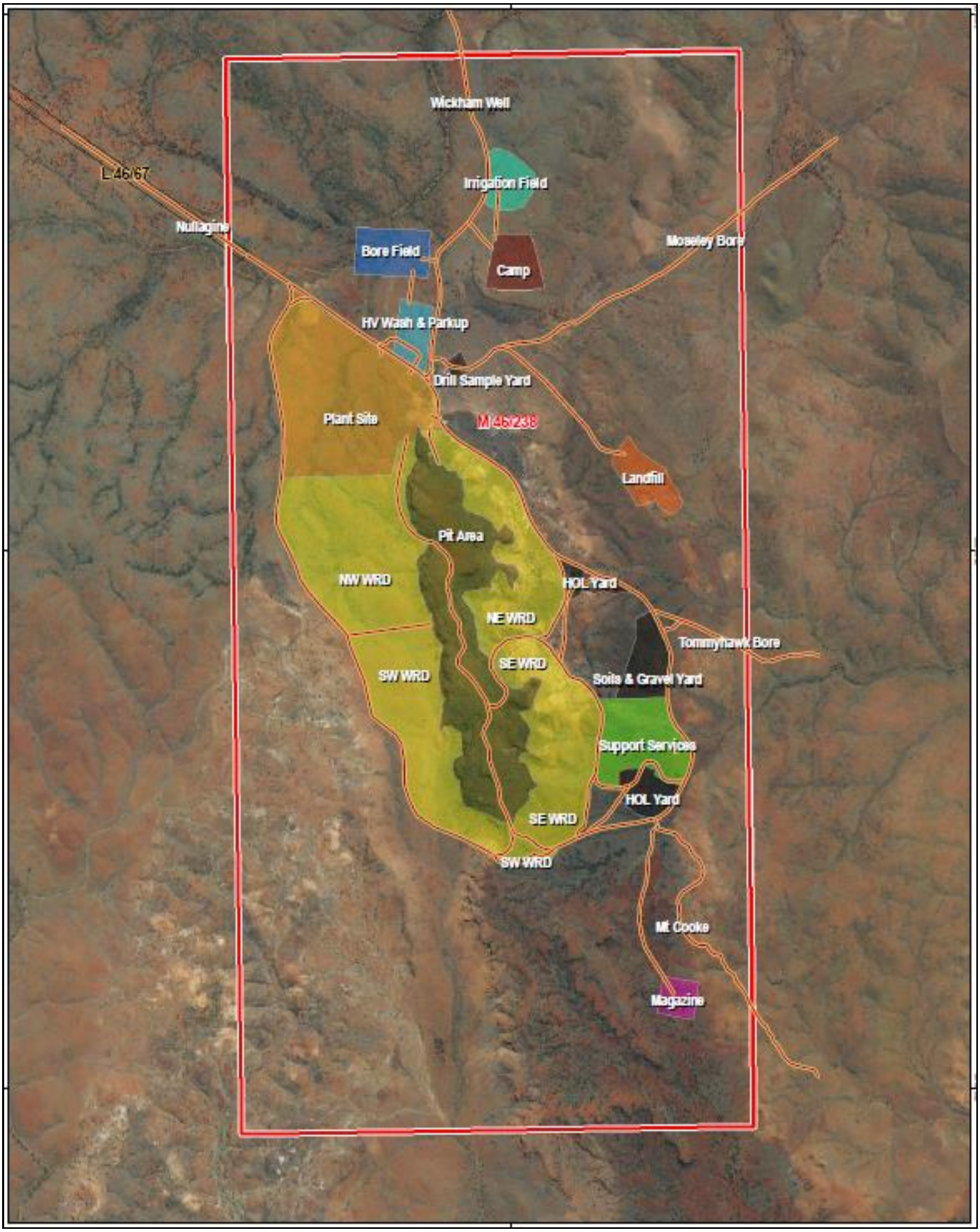


**Figure 2: Processing Plant, Settling Ponds and Process Water