Erosion and Sediment Control Plan

Nobles Nob Gold Project

Tennant Consolidated Mining Group Pty Ltd

ER012/Version 3.0

January 2023

Acknowledgement of Country

Tennant Mining acknowledges the Traditional Owners of the lands on which we work. We pay our respects to elders, past, present, and emerging.

Disclaimer

Document Control

Version	Personnel	Date
Version 1.0	Dr Ashish Mishra prepared the document	14-10-2022
Version 1.0	Adele Faraone from EcOz (CPESC) reviewed the document	30-10-2022
Version 1.1	Dr Ashish Mishra revised V1.0 incorporating Adele's comments	07-12-2022
Version 1.1	Steve Murdoch reviewed V1.1	08-12-2022
Version 1.2	Dr Ashish Mishra revised V1.1 incorporating Steve M's comments	08-12-2022
Version 2.0	Dr Ashish Mishra finalised V2.0 for CPESC Adele Faraone	10-12-2022
Version 2.1	CPESC review	19-12-2022
Version 2.2	Dr Ashish Mishra addressing CPESC's comments	19-12-2022
Version 3.0	Dr Ashish Mishra finalised V3.0	09-01-2023

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1.0 Introduction

1.1 Background

This Primary Erosion and Sediment Control Plan (ESCP) has been developed on behalf of Tennant Consolidated Mining Group (TCMG) for the Nobles Nob Gold Project (Nobles Nob). Nobles Nob is located approximately 13 kilometres (km) southeast of Tennant Creek township, in the Northern Territory (NT). Gold was initially extracted at Nobles Nob from underground operations commencing in the early 1930s and then via open-cut methods from the 1960s. Open-cut mining at Nobles Nob concluded in 1985, although gold production continued until 1992.

TCMG is proposing to recommence operations at Nobles Nob, which will include extractive mining and reprocessing of the old rock waste dump, a small extension of the Nobles Nob Pit, and exploration activities. The Northern Territory *Mining Management Act 2001* requires approval of a Mining Management Plan (MMP) for mining authorisation approval, prior to any mining activity (including exploration or operational activities) taking place. An MMP for Nobles Nob has been approved, with mining authorisation (1123-01) granted as of 15 August 2022. This erosion sediment control plan has been prepared to meet Condition 16 of the Mining Authorisation.

1.2 Plan Development and Certification

This Primary ESCP has been prepared by a suitably qualified person, Dr Ashish Mishra. Dr Ashish has a doctorate (PhD) in environmental geochemistry, where his thesis focused on soil erosion and sediment generation. Ashish has been involved in developing erosion and sediment control plans for various mines site in Queensland. Additionally, Ashish has undertaken several specialised contaminant source, cause and extent identification investigations for groundwater and surface water resources, and assessment of potential environmental impacts on water resources.

This Primary ESCP has also been reviewed and certified by a Certified Professional in Erosion and Sediment Control (CPESC) from EcOz Pty Ltd, Adele Faraone (CPESC #11426). A letter of endorsement is provided in **Appendix C**.

1.3 Scope

The scope of this ESCP includes the following:

- Strategies to minimise erosion and sediment discharge at the mine site.
- Maintenance and monitoring program.

This ESCP provides a general overview of the erosion and sediment control measures that will be implemented to minimise the impact of the proposed site activities on the external environment. Recommendations and designs provided within this ESCP are consistent with the International Erosion Control Association (IECA) best practice guideline *Best Practice Erosion and Sediment Control* (IECA, 2008).

Progressive ESCPs for construction and operation will be developed by TCMG prior to the commencement of site construction works, when specific site conditions can be assessed, and appropriate control measures determined. All Progressive ESCP's are to be consistent with the details of this Primary ESCP, with site specific measures implemented in accordance with IECA guidelines, project approvals and associated documentation.

1.4 Objectives

The objective of this ESCP are as follows:

- Minimise and control erosion and sediment generation from disturbed areas during construction and mining activities.
- Ensure adequate drainage control measures are implemented to manage runoff from disturbed site areas.
- Ensure stormwater is managed to protect downstream water quality.
- Ensure sedimentation from the site is reduced, so soil particles greater than 1mm are retained.
- Ensure erosion is prevented, where possible.

1.5 Relevant Legislation and Guidelines

The relevant legislation and guidelines that were used in the preparation of this ESCP are as follows:

- *Water Act 1992* (Northern Territory).
- *Soil Conservation and Land Utilisation Act 1969* (Northern Territory).
- *Waste Management and Pollution Control Act 1998* (Northern Territory).
- Best Practice Erosion and Sediment Control (IECA, 2008).

1.6 Review and Updates

This Primary ESCP will be reviewed annually to assess effectiveness and performance based on the objectives noted in Section 1.4. The ESCP will be updated where necessary to reflect identified changes or modifications from site inspections using site checklists as found in Appendix B

2.0 Project Description

The Nobles Nob Mine is located within the Tennant Creek Goldfield, approximately 13 km southeast of Tennant Creek in Northern Territory, Australia. Tennant Creek is approximately 504 km north of Alice Springs and 978 km south of Darwin (**Figure 1**).

The Nobles Nob project area encompasses 355 hectares (ha), with 253 ha within Nobles Nob mining tenements and 102 ha within Juno tenements. Previous disturbances at Nobles Nob occurred during historical mining activities. Nobles Nob was historically mined over 50 years from the late 1930s to the 1980s. Mining commenced in 1939 with underground operations. The collapse of the crown pillar in 1968 led to the construction of a new plant, followed by open-cut operations in 1969. Some of the material from the collapsed crown pillar was recovered, while most of the material was stockpiled in the existing mineralised southern waste rock dump (Southern WRD), located to the south of the Nobles Nob pit.

Open-cut mining continued at Nobles Nob from 1969 through to 1985 with a total production of 1.6Mt of ore at a grade of ~7g/t gold yielding 342,000 ounces of gold. In total, since the 1930s, the Nobles Nob mine produced 2.1Mt of ore at a grade of 17.0 g/t with a total yield of 1.17M ounces of gold and was considered Australia's richest gold mine for many of those years.

2.1 Proposed Activities

TCMG plans to commence the following activities on site, which includes:

- The excavation of existing waste rock from the Southern WRD for reprocessing. The existing Southern WRD is from historic Nobles Nob pit operations.
- A cut back of the existing Nobles Nob pit.
- Establishment of a processing area that comprises the following:

- Processing Plant – the plant is designed based on an estimated throughput of 700k tonnes per annum Carbon-In Leach (CIL) ore processing plant (COMO, 2021). The processing will include crushing and milling of the ore before processing and discharge of tailings.
- Tailings Storage Area – tailings from the processing plant will be stacked in a tailings storage area, where it will be stored.
- Sump and Water Ponds – The sumps and process water ponds will store water required for processing and the water recovered from tailings storage area.

All infrastructure except the solar field will be placed within the disturbance footprint of previous mining operations and will not require any clearing. The proposed solar field will be placed on the western section of the site and will require clearing a 4 hectares (ha) area of vegetation. This is the only new area, where disturbance is proposed to previously undisturbed land.

Construction at Nobles Nob is scheduled to commence in Late-February/March 2023 for eight months, until November 2023, and will include the following activities:

- Upgrade of the access road, where required.
- Setting up of office/administration and amenities.
- Setting up the processing facility.
- Earthworks to prepare the area for tailings storage.

Mining operations are scheduled to commence in November 2023, on completion of the commissioning of the critical infrastructure.

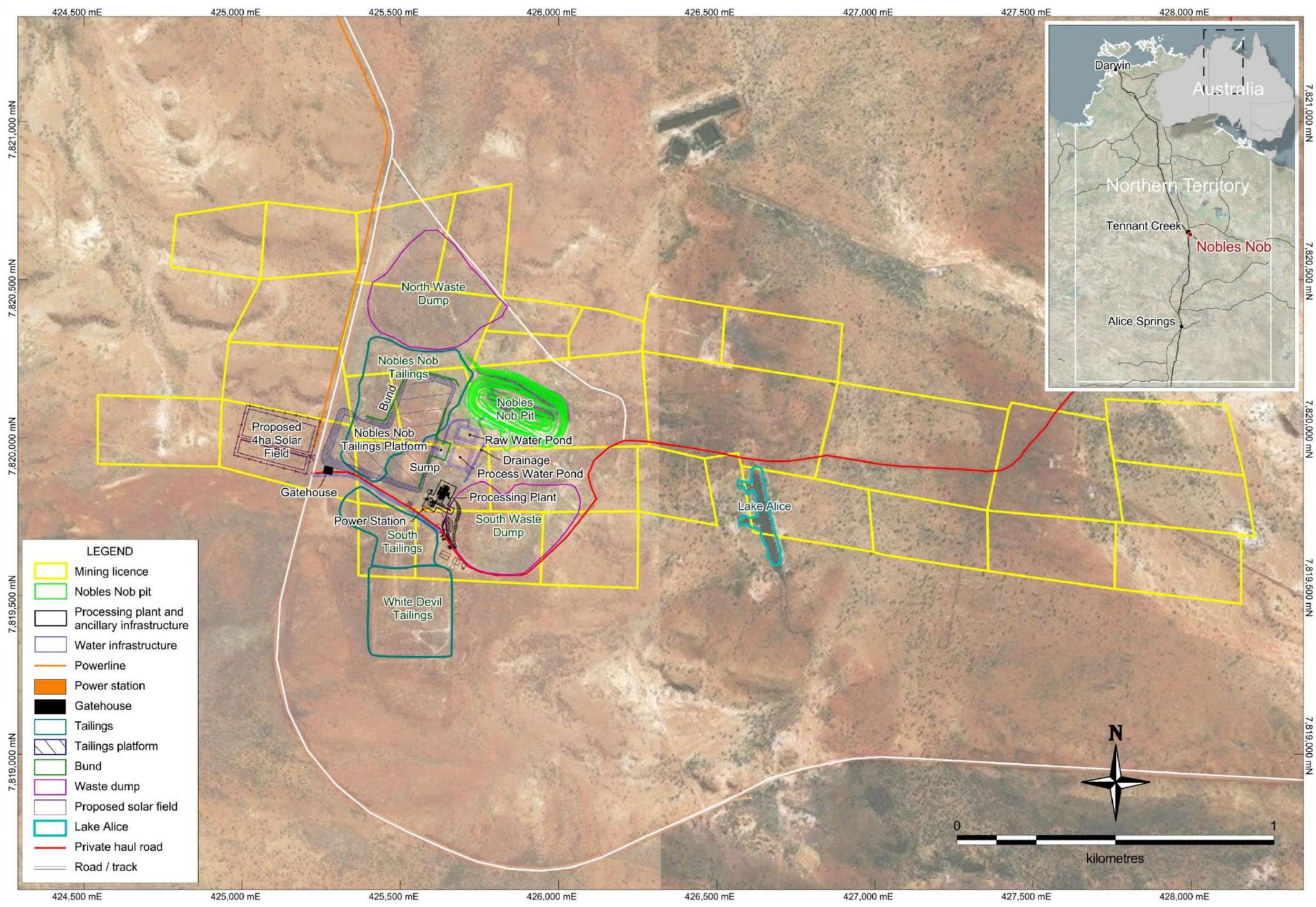


Figure 1 Site Location and Proposed Infrastructure

3.0 Site Characteristics

2.1 Topography and Drainage

Land surface elevation, informed by LiDAR data, shows that the area around Nobles Nob comprises plains and low hills associated with the McDougall Ranges (Umwelt, 2021). Elevation throughout the site ranges from approximately 296 mAHD to 380 mAHD. The rest of the region towards the west of Nobles Nob appears to be dominated by level to undulating plains, associated mainly with dune fields and sand plains of the Tanami Desert (Umwelt, 2021).

Two permanent surface water body exist around Nobles Nob (TCMG, 2022; Tennant Gold Resource, 2018), including the Nobles Nob Pit and Lake Alice, an identified Aboriginal Sacred Site located approximately 500 m southwest of the pit. Some surface drainage occurs briefly during the wet season. Surface flows across the mine site would predominately be conveyed as sheet flow before channelising and forming local flow paths (ATCW, 2022). A large extent of site surface areas discharges to the Nobles Nob Pit. The existing catchment draining to the Nobles Nob Pit is approximately 36.9 ha. The southern and western extents of the site discharge to the north/northwest along Peko Road. Refer to **Figure 2**, which illustrates the existing catchment boundaries and flow paths.