Pond layout**

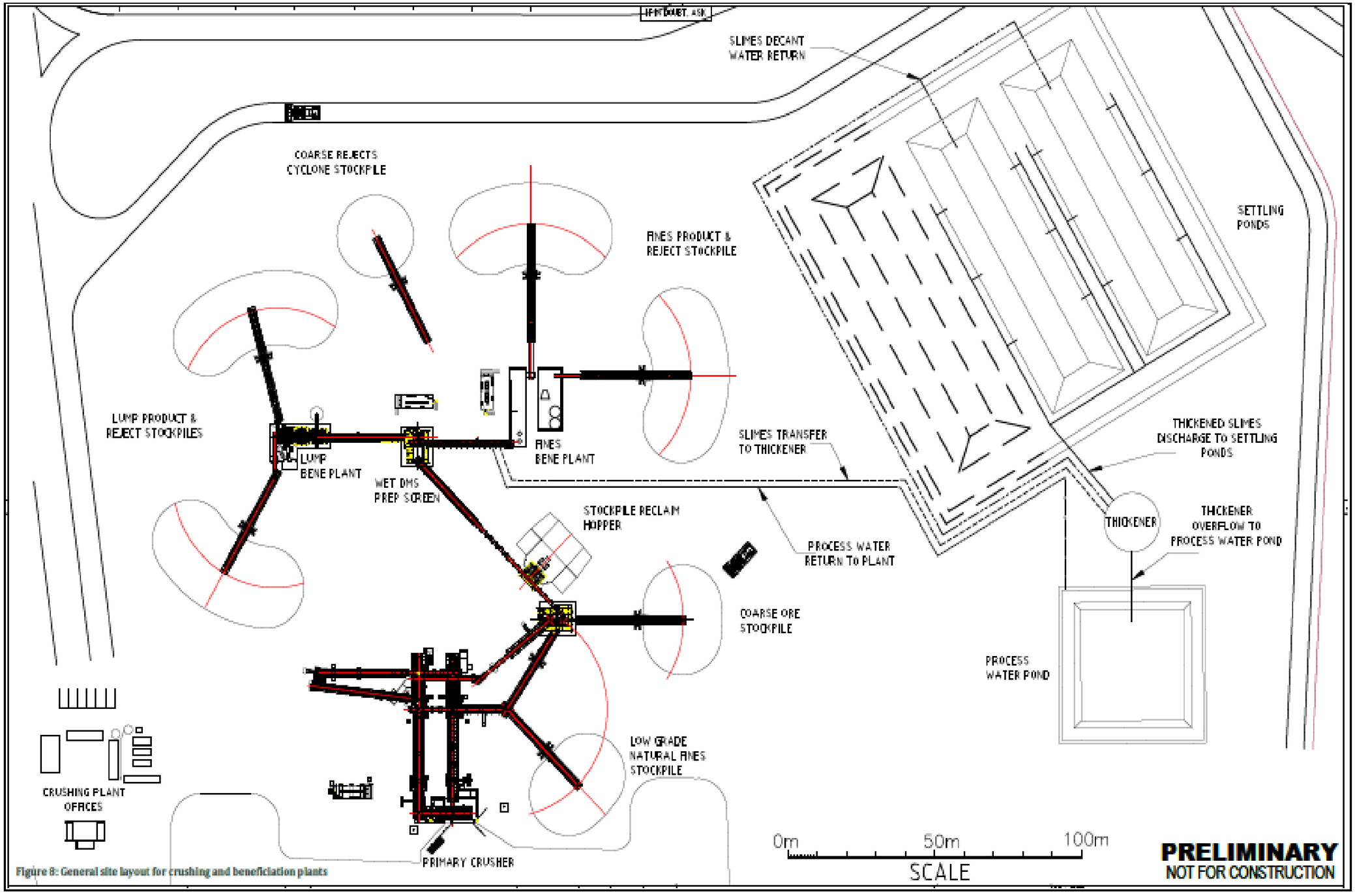


**Figure 3: Settling Pond conceptual arrangement**

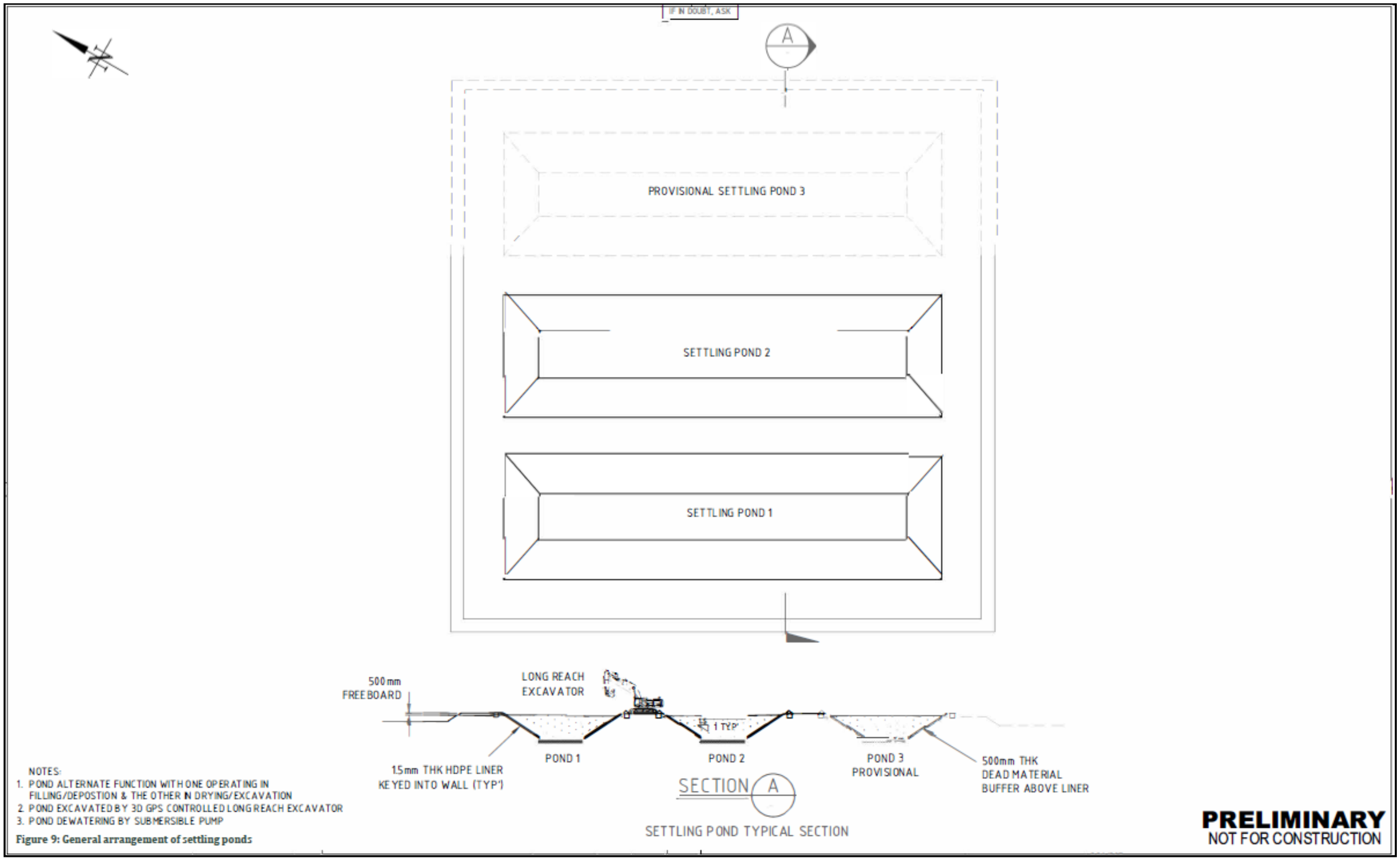


**Figure 4: Proposed groundwater monitoring bores and location