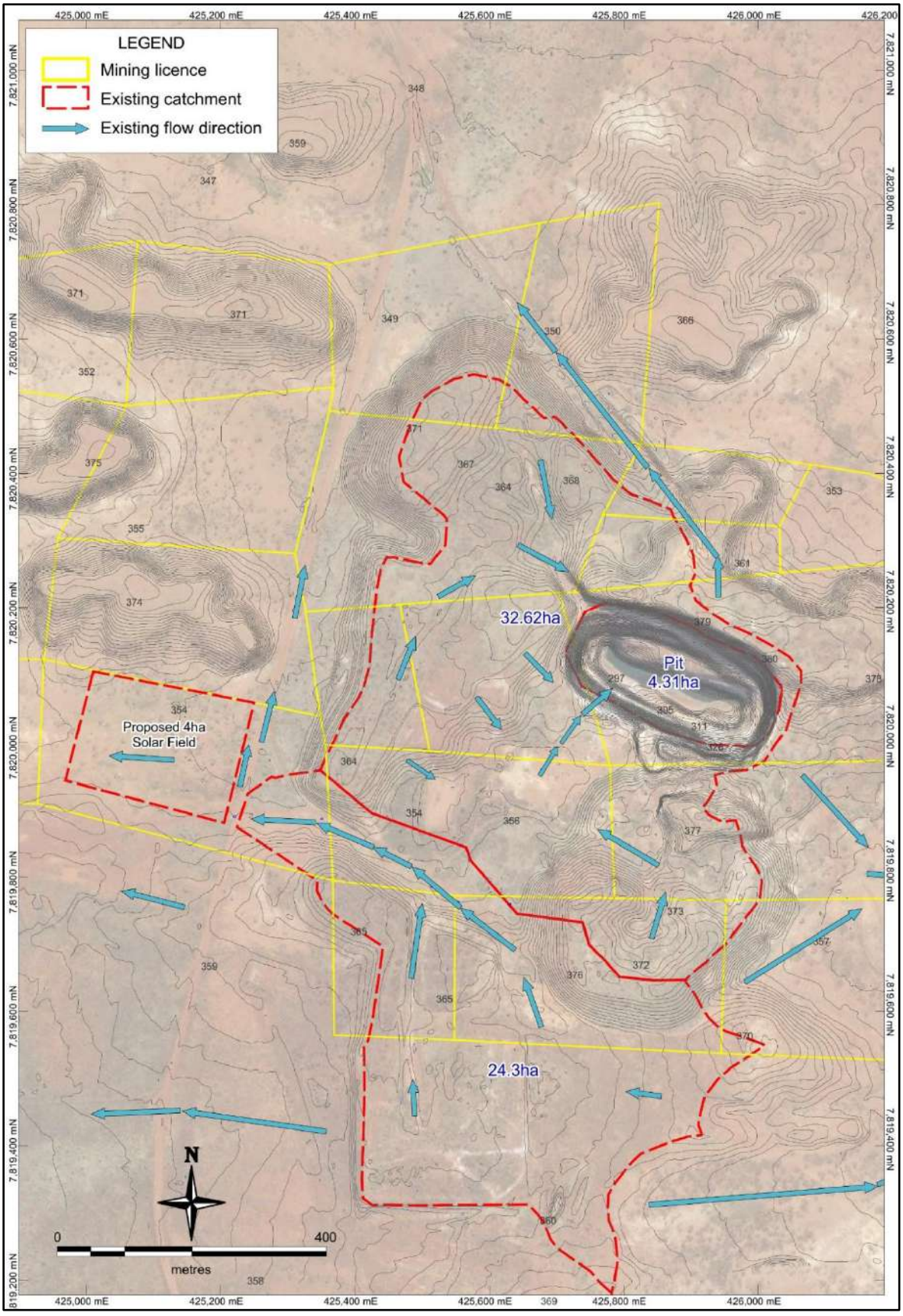


Figure 2 Existing Catchments and Flow Directions (Source: ATCW, 2022)

2.2 Climate

The area is characterised by a hot arid climate, with evapotranspiration exceeding rainfall throughout the year. The mean monthly temperature data was retrieved from the nearest Bureau of Meteorology (BoM) weather station at Tennant Creek Airport (Station number 15135), presented in **Table 1**. The mean monthly maximum temperature ranges from 24.6°C during the winter (June) to 37.3°C in the summer (December) (BoM, 2022).

Table 1 Mean Monthly Temperature

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean maximum temperature (˚C)	36.8	35.9	34.7	32	27.7	24.6	24.8	27.6	31.8	35	36.7	37.3
Mean minimum temperature (˚C)	25	24.5	23.4	20.6	16.4	13	12.3	14.4	18.5	21.9	23.9	25

Mean has been calculated using monthly data from Jan 1969 to Oct 2022

Rainfall data has been retrieved from the publicly available Scientific Information for Landowners (SILO) database. The monthly average rainfall and evapotranspiration data has been retrieved from the nearest SILO station Tennant Creek Airport (Latitude -19.64, Longitude 134.18), from 01/01/1900 to 01/10/2022.

The SILO database generally provides a complete long-term dataset and is, therefore, helpful in assessing long-term rainfall trends in the vicinity of the site. This dataset is interpolated from quality-checked observational time-series data collected at nearby stations by the Bureau of Meteorology. Based on the SILO dataset, the average annual rainfall is 383 mm, with evaporation exceeding rainfall during each month of the year (**Table 2** and **Figure 3**). As mentioned above, the average annual rainfall at Nobles Nob is less than 500 mm per year and the landscape is arid with almost flat terrain, which minimises potential for runoff and sedimentation.

Table 2 Monthly Average of Rainfall and Evapotranspiration (SILO)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
SILO Rainfall	96.7	91.1	50.2	11.8	10.4	6.6	5.0	2.0	5.4	14.9	30.2	58.1	382.5
SILO ET	350.2	291.8	321.2	287.5	232.8	186.8	198.9	250.1	307.2	358.7	371.8	371.6	3528.6
SILO fao56 ET	213.7	182.8	191.3	167.7	138.4	115.3	126.3	156.1	185.1	215.5	220.8	224.1	2137.0

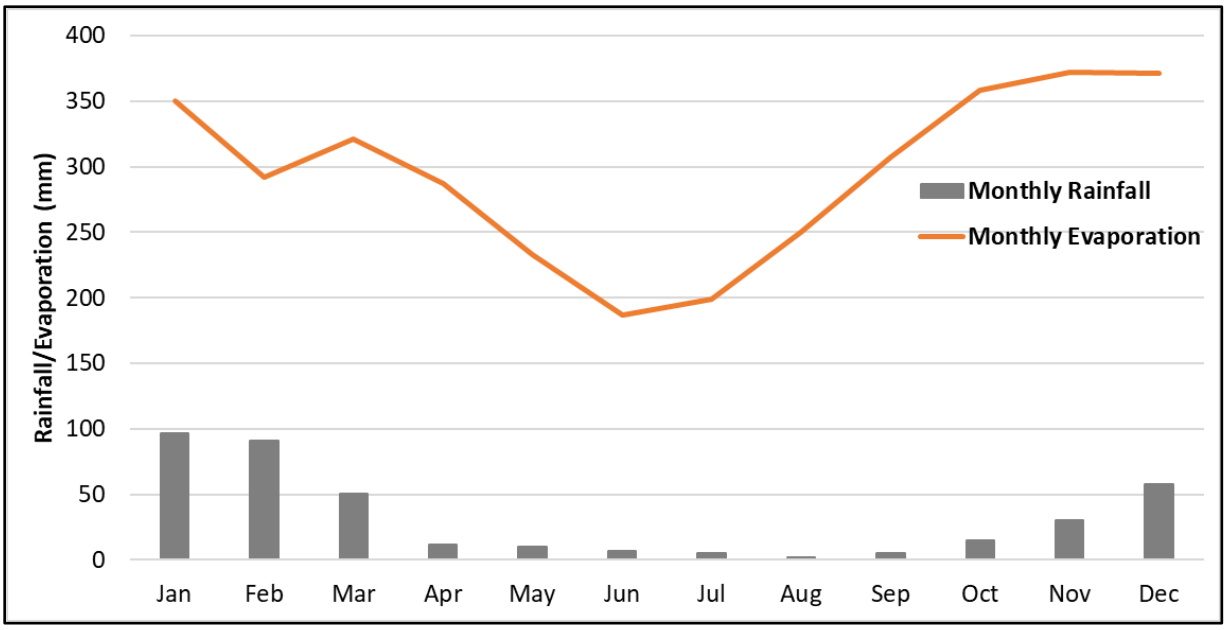


Figure 3 Graph Showing Monthly Average Rainfall and Evapotranspiration

2.5 Land System and Soils

Nobles Nob is situated within the Tennant Creek Land System, dominated by sandstone plains and rises characteristic of the Ashburton Range subregion. It is part of the greater Davenport Murchison Ranges bioregion, characterised by plateaux, plains and rises on sandstone, claystone and limestone, and outcrops with shallow stony soils.

According to the Australian Soil Classification, the dominant soils at Nobles Nob are Kandosol, Rudosol and Tenosol (**Figure 4**).

- Kandosols are often referred to as red, yellow and brown earth. Kandosols are essential for agricultural and horticultural production. They occur throughout the Northern Territory and are widespread across the Top End, Sturt plateau, Tennant Creek and Central Australian regions.
- Rudosols are very shallow soils with minimal soil development. Rudosols include very shallow rocky and gravelly soils across rugged terrain and pure sand soils in deserts.
- Tenosols are weakly developed or sandy soils which are essential for horticulture. These soils show some degree of development (minor colour or soil texture increase in subsoil) down the profile.

The Digital Atlas of Australian Soils (Australian Soil Resource Information System 1991) shows that the soil types at Nobles Nob are primarily: AB31, BA13, and My80 (**Figure 5**). The description of these soil types as per the Digital Atlas of Australian Soils are as follows:

- AB31 – these soils are associated with flat to gently undulating sand plains with some low broad sand rises and small alluvial flats. These soils usually comprise red earthy sands, with some clay pans.
- BA13 – These soils are usually found in areas with flat-topped, gently sloping areas and valleys on sandstones, siltstones, and shales. These soils are usually stony sands and loams.
- My80 – These soils are usually found in gently undulating plains and hills with rock outcrop. These soils are mainly neutral red earths, with a variable content and surface scatter of

ironstone gravels. My80 soils are also often characterised with loamy soils, and some shallow gravelly and stony soils.

Soil from sumps that were dug for the recent drilling program were also examined across the site. the top layer of the soils was found to be brown to red in colour, dry, very fine loam with pebbles and larger rocks throughout. Below the top layer (i.e., approximately 0.5-1 m), the soil encountered was mostly clay with fine loam. The drilling records of the groundwater monitoring bores also recorded that the top layer comprised of approximately 3 metres of red laterite soils, followed by 3 metres of clay layer.