of the NE WRD**

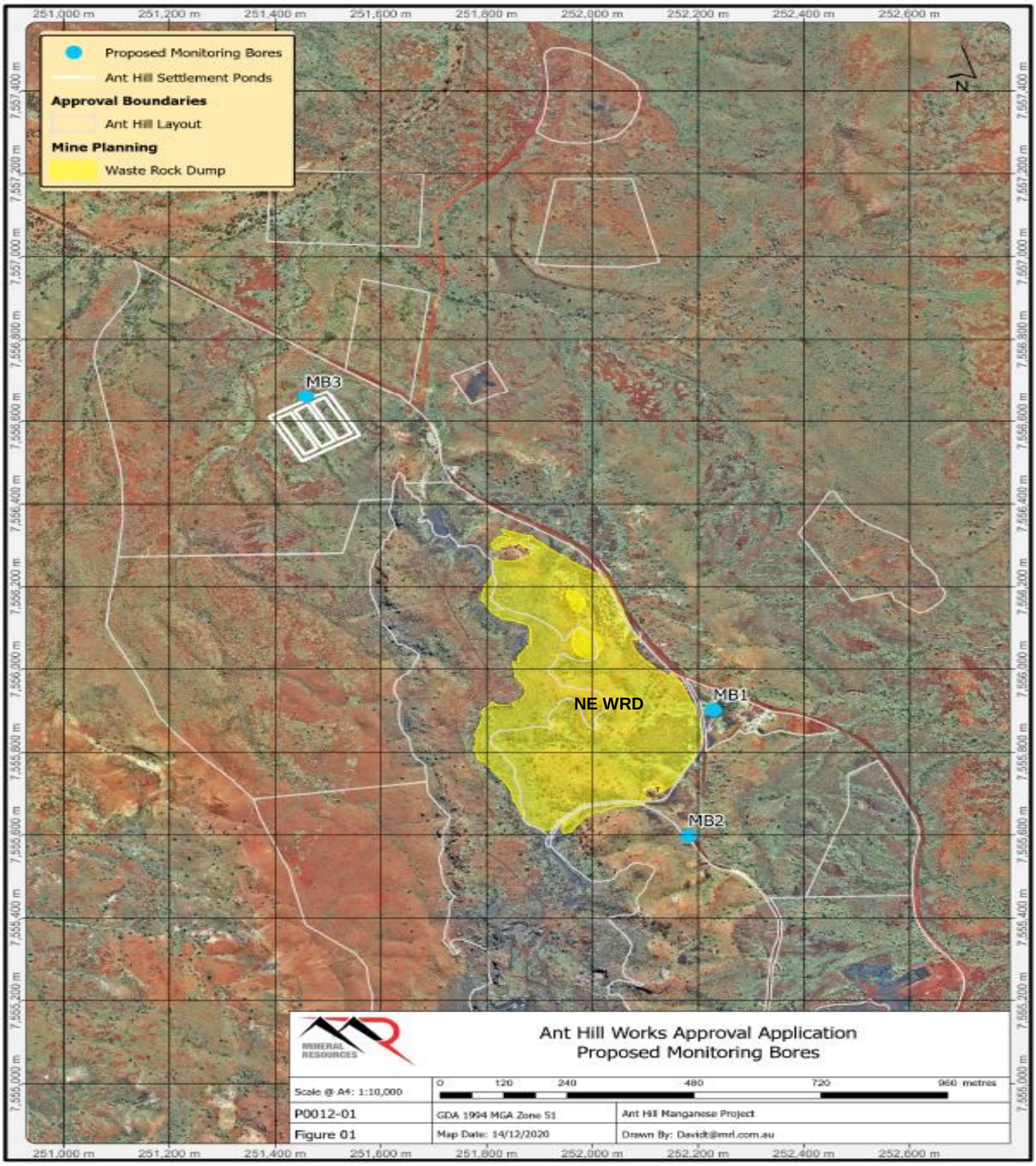


**Figure 5: Plant site and NE WRD surface