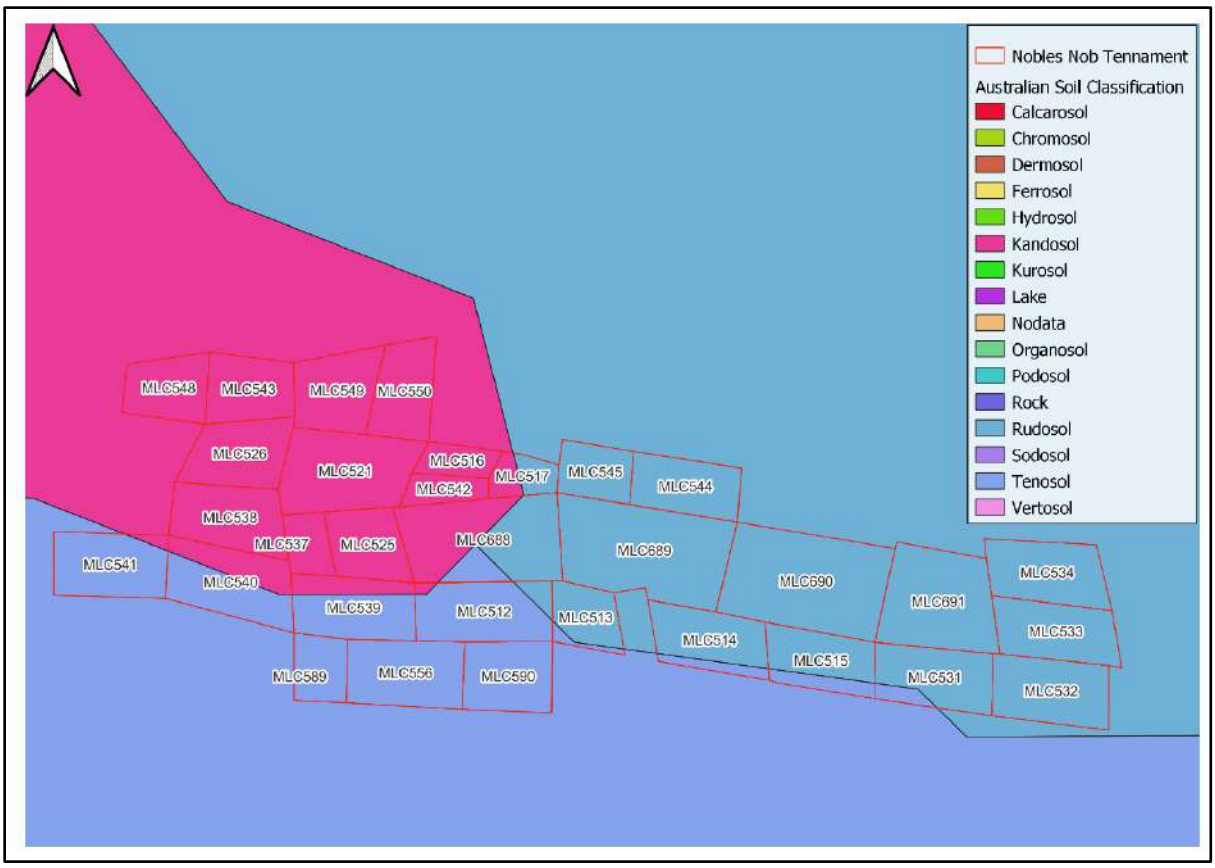


Figure 4 Soil Type from Australian Soil Classification at Nobles Nob

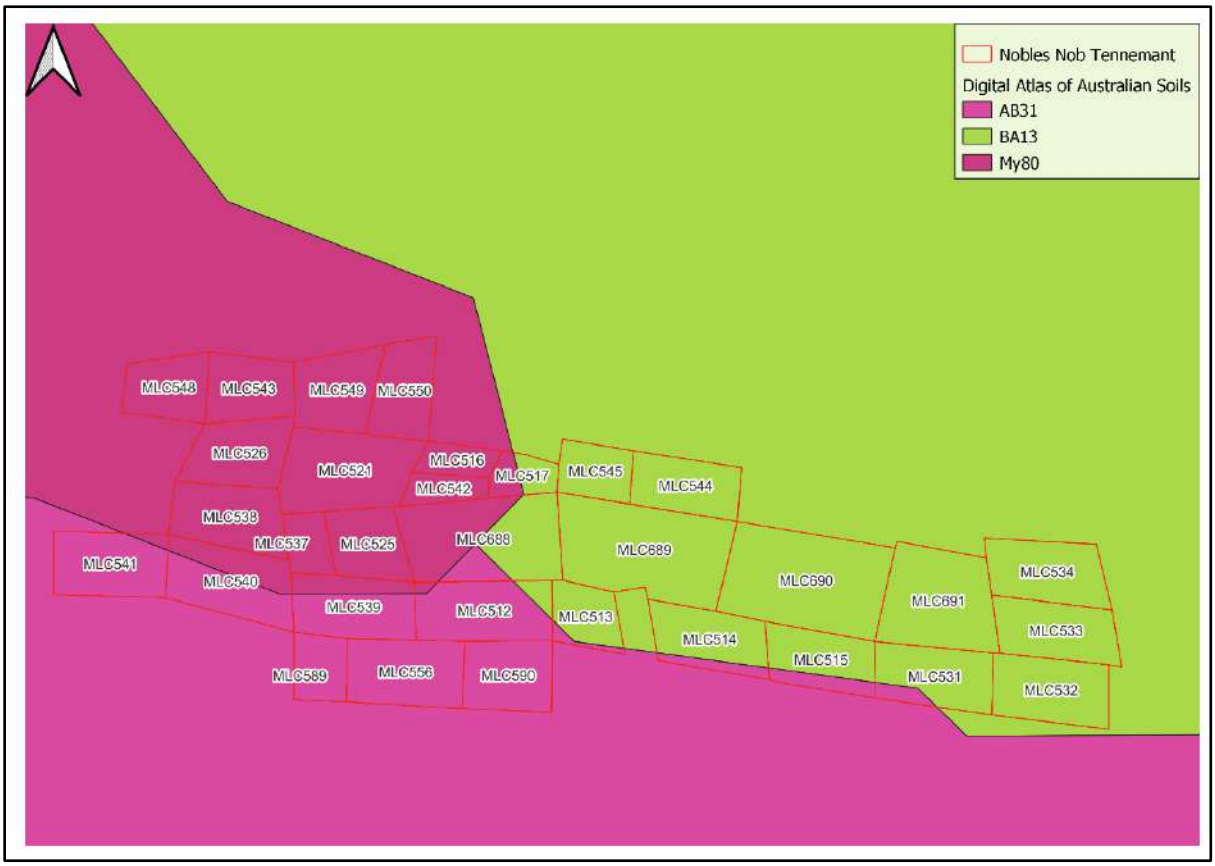


Figure 5 Soil Type from Digital Atlas of Australian Soils at Nobles Nob

2.6 Vegetation

Previous surveys identified the vegetation at Nobles Nob as predominantly eucalypt low open woodland and acacia-sparse shrubland over hummock grassland. Rises host a community of open woodland dominated by snappy gum (*Eucalyptus leucophloia* subsp. *euroa*) over gummy spinifex (*Triodia pungens*) grassland. Plains and drainage communities have a mosaic of *E. pruinosa* and *E. aparrerinja* woodlands (Tennant Gold, 2018). No vegetation communities or ecological communities of listed conservation significance have been recorded within 50 km of Nobles Nob. A search of the NT Flora Atlas identified 22 records of 13 species of listed conservation significance, three of which are considered 'Near Threatened' under the *TPWC Act*: *Lythrum wilsonii, Trianthema glossostigmum,* and *Trianthema. oxycalyptra* var. *oxycalyptra.*

2.7 Disturbances

2.7.1 Previous Disturbances

As mentioned in **Section 2.0**, Nobles Nob was historically mined over 50 years from the late 1930s to the 1980s. Some recent exploration activities were undertaken on-site besides the disturbance caused by historical mining activities. In 2011, 5 reverse circulation (RC) exploration holes were drilled at Nobles Nob. In 2012, 5 holes were drilled, and a full-scale structural geological mapping program and a ground-based gravity survey were undertaken. Work carried out during 2013 consisted of non-invasive ground-based activities using existing tracks. Walking gravity surveys and mapping were also carried out. In 2018, 269 RC holes were drilled in the Nobles Nob Tenements, 63 of which were in the pit and 10 of these holes were in the Southern WRD.

2.7.2 Proposed Disturbances

As outlined in **Section 2.1**, the proposed activities include the following:

- The excavation of existing waste rock from the Southern WRD for reprocessing. The existing Southern WRD is from historic Nobles Nob pit operations.
- A cutback of the existing Nobles Nob pit.
- Establishment of the processing area that comprises the following:
  - Processing Plant
  - Tailings Storage Area
  - Sumps and Water Ponds.

In addition, construction and earthwork activities will be carried out before mining operations commences, and will include the following:

- Upgrade of access road, where required.
- Office/administration and amenities
- Setting up the processing facility.
- Earthworks to prepare the area for tailings storage.

All infrastructure except the solar field will be placed within the disturbance footprint of previous mining operations and will not require clearing any undisturbed areas. The proposed solar field will be placed on the western section of the site and require clearing a 4 ha area of vegetation. This is the only new area of disturbance proposed. **Figure 6** below shows the area with proposed disturbance in previously disturbed areas (in orange) and in previously un-disturbed areas (in brown). The remaining area within the site will be undisturbed (shown in green in **Figure 6).**

Further details of the proposed disturbances have been presented in **Table 3** below.

Table 3 Details of the Proposed Disturbances

Proposed Disturbance Area	Proposed Activities	Area (ha)	Previous Disturbance	Land Clearance
Operational Area	Areas for construction of the processing facility, office/administration and amenities.	3.28	Area is previously disturbed by historical mining activities.	No land clearance required
Tailings Area	Area for construction of tailings storage facility	10	Area is previously disturbed by historical mining activities.	No land clearance required
Solar Farm	Area for construction of a solar farm	4	Area is not previously disturbed.	Land clearance required. Will be done as per NT Land Clearing Guidelines

The erosion risk from proposed disturbances in these areas has been discussed in the sections below. Clearing in the proposed solar farm area and disturbance across the site will be in accordance with the NT Land Clearing Guidelines (DEPWS, 2021).

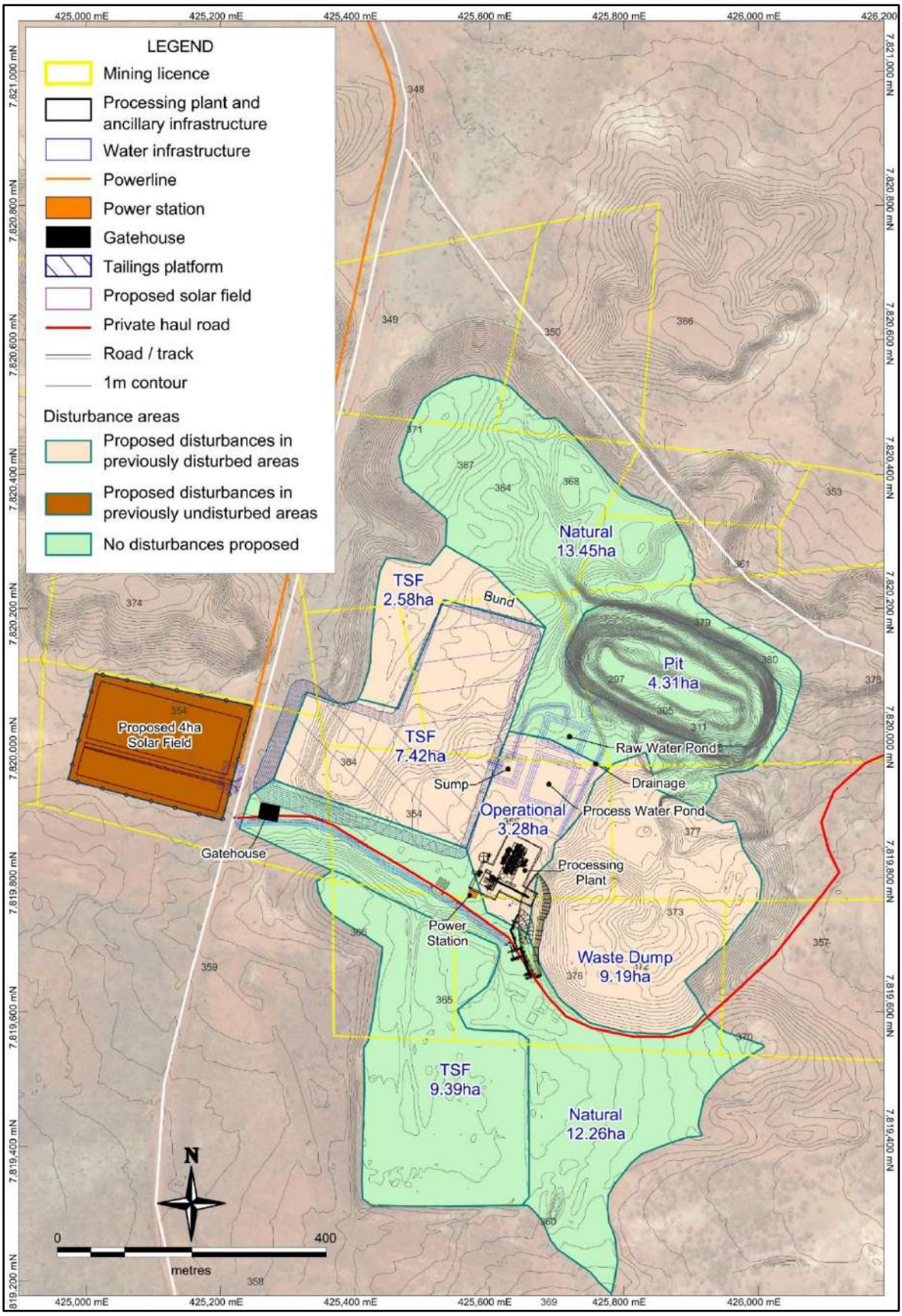


Figure 6 Catchment and Area of Proposed Disturbances

3.0 Erosion Risk Assessment

Erosion risk is assessed using the Revised Universal Soil Loss Equation (RUSLE) as per IECA (2008). This enables the prediction of the long-term, average, annual soil loss from sheet and rill erosion under specified conditions.

The RUSLE is represented by the following equation as A = R * K * LS * P * C

Where:

- A = estimated soil loss (tonnes/ha/yr)
- R = rainfall erosivity factor
- K = soil erodibility factor
- LS = slope length/gradient factor
- P = erosion control practice factor
- C = ground cover and management factor

3.1 Soil Erodibility

The soil erodibility, also referred to as the K-factor, is a numerical representation of soils' ability to resist rain's erosive energy (IECA, 2008). Taking a conservative approach, a K-factor of 0.053 has been adopted for all work areas assessed as part of this ESCP, based on the site soil textures observed on-site and tables within IECA for 'Silty gravels, poorly graded gravel-sand-silt' soil texture type (i.e., Table E5; IECA, 2008).

3.2 Slope Length Factor

The slope length factor, or LS factor, is a numerical representation of the length and slope combination. The grid LS model was developed using LiDAR data and SAGA. SAGA stands for System for Automated Geoscientific Analyses, and is a geographic information system (GIS) computer program, used for terrain analysis and geomorphometric calculations such as slope, aspect, curvatures, flow path analysis, catchment delineation, channel lines, and relative altitudes etc. SAGA used the LiDAR data to determine the range of LS factors across the site. The grid LS model was then overlaid with the catchment boundaries for the proposed disturbances on site as shown in **Figure 6**, and then the mean values of the LS within each catchment were taken for RUSLE. The mean LS factor taken for each proposed disturbance areas is shown in **Table 4** below.

Table 4 Catchment with Proposed Disturbances and LS-Factor

Catchment	Area (ha)	LS factor
Operational area (processing plants, admin, and offices)	3.28	0.27
Solar Farm	4	0.42
Tailings Area (for TSF)	10	0.48

3.3 Rainfall Erosivity Factor

The rainfall erosivity factor (R factor) is a measure of the ability of rainfall to cause erosion. Table E1 and E2 of the IECA (2008) recommends R factor only for Darwin and Katherine in Northern Territory. As Tennant Creek is located away from these two locations, and experiences different rainfall, the R factor for the site is derived from the IECA (2008) recommended methodology (using the 2-year 6-hour rainfall intensity for site).

The formula is:

$R = 164.74\ (1.1177)^{S} * S^{0.6444}$

Where, S is the 2 year ARI, 6 hour rainfall event.

The R factor derived from the IECA (2008) recommended methodology (using the 2-year 6-hour rainfall intensity for site) is 1461.

3.4 Cover Factor

The cover factor, also known as C-factor, is the influence of cover on the site that protects the disturbed area from rainfall erosion. It can be through matting, temporary or permanent vegetation, and/or chemical binders.

Ground cover on site comprises vegetation, rocks, competent gravel, and unprotected soil material. Soil binders may also be applied for dust suppression and erosion control. Existing roads are characterised by a stable gravel/soil surface. Taking a conservative approach, the C-factor adopted for this assessment was taken as the worst-case scenario, i.e., 1, which is C-factor for bare soil and erosive surfaces.

3.5 Practice Factor

The practice factor (P-factor) measures the combined effect of all support practices and management variables. It relates to compaction and construction practices across the site and how they impact the velocity and runoff and its tendency to flow directly downhill. The nominated P factor for all areas without permanent, stable ground cover is 1.3 (based on the default construction phase condition). This value has been used for this assessment.

3.6 Estimated Soil Loss

The annual soil loss rate for each catchment area was calculated based on the assessment parameters described above. The erosion risk was then derived based on Table 4.4.3 of IECA (2008). Appropriate techniques for different ranges of soil loss rates can also be determined. These are summarised in **Table 5** below. The technique type is explained further in the sections below.

Table 5 Estimated Soil Loss, Erosion Risk, and Control Type

Catchment	Annual Soil Loss Rate (tonnes/ha/year)	Erosion Risk (as per IECA, 2008)	Sediment Control Technique Type	Sediment Control Methods
Operational area	27.18	Very Low	Type 3	Sediment Trap
Solar Farm	42.28	Very Low	Type 3	Sediment Trap
Tailings Area	48.32	Very Low	Type 3	Sediment Trap

Type 1 (i.e., sediment basins) controls will not be required during construction of the project, due to the annual soil loss rate being <150t/ha/yr. As per Table 4.5.1 of IECA (2008), the default sediment control standard based on soil loss rate, Type 3 controls will be required. Further information about the sizing of these controls is discussed further in **Section 4**.

3.7 Erosion Risk

Table 6 below summarises erosion risks and control requirements across a full calendar year. Most of the construction will occur during very low erosion risk (between March to September). Typical measures to be implemented are discussed in **Section 4** below.

Table 6 Monthly Erosion Risk Rating

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall (mm)	96.7	91.1	50.2	11.8	10.4	6.6	5.0	2.0	5.4	14.9	30.2	58.1
Rating	M	M	M	VL	VL	VL	VL	VL	VL	VL	L	M

M – Moderate; L – Low; VL – Very Low; Based on Table 4.4.2 of IECA (2008).

4.0 Erosion and Sediment Control

Best practice site management procedures will be implemented to control the severity and extent of soil erosion and pollutant transport during the construction and operational phase of the site. Erosion and sediment control measures required during construction and operation have been derived based on the site erosion hazard and risk. Conceptual details of the controls are provided in the sections below based on the current level of design detail.

During construction, the construction contractor will be responsible for implementing, inspecting, repairing and modifying the controls. TCMG will ensure that the construction contractor is aware of all required procedures and systems for erosion and sediment management and are provided with appropriate clearance approvals and on-ground guidance prior to giving any ground disturbance instructions. TCMG will also be responsible for preventing any environmental harm, and reporting any environmental incidents to relevant authorities, if required. Post-construction, TCMG will be accountable for the implementation, inspection, repair, and modification of the controls and will be subjected to annual internal audits and will be reported on within the annual Environmental Mining Report to be completed as a condition of Mining Authorisation.

4.1 Drainage Control

In accordance with IECA (2008), drainage controls include measures for the diversion of 'clean' stormwater runoff around and through the site; and the diversion of 'dirty' site stormwater runoff to enable treatment of sediment prior to release offsite. The clean and dirty water are defined as follows:

- **Clean water** – Clean water is defined as water that either enters the site from an external source and has not been further contaminated by sediment within the site due to either construction or mining activities. Clean water can also be water that has originated from the site and is of such quality that it does not need to be treated to achieve the required water quality standard (IECA, 2008). Site clean water constitutes surface runoff from areas of non-erodible cover, including vegetation, hardstand, soil binder etc. It also includes runoff from non-disturbed natural areas of the site.
- **Dirty water** – Dirty water is defined as water that is not clean. This includes surface runoff from disturbed areas and contaminated either from construction or mining activities. Dirty water requires treatment with appropriate controls before release from the site (IECA 2008).

Temporary drainage controls installed as part of the construction will enable the management of stormwater within work areas. Drainage controls will perform the following functions:

- Enable diversion of 'clean' up-slope water either around or through the site at non-scouring velocities through clean water drains (See **Figure 7**).
- Enable collection of 'dirty' runoff generated within construction areas and the delivery of this water to an appropriate sediment control measure through dirty water drains (see **Figure 7**). Ensuring that 'dirty' water is diverted away from sensitive receptors including the identified sacred site, Lake Alice. The sediment control measures are discussed in **Section 4.3** below.
- Bunds across the construction area, especially around TSF area, to limit the inflow of clean water flowing into construction areas and restrict dirty water from running off the dirty water drains (**Figure 7**). Bunds will also be put across the solar field area to prevent construction dirty water running off.
- Minimise the risk of soil erosion caused by site-generated flows within the project, using 'intermediate' flow treatment and release points.

The clean water and dirty water drain will be installed for both construction as well as operational phases. The drain design diagram, and the detailed diagram is shown in **Appendix A**. The progressive ESCPs will be developed in accordance with relevant engineering drawings.

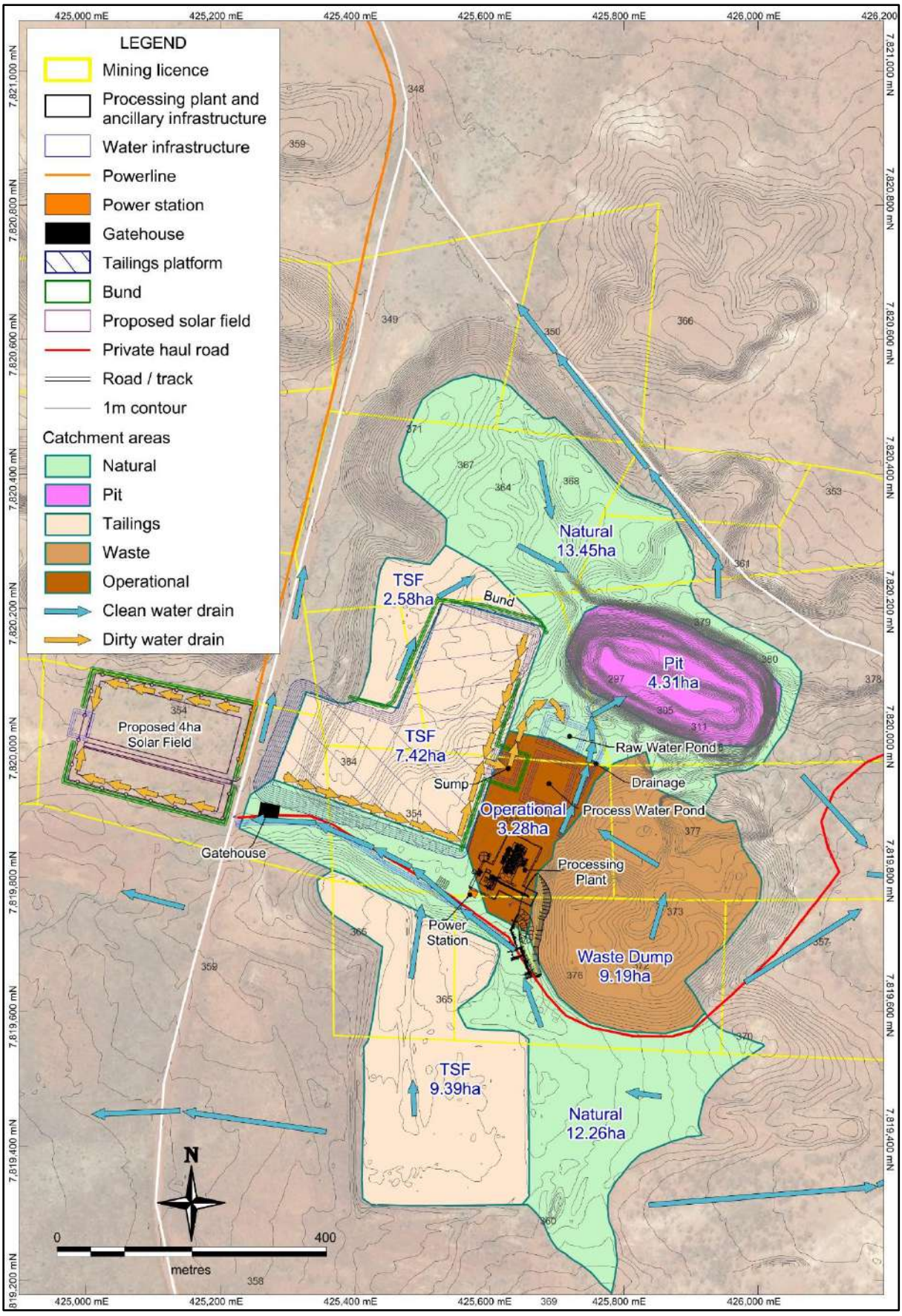


Figure 7 Clean and Dirty Water Drains in Proposed Work Areas

4.2 Erosion Control

The prevention of erosion is the primary approach for preventing adverse impacts associated with sedimentation. Construction and operation activities are to be undertaken to reduce the duration of soil exposure to erosive forces (wind and water), either by holding the soil in place or by shielding it. Measures to be used include a variety of construction practices, structural controls and vegetative measures aimed at managing runoff at a non-erosive velocity, and the protection of disturbed soil surfaces.