water sedimentation management**

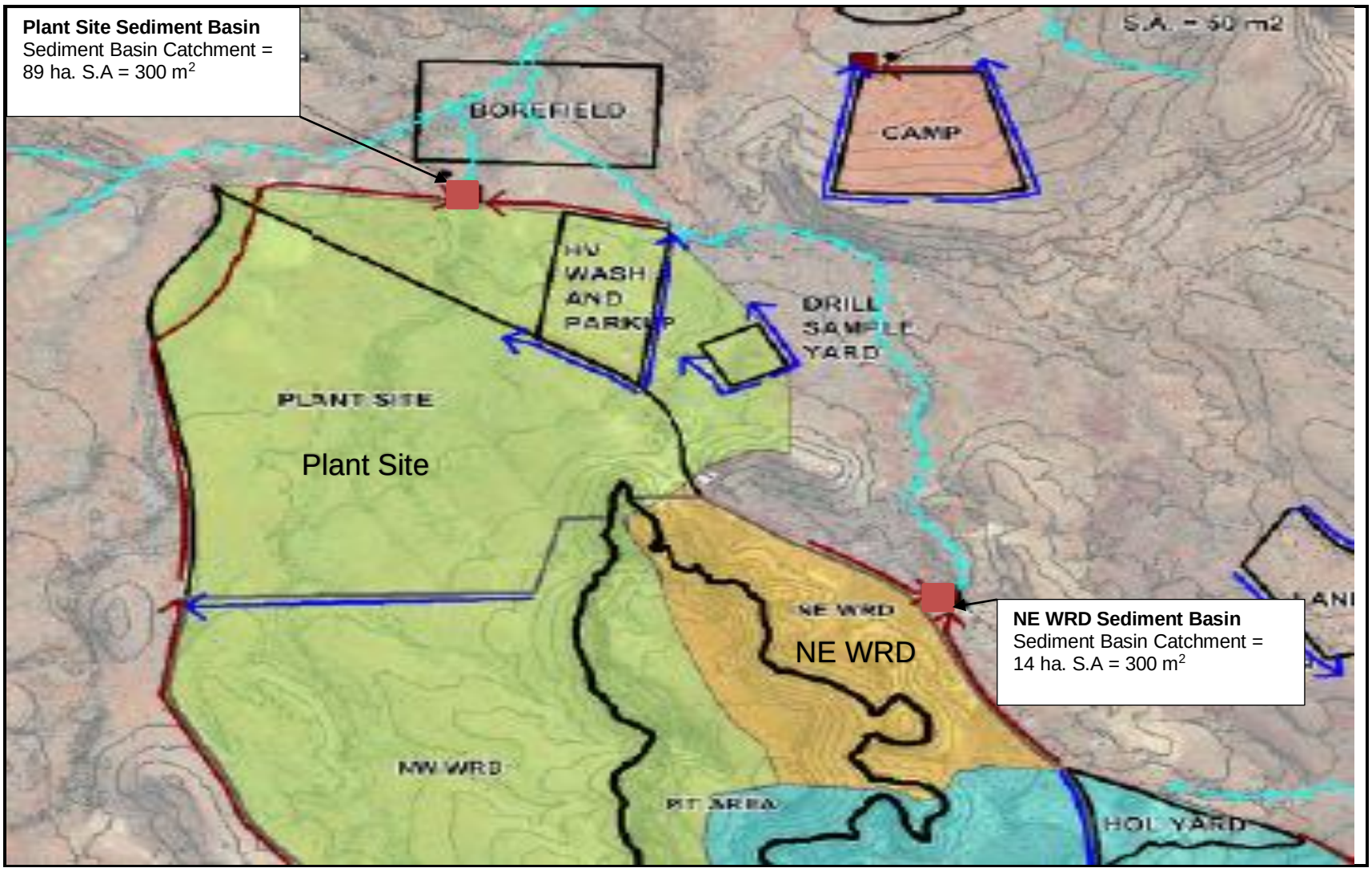



**Figure 6: NE WRD - slimes