The specific measure(s) implemented will be based on seasonal erosion risk and construction considerations, in accordance with IECA guidelines.

Proposed controls are listed below:

- Undertaking initial construction in the dry season months as far as the schedule allows. The construction works start in March (moderate erosion risk), but most of the work will be done post-March, which has a relatively lower erosion risk (dry months).
- Minimise disturbance to existing vegetation as far as practical within the site. Land clearing will be undertaken in a staged approach and in accordance with the Environmental Management System, which includes procedures and methods for minimising levels of soil disturbance and impacts to natural drainage pathways.
- Promptly stabilising exposed post clearing either by surface cover or completed construction works. Protection of exposed surfaces are as follows:
    - Protection of soil surface (temporary and permanent), including placement of hardstand surfaces, use of soil binder, vegetation establishment (including mulch), and protection with mats & blankets (e.g., jute, geotextile) where practical.
- Application of dust suppression by wetting of exposed surfaces (water truck), application of soil binder, and/or application of soil cover.

4.3 Sediment Control

The required standard is determined from the area of disturbance and estimated soil loss. Based on the estimated soil loss (**Table 5**), a Type 3 sediment control standard applies for all areas with proposed disturbance.

As a Type 3 control, a sediment trap pond will be constructed in TSF/operation area and solar farm area to capture the dirty water and sediments from this area. The sediment trap pond of the TSF area will be converted into sump during the operational phase. Similar to erosion control, sediment control will also be a staged approach, and the sediment trap ponds will be constructed prior to further construction, to prevent any sediment-laden water from discharging from the site. The conceptual drainage layout and sediment trap pond placement for TSF/operational and solar area are shown in

Figure 8. Final location of sediment trap pond for solar farm will be designed post-clearing and further site assessment. More detailed drawing is presented in **Appendix A**. Runoff captured within these sediment traps will be re-used within the site, wherever practical (e.g., dust suppression, processing etc.), with excess treated runoff to be discharged to the receiving environment. Any other specific sediment control requirements will be assessed and documented within progressive ESCPs, and will include consideration of season and practicality of control measures, and will be in accordance with the methods outlined in IECA (2008).

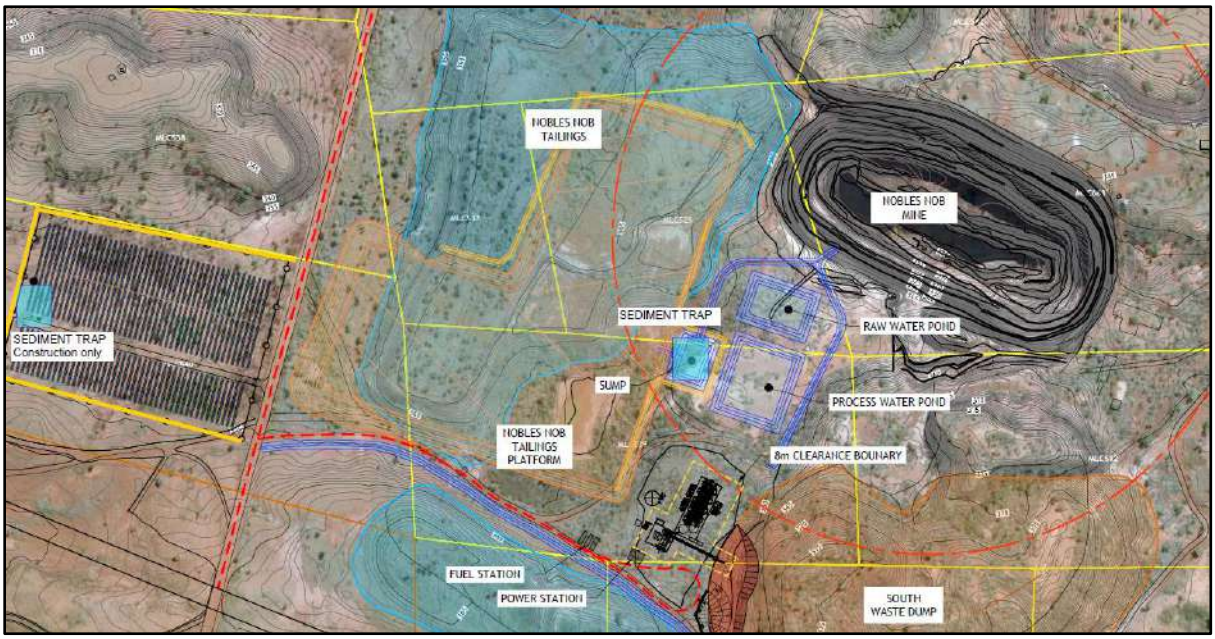


Figure 8 Drawing of Sumps (Sediment Basin) for TSF/Operational Area

4.3.1 Supplementary Sediment Control

Supplementary sediment control measures form an important component of the erosion and sediment control system when implemented in conjunction with other measures. The following supplementary controls will be implemented:

4.3.1.1 Construction Entry and Exit Shake Down

There is a possibility of sediment and soil transportation outside the construction area from the vehicle's tyres. This will be prevented by having only one construction entry/exit point for the site, unless more points are required for site access or topography. An entry/exit sediment control rock pad or vibration grid will also be installed at the entry/exit points. **Figure 9** below shows an example of a typical construction entry/exit shake-down rock pad and vibration grid used to prevent the transport of sediment off-site.

Figure 9 Example of Entry-Exit Shake Down Area (Source: Witheridge, 2012)

4.4 Management of Other Disturbed Areas

4.4.1 Roads

Roads will be designed to be water-shedding to avoid flow accumulation which could lead to erosion of the road surface and embankments. Roads will be constructed using best practice guidelines and techniques. Gravel surface material will be used with the addition of waste rock material where the upper soil profile is found to be unsuitable or substandard for road construction.

Roads will also be sprayed with water to minimise dust generation and to improve the structural integrity of the roads, to minimise sediment erosion and runoff potential. Culverts will be used in parts where the roads intersect drainage lines or diversion structures.

4.4.2 Stockpiles

Stockpiles (e.g., for topsoil) will be constructed no higher than 2 m and subsoil stockpiles no higher than 10 m as per the best practice guidelines. The slope of these stockpiles will also be kept less than 15 degrees to help minimise erosion. Stockpiles may be bunded around the perimeter to minimise sediment runoff, where necessary.

4.4.3 Dust Control

Wind erosion will be controlled by a combination of surface material and water spraying. Surfaces that require additional dust control measures, such as roads, will be sprayed with water periodically as needed.

Any cleared areas that are no longer required will be progressively rehabilitated in accordance with the guidelines. This will restore native plant cover and reduce the risk of erosion and dust generation from exposed soil surfaces.

4.4.4 Roof water

Where possible, rainwater from the roof of site buildings will be diverted into rain harvesting water tanks for use during construction and operations (e.g., dust control). Tanks will be designed for peak capacity with overflow and diversion measures in place.

4.5 Management of Restricted Areas

All areas identified as being non-clearable areas, as well as the restricted works areas and exclusion zones associated with sacred sites, will be flagged and marked on the ground. This is to restrict the movement of vehicles or persons into this area. Maps and GPS coordinates of the restrictive areas will be provided to the clearing contractors.

4.6 Monitoring

During the construction and operational phases of the mine, the stormwater runoff from the site will be monitored. Monitoring will be done as per the site Water Quality Management Plan. The samples will also be collected from the following point (when available):

- Runoff from the dirty water drains.
- Runoff from the clean water drains.
- Runoff entering the sump.
- Runoff entering the pit (from clean water drains).

Where possible, baseline data will be collected on the runoff to understand existing stormwater quality, prior to construction.

The parameters that these samples will be tested for are:

- pH
- electrical conductivity (EC)
- total suspended solids
- turbidity
- dissolved oxygen

Sampling will be undertaken in accordance with procedures set out in the Environmental Protection Authority's Water Quality Sampling Manual, and the samples will be sent to a National Association of Testing Authorities (NATA) accredited laboratory. A standard operating procedure (SOP) will be developed for sample collection.

Monitoring will also be undertaken during the construction phase to determine the impact of activities on the site and to ensure that the sediment controls have been implemented and maintained to a satisfactory standard.

4.7 Maintenance of Controls

All sediment and erosion control measures will regularly undergo maintenance to ensure they remain fully operational during the construction and operational phase of the mine.

An operational plan will be implemented, which will also include the procedure and timing for visual inspection of all controls within regular site environmental monitoring. Repairs will be carried out immediately with the appropriate reporting and documentation of details.

4.8 Triggers and Corrective Actions

The following criteria will be used to determine if the requirement for corrective actions is triggered:

- Evidence of deterioration of downstream water quality (visible evidence such as high turbidity) due to site activities.
- Evidence of significant erosion.
- Visible evidence of a failure of control measures.

If triggered, the following corrective actions will be required:

- The source of water quality deterioration to be located and inspected.
- Prevent the deterioration with prompt temporary controls.
- Inspect the existing controls, and repair where necessary. If necessary, additional controls should be constructed.
- Modify existing controls, if required, to prevent future deterioration.
- Review the management plan if significant deterioration in water quality is observed during the operational phase.

4.9 Rehabilitation

Following the completion of construction and operational activities, long-term protection of the site from erosion will be provided by the final rehabilitated landform. The draft Mine Closure Plan for the site will provide details of the site closure objectives, closure criteria for each landform, a work program to achieve the closure objective, and monitoring methods.

Permanent erosion control measures will include a combination of vegetative, hardstand and structural erosion control techniques, implemented progressively. Sediment control measures will continue to be managed and maintained until the site is assessed as being adequately stabilised.

Existing basins may be required to be retained beyond mine closure to provide ongoing water quality management (with appropriate modifications to outlets).

In relation to erosion and sediment control, the following practices will assist in achieving site stabilisation and long-term protection for downstream environments:

- Topsoil is managed to ensure the preservation of its long-term value.
- Selected plant species for revegetation are appropriate for site conditions and endemic to local vegetation communities.
- Erosion and sediment controls are to remain in place until a minimum 75 % self-sustaining ground cover (or equivalent) is achieved for disturbed areas, with a minimum of 90 % for drainage features.

Site-specific controls will be provided in a closure ESCP, which will be prepared based on the constructed site and the proposed rehabilitation program.

5.0 ESCP Management

5.1 Responsibilities

Responsibility for this ESCP, including implementation of and adherence, is summarised in **Table 7** below.

Table 7 Responsibilities

Entity	Primary Responsibility
Project Manager/Chief Operating Officer (TCMG)	- Overall implementation of the ESCP and management of environmental impacts and risks. - Ensure all employees and contractors are aware of all required procedures and systems for erosion and sediment management and are provided with all the necessary resources to implement the requirements effectively. - Ensure all employees and contractors are provided with appropriate clearance approvals and on-ground guidance prior to giving any ground disturbance instructions. - Responsible for reporting any incidents to relevant authorities if required. - Implementation, monitoring, reporting and corrective actions within the ESCP. - Undertake an annual review of the erosion and sediment control EMP.
Site Manager/Construction Manager	- Implementation of strategies, requirements, procedures and measures to ensure that appropriate environmental protection is in place. - Induction, supervising and monitoring of the ESCP. Undertake inspections, reviews and monitoring as required and stated in this plan.

	- Ensure that details of any incident/non-conformances are recorded, and relevant authorities are notified.
Safety Manager	- Develop and implement Site Safety Rules. - Ensure safety procedures and protocols have been developed and implemented before commencing any work. - Ensure all employees and contractors are provided with appropriate erosion and sediment management related training.
Employees and Contractors	- Report any non-compliance with the erosion and sediment management requirements through the event/incident reporting system. - Adherence to this ESCP and Site Safety Rules.

5.2 Environmental Notification

In the event of a major incident or non-conformance which has the potential to cause significant environmental harm, the relevant authority will be notified of the incident as soon as practicable after being made aware of the incident.

The duty to notify will be applicable to the following people:

- The personnel/contractor/sub-contractor undertaking the activity.
- The occupant of the premises where the incident occurs.