tailings waste co-disposal cross section**

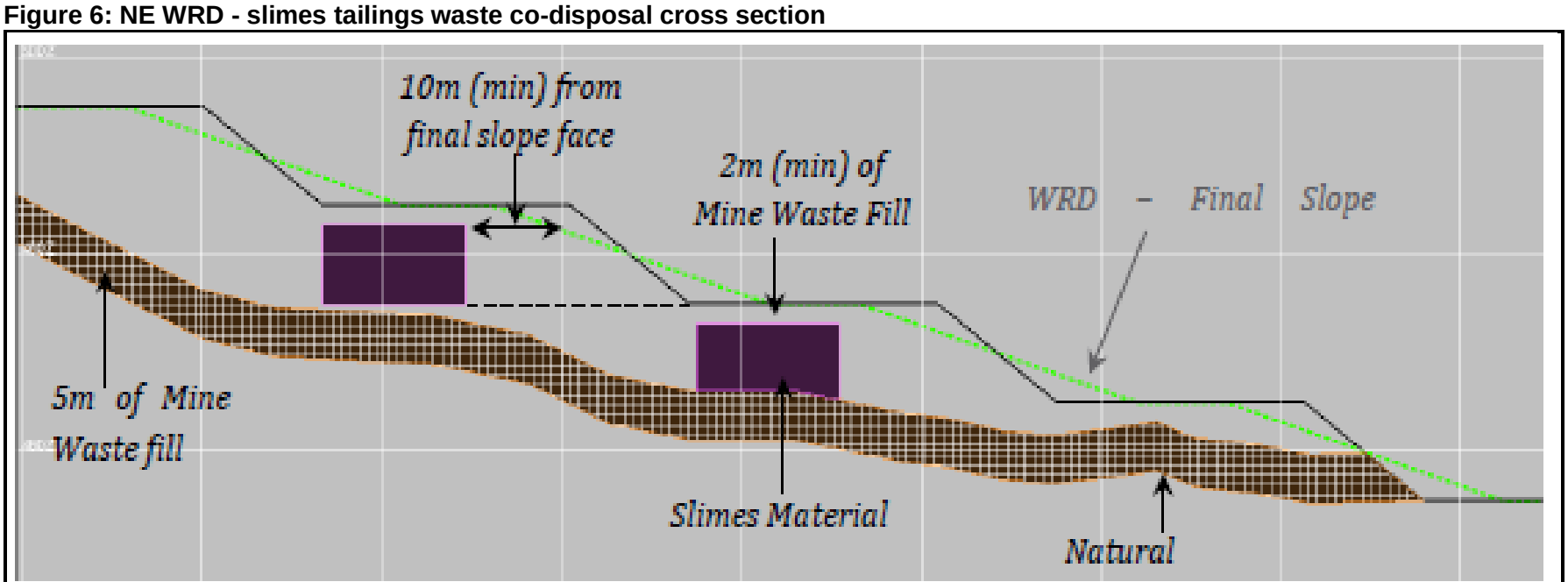


**Figure 7: Sediment