In the event of an incident, the Site Manager will document the following details:

- The time, date, nature, duration and location of the incident or non-conformance.
- The nature of the incident/non-conformance and the cause.
- Details of the circumstances in which the incident/non-conformances occurred.
- The action that has been taken and actions that are proposed to be taken to deal with the incident/non-conformance.
- All incidents and near-misses will be recorded within the Tennant Mining Environmental Incident Register in the online document management system *Skytrust*.

5.3 Training and Awareness

The requirements of this ESCP will be provided to contractors and employees through training, site induction, toolbox talks, and site alerts. Training will be part of the safety inductions that will be conducted prior to commencing site work. This will cover:

- Identification of site environmental values.
- An understanding of the requirements of applicable environmental management and monitoring plans.
- Roles and responsibilities of site personnel.
- Communication procedures (both normal and emergency).
- Incident reporting procedure to be followed on site.
- Environmental emergency response procedures.

- Site environmental controls (e.g., associated with ground clearing, weed management, erosion and sediment control, waste management, heritage, and archaeological sites/ restricted work areas etc.).
- The potential consequences of not meeting environmental obligations/responsibilities.

It will be a mandatory requirement that everyone undertaking any site work will have to be properly inducted. Records of inductions will be maintained within the Tennant Mining environmental management system in the online document management system *Skytrust*.

5.4 Inspection and Auditing

The ESC controls are to be regularly inspected. The frequency of inspections will be as follows:

- Inspected at least weekly during construction and operation as a part of site environmental inspections.
- Inspected within 24 hours of an expected high rainfall event.
- As soon as reasonably practical after a high rainfall event (i.e., > 10 mm in a 24-hour period).

Visual assessment will be carried out of surface water runoff structures, drainage structures and erosion control structures to ensure they are operating efficiently.

A site inspection checklist has been developed (see **Appendix B**).

5.5 Updates and Variation

An ESCP is a dynamic document, and it requires regular updates as the mining operations progress altering the site characteristics. Any alterations to the implementation of erosion and sediment controls within specific areas are to be recorded and outlined in updated ESCPs. This may include the following scenarios:

- Controls require alteration due to change in work practices or new stage of works is commenced.
- Controls require alteration due to change in seasonal conditions (e.g., dry season vs wet season).
- Changes occur in slope gradients and drainage paths, with their exact form unpredictable before works start.
- A change in the design occurs that materially affects the site works.
- The desired outcome (e.g., protection of receiving environments) is not being achieved under current plan.

5.6 Reporting

TCMG will undertake an annual audit of the performance of erosion and sediment controls on site, taking into consideration the weekly monitoring of controls, any repairs and maintenance carried out, and any environmental incidents recorded. Findings will be reported within the annual Environmental Mining Report, to be submitted to the Minister as required under the Mining Authorisation. If controls are not found to be adequate, this will trigger an update and variation of this plan.

6.0 References

- ANZG. (2018). Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines
- Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ). (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Canberra.
- ATC Williams (ATCW). (2022). Nobles Nob Water Management Plan. Prepared for Tennant Consolidated Mining Group Pty Ltd in February 2022.
- Bureau of Meteorology (BoM). (2022). Accessed from Climate statistics for Australian locations (bom.gov.au) on 10 October 2022.
- Department of Environment, Parks and Water Security (DEPWS). (2021). Land Clearing Guidelines – Northern Territory Planning Scheme. TRM number LRM2021/0077~0002. Prepared in September 2021.
- IECA. (2008). Best Practice Erosion and Sediment Control. Picton NSW: International Erosion and Sediment Control Association (Australasia).
- NHMRC, NRMMC. (2011). Australian Drinking Water Guidelines Paper 6 National Water Quality Management Strategy. National Health and Medical Research Council, National Resource Management Ministerial Council, Commonwealth of Australia, Canberra.
- Tennant Consolidated Mining Group Pty Ltd (TCMG). (2022). Mining Management Plan – Nobles Nob & Juno. March 2022.
- Tennant Gold Pty Ltd. (2018). Mining Management Plan Tennant Creek Project – Nobles Nob & Juno. October 2018 – Amendment #2. https://industry.nt.gov.au/__data/assets/pdf_file/0010/586873/mmp-tennant-gold-2018.pdf
- Umwelt Australia Pty Ltd (Umwelt). (2021). Groundwater Assessment Report Nobles Nob Mine. Prepared for Tennant Consolidated Mining Group Pty Ltd in December 2021.
- Witheridge. (2012). Erosion and Sediment Control – A Field Guide for Construction Site Managers. Catchments & Creeks Pty Ltd., Brisbane, Queensland

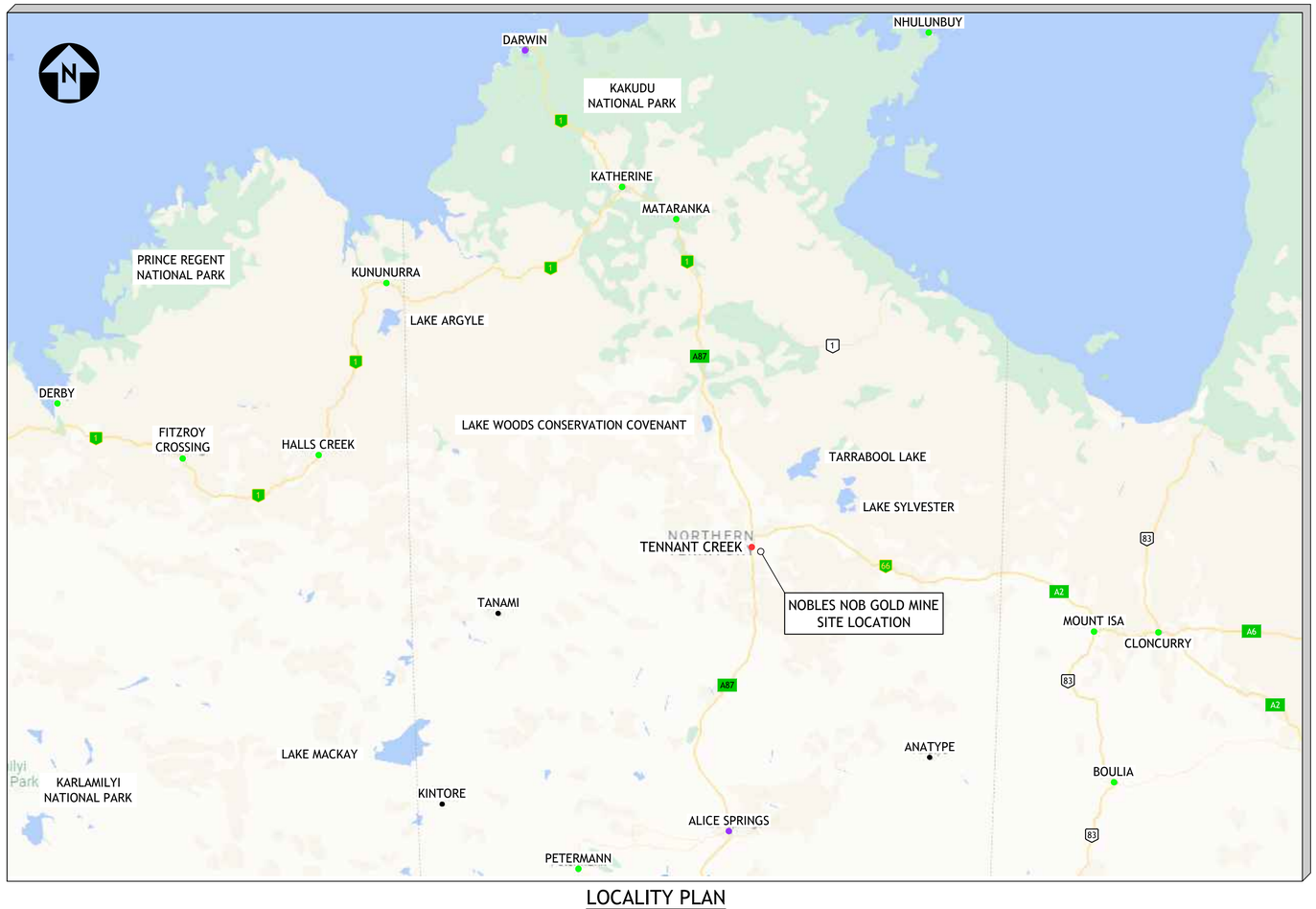
Appendix A. Drawings

TENNANT MINNG

NOBLES NOB GOLD MINE

CONSTRUCTION OF EARTHWORKS AND STORMWATER DRAINAGE

JULY 2022



LOCALITY PLAN

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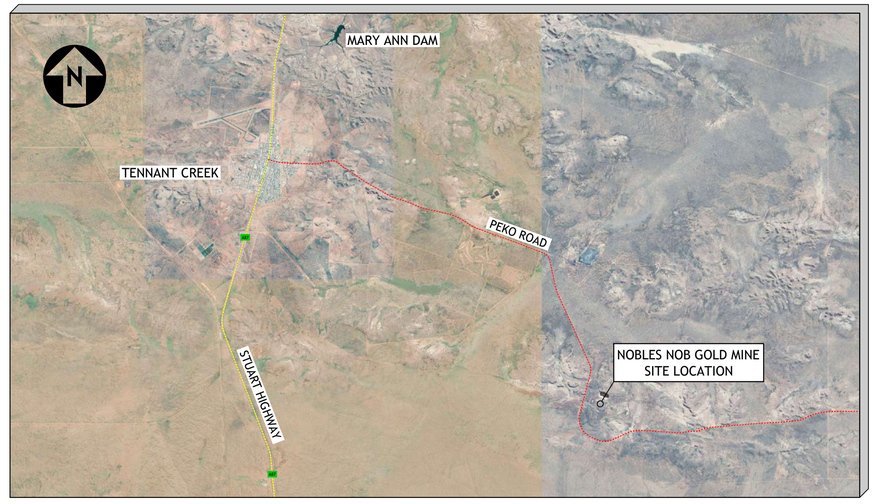

MINE SITE

N.T.S

DRAWING LIST

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5449-40-DWG-CI-00001	GENERAL ARRANGEMENT PLAN
5449-40-DWG-CI-00002	OVERALL EARTHWORKS PLAN
5449-40-DWG-CI-00003	TSF, DRAINS & PONDS - GENERAL ARRANGEMENT & SETTING OUT PLAN
5449-40-DWG-CI-00004	TSF, DRAINS & PONDS - CROSS SECTIONS & DRAIN PROFILES
5449-40-DWG-CI-00005	PROCESS PLANT PLATFORM & STORMWATER DRAIN - GENERAL ARRANGEMENT & SETTING OUT PLAN
5449-40-DWG-CI-00006	PROCESS PLANT PLATFORM - CROSS SECTIONS & STORMWATER DRAIN PROFILE
5449-40-DWG-CI-00007	SITE ACCESS ROAD - LAYOUT & LONGITUDINAL SECTION

wave international

DETERMINE • DESIGN • DELIVER

TENNANT MINING

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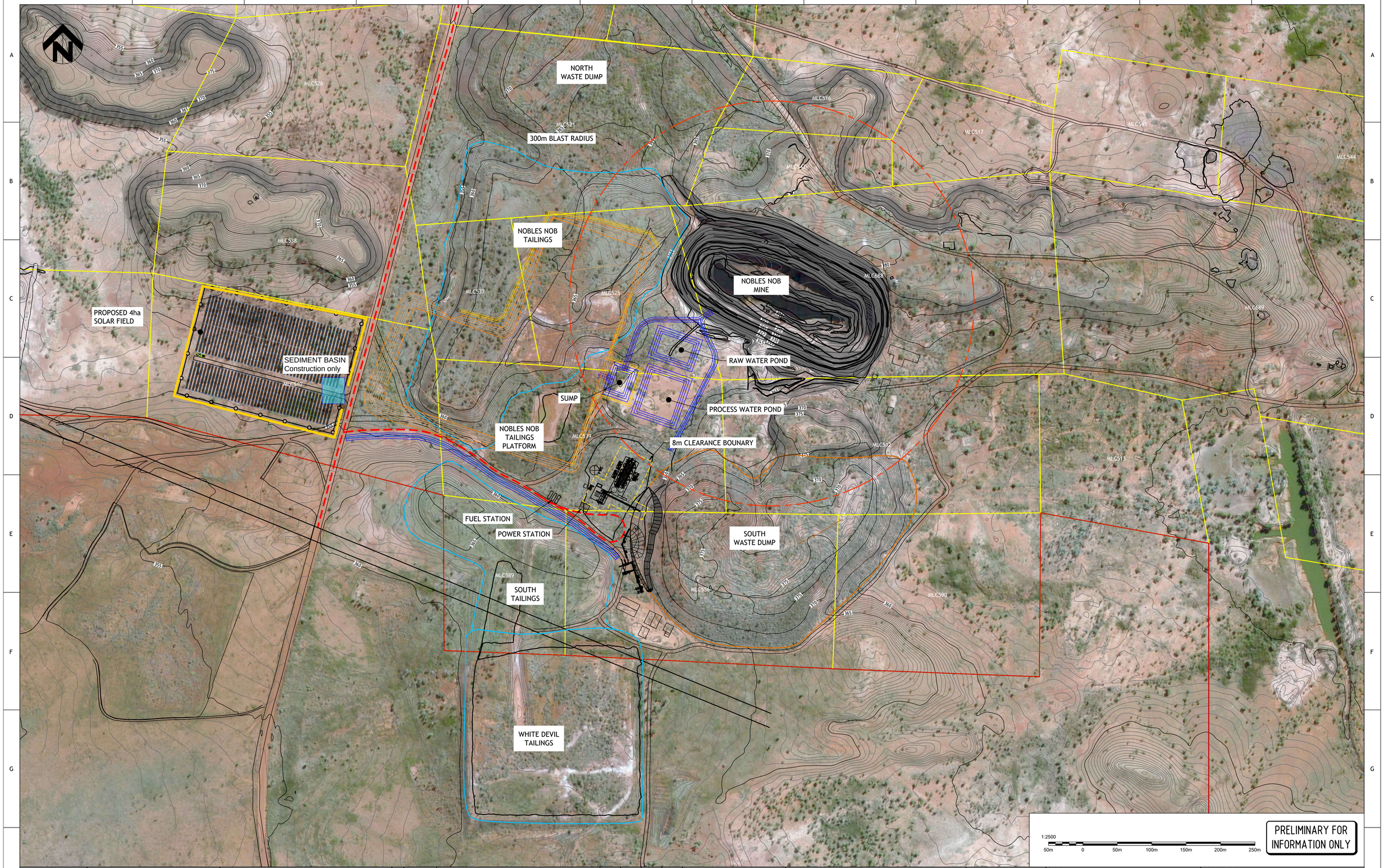
REVISION: A



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DRAWING REFERENCE	

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IN THE ABSENCE OF THE APPROVED SIGNATURE, THIS DRAWING SHALL BE TREATED AS PRELIMINARY

DRAWN	J.GREEFF	02.02.2022
DESIGNED		02.02.2022
CHECKED	D.PIENAAR	02.02.2022
ENGINEER	S.WOLMERANS	02.02.2022
APPROVED		

wave international
DETERMINE • DESIGN • DELIVER

CLIENT: TENNANT CREEK GOLD MINE
PROJECT: NOBLES NOB MINE
TITLE: GENERAL ARRANGEMENT PLAN

DRAWING STATUS: ISSUED FOR INFORMATION
CLIENT DWG NO:
AS1100-1992 ALL DIMENSIONS IN mm

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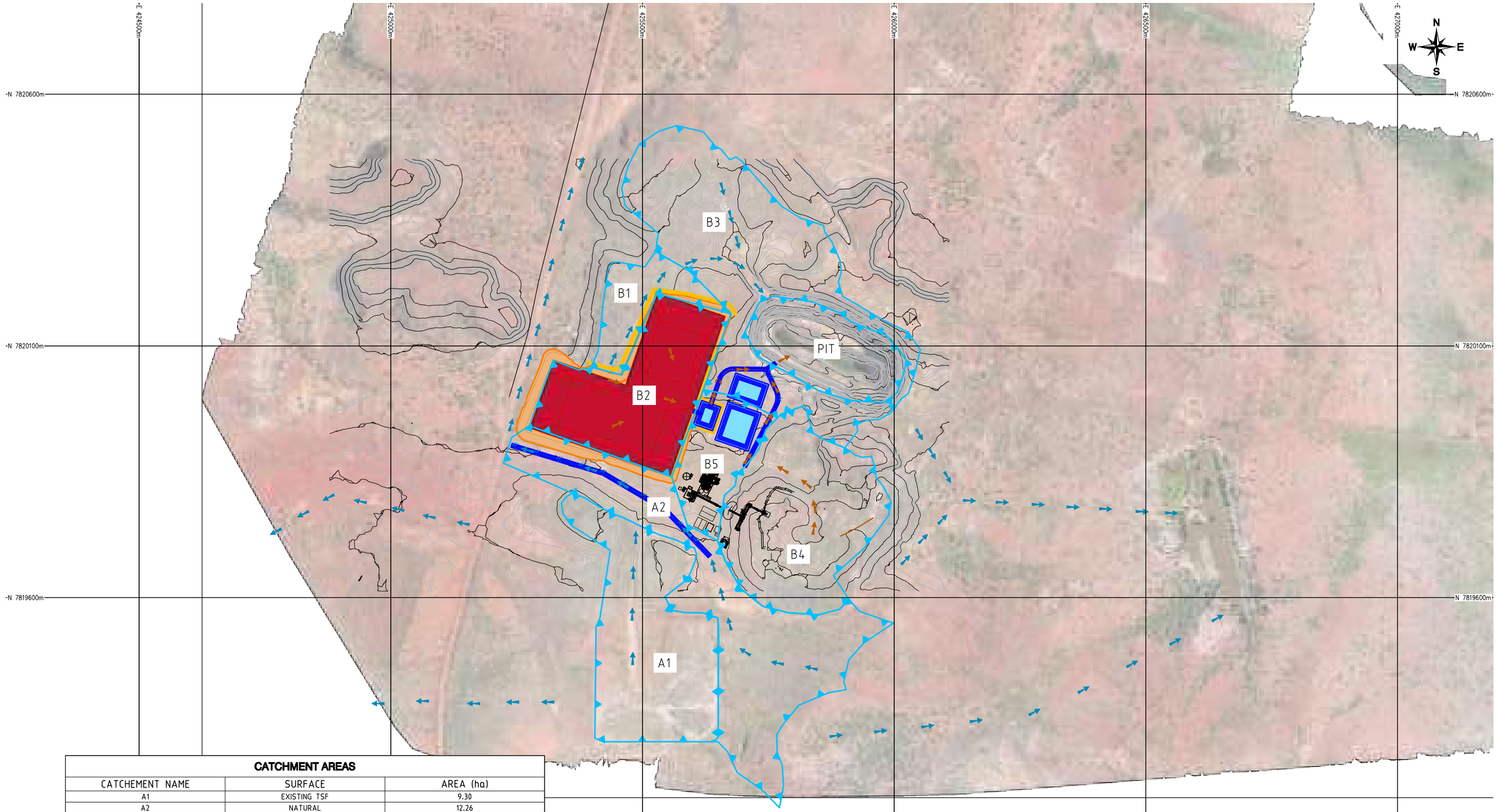

CATCHMENT AREAS

CATCHEMENT NAME	SURFACE	AREA (ha)
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A2	NATURAL	12.26
B1	EXISTING TSF	2.58
B2	GEOTUBES	7.42
B3	NATURAL	13.45
B4	WASTE DUMP	9.19
B5	OPERATIONAL AREA	3.28
PIT	PIT	4.31

ISSUED FOR REPORTING
NOT FOR CONSTRUCTION

No.	DESCRIPTION	DATE	DRAWN	CHECK'D	APPR'D
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SCALE: 1:7,500
JOB No. 121089.01
DATE FEB. 2022
DESIGN BH
DRAWN ARL
CHECKED MWJ
APPROVED EJB

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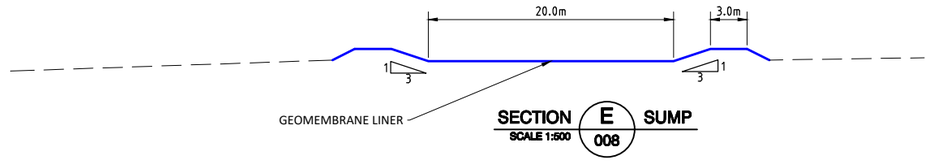
TENNANT CONSOLIDATED MINING GROUP PTY LTD
NOBLES NOB GEOTUBES PLATFORM CONCEPT DESIGN

CATCHMENT PLAN
OVERALL SITE (CLOSURE)

DWG. No. 121089.01-010

SHEET SIZE A3 Rev. A

SHEET 1 OF 1



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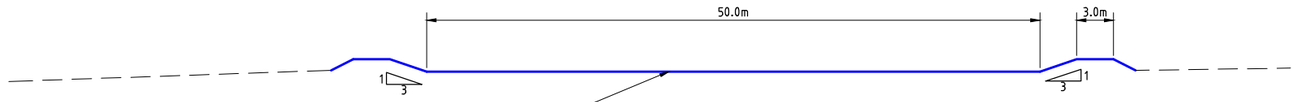

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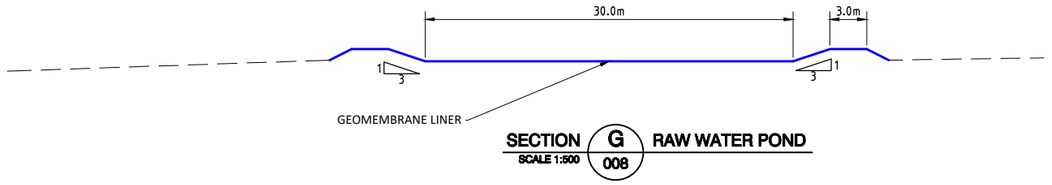

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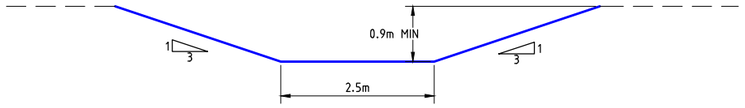

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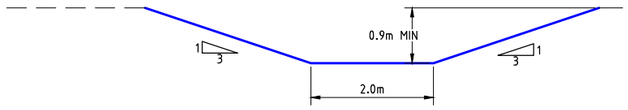

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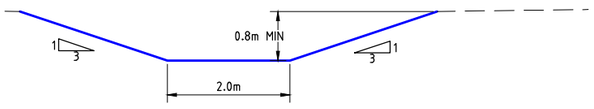

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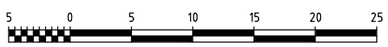

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DATE	FEB. 2022
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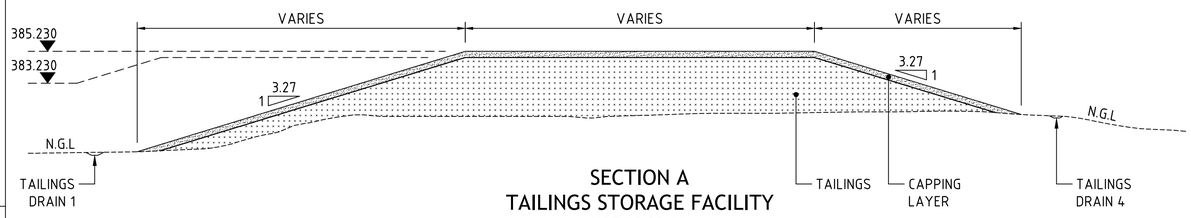
PONDS AND DRAINS
SECTIONS AND DETAILS

DWG. No. 121089.01-011

SHEET SIZE A3 | Rev. A

SHEET 1 OF 1



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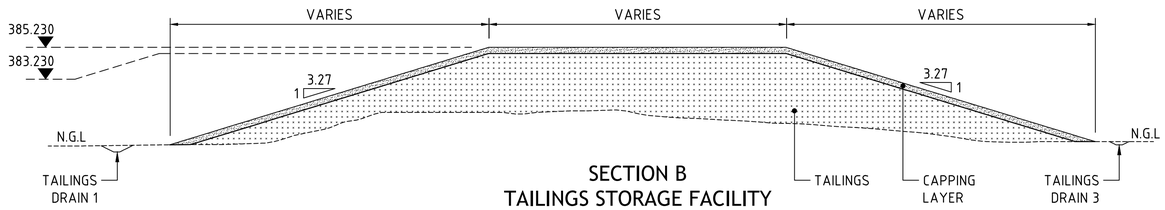