basin design - layout**

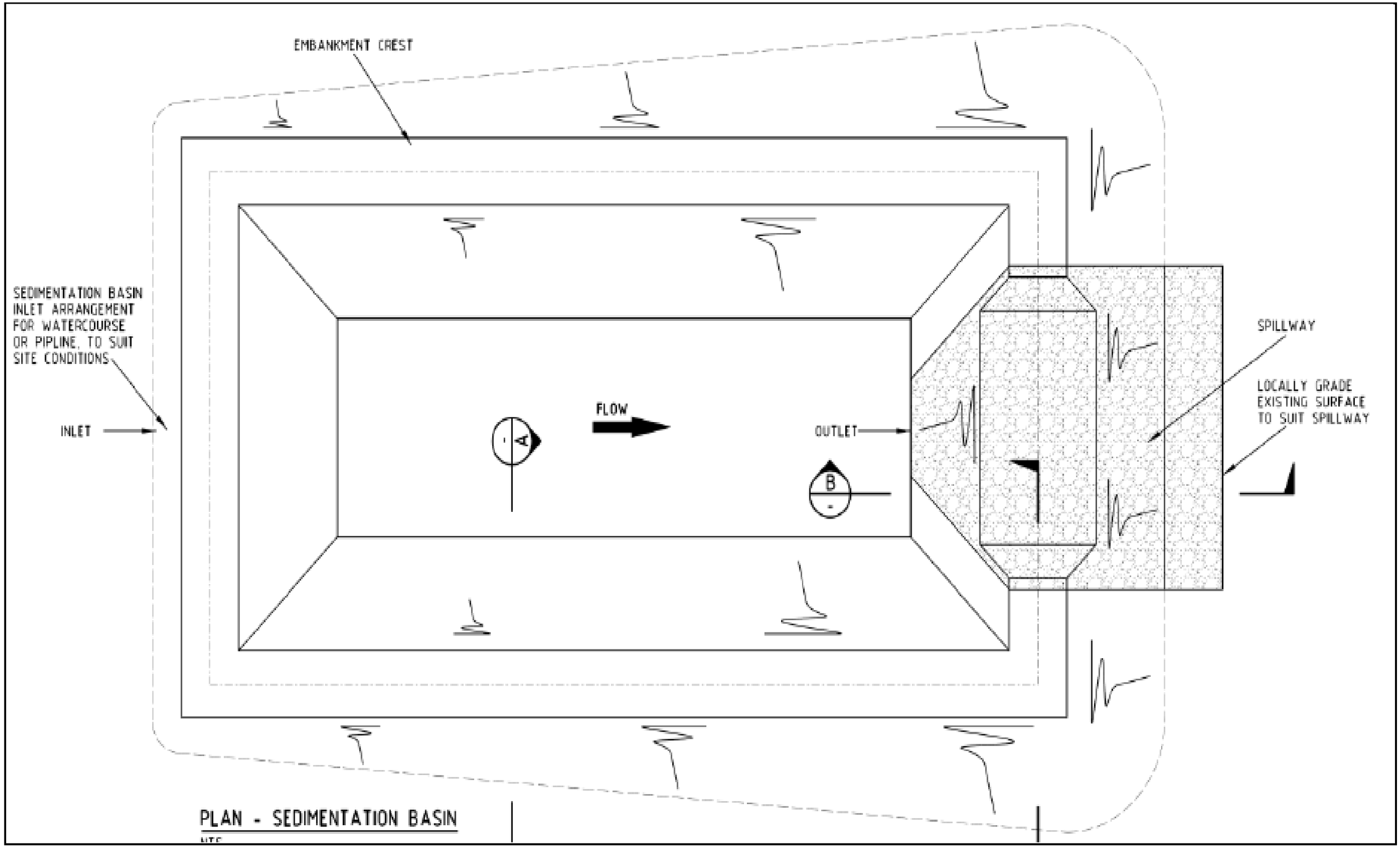
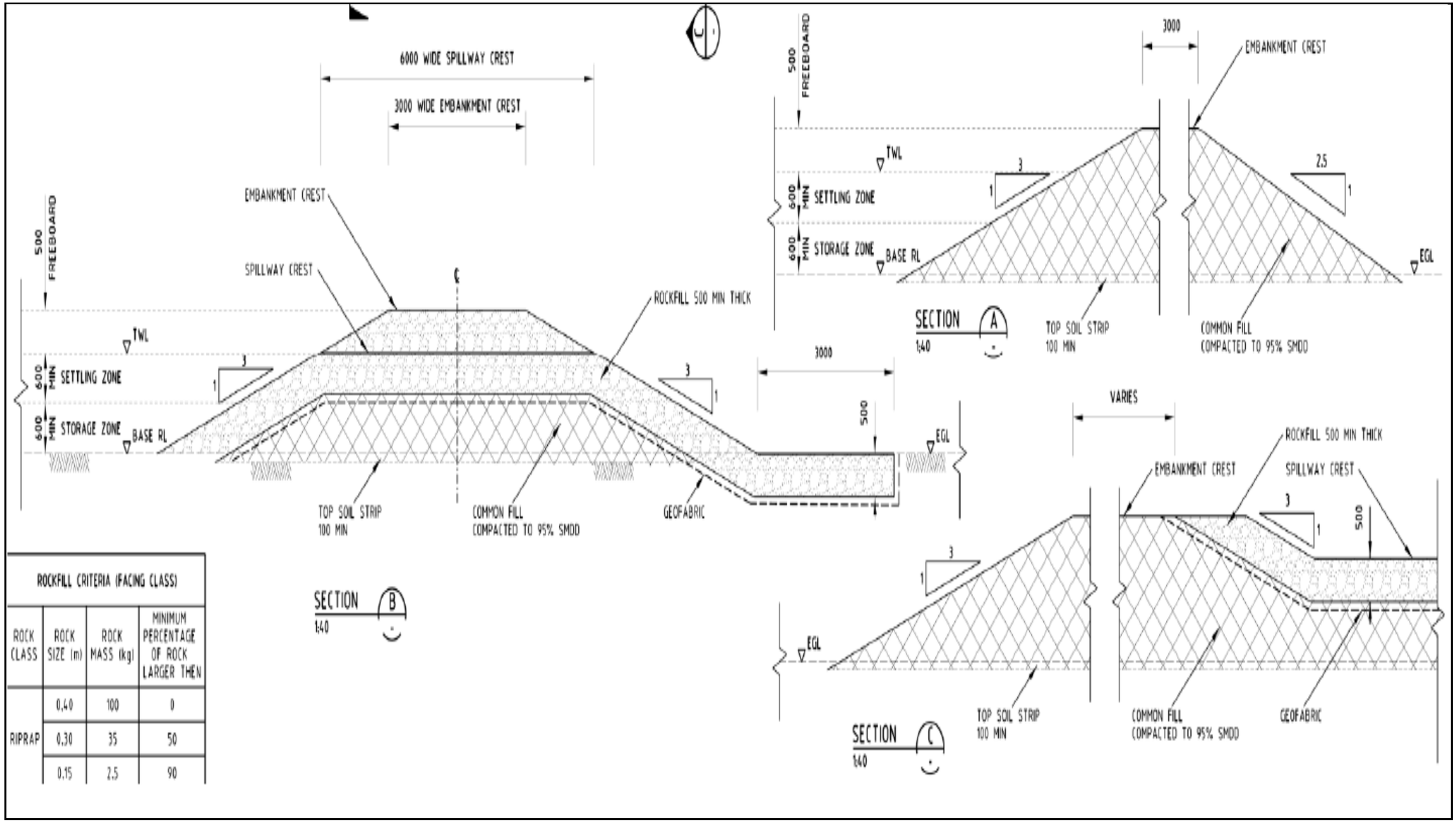


**Figure 8: Sediment basin design - cross section**




| ROCKFILL CRITERIA (FACING CLASS) | | | |
|---|---|---|---|
| ROCK CLASS | ROCK SIZE (m) | ROCK MASS (kg) | MINIMUM PERCENTAGE OF ROCK LARGER THEN |
| RIPRAP | 0.40 | 100 | 0 |
| | 0.30 | 35 | 50 |
| | 0.15 | 2.5 | 90 |

**Figure 9: Landfill layout**

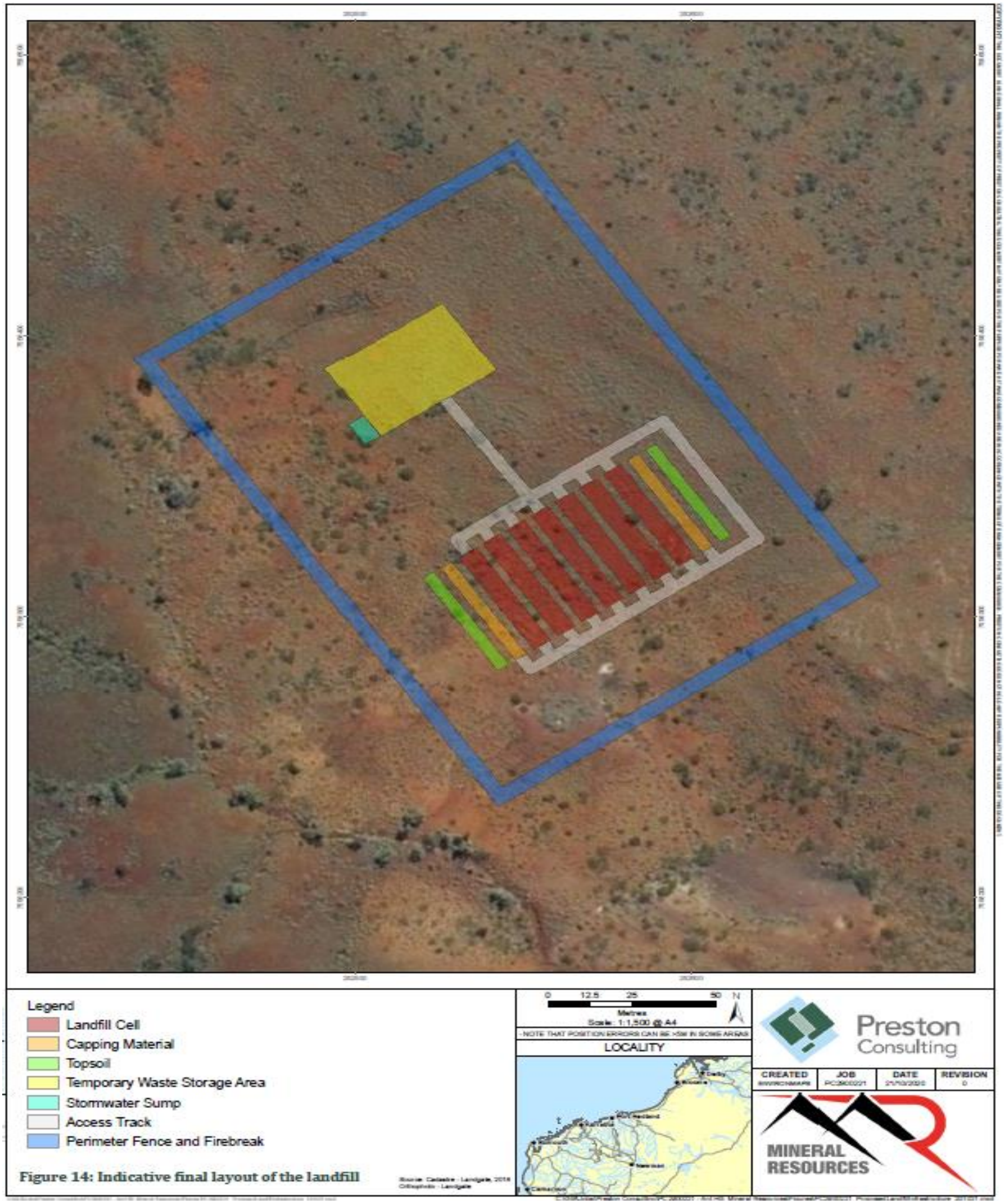



Figure 14: Indicative final layout of the landfill