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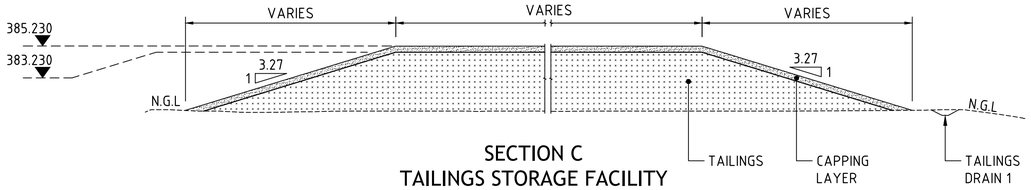

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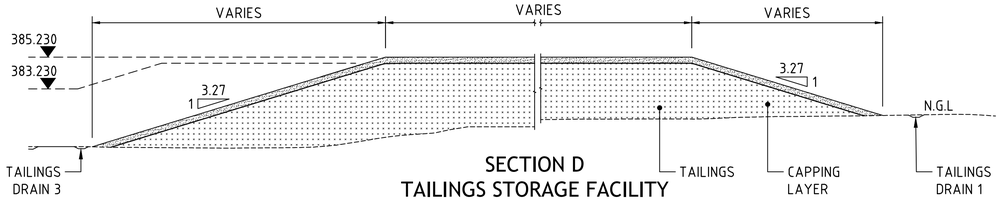

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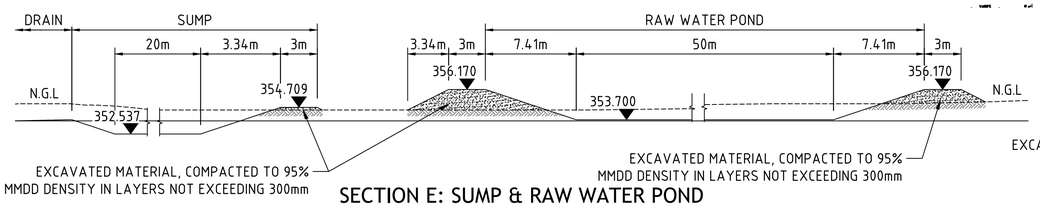

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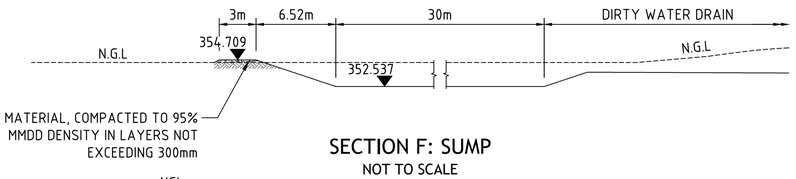

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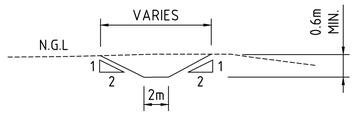

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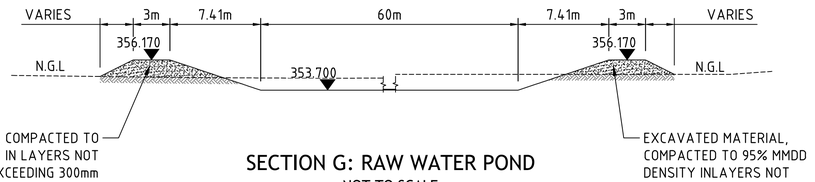

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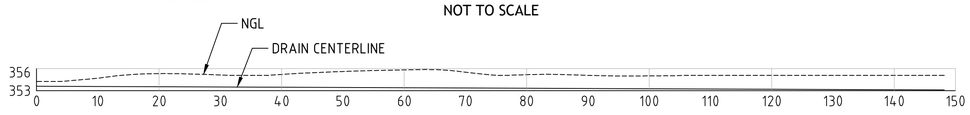

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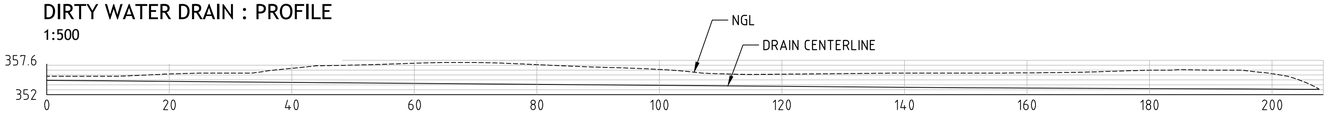

CLEAN WATER DRAIN : PROFILE
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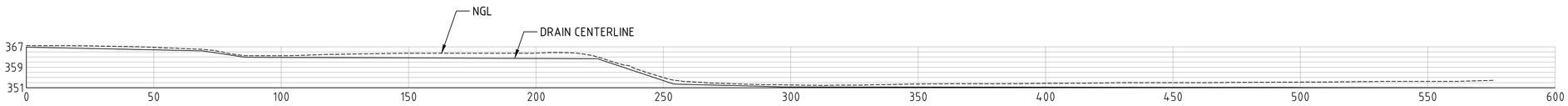
TSF DRAIN 1
PROFILE
1:1000



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PROFILE
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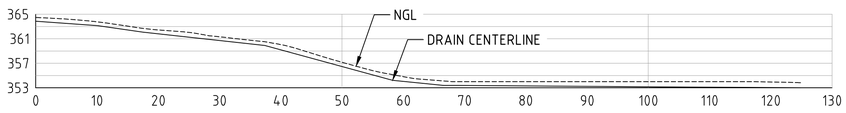

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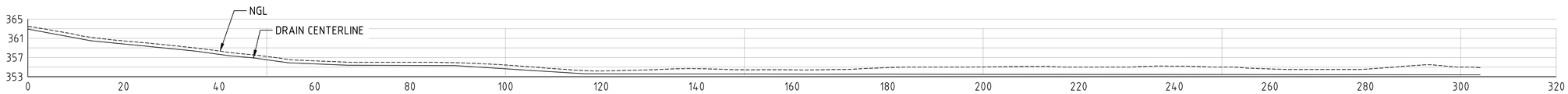

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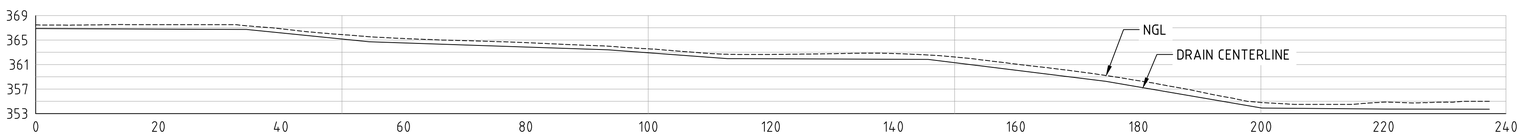


PRELIMINARY FOR CLIENT REVIEW

REV	DATE	REVISION DESCRIPTION	DRAWN	CHECKED	ENGINEER	APPROVED
A	22.07.2022	ISSUED FOR REVIEW	J.G	D.P	S.W	S.W

IN THE ABSENCE OF THE APPROVED SIGNATURE, THIS DRAWING SHALL BE TREATED AS PRELIMINARY

		DATE
DRAWN	J.GREEFF	22.07.2022
DESIGNED	S.GELDENHUYS	22.07.2022
CHECKED	D.PIENAAR	22.07.2022
ENGINEER	S.WOLMERANS	22.07.2022
APPROVED	S.WOLMERANS	22.07.2022

DRAWING NUMBER | DESCRIPTION
DRAWING REFERENCE

TENNANT MINING

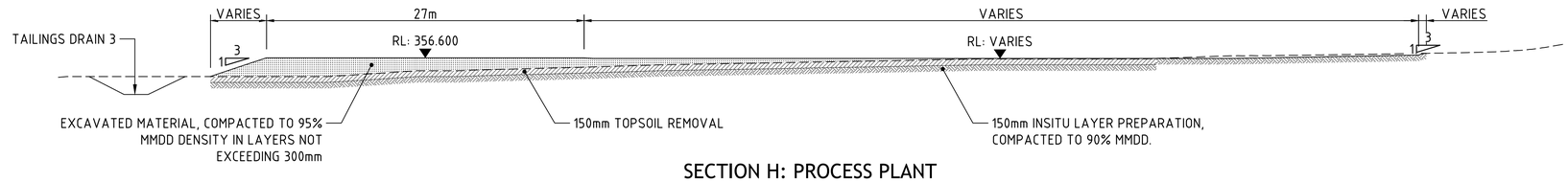
wave international
DETERMINE • DESIGN • DELIVER

CLIENT: TENNANT MINING
PROJECT: NOBLES NOB GOLD MINE
TITLE: TAILING STORAGE FACILITY EARTHWORKS TSF, DRAINS & PONDS CROSS SECTIONS & DRAIN PROFILES

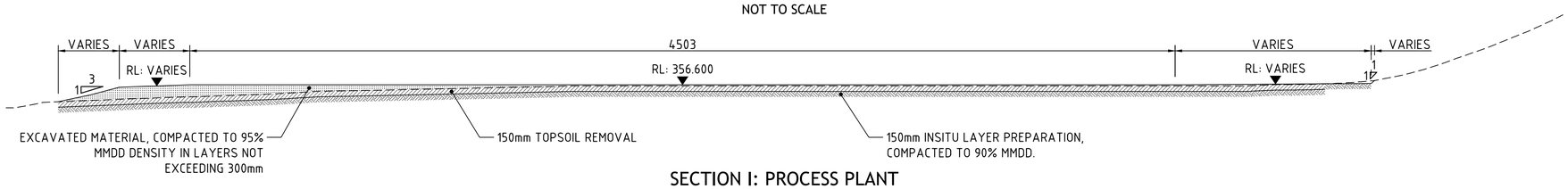
DRAWING STATUS: ISSUED FOR REVIEW
CLIENT DWG NO
AS1100-1992 ALL DIMENSIONS IN mm

SCALE	GRID	DATUM	SIZE
AS SHOWN	MGA94 Z 53	GDA94	A1

DWG NO: 5449-40-DWG-CI-00004 | REV: A



SECTION H: PROCESS PLANT
NOT TO SCALE



SECTION I: PROCESS PLANT
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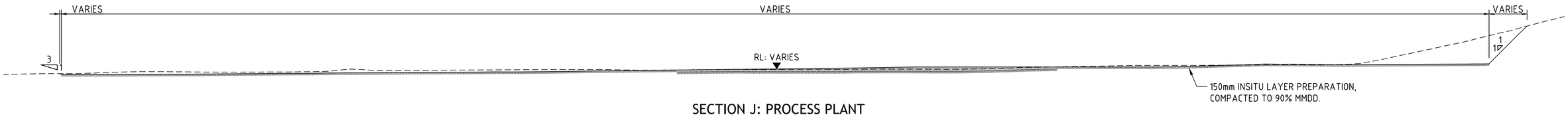

SECTION J: PROCESS PLANT
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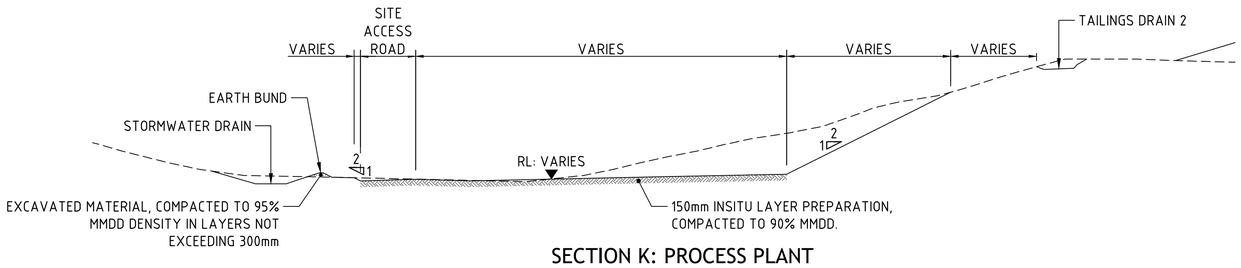

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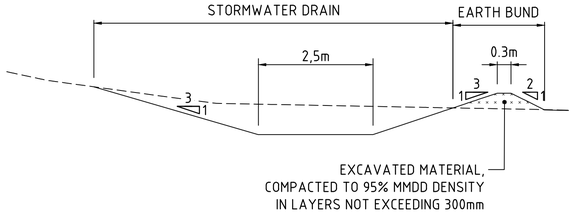

TYPICAL SECTION: STORMWATER DRAIN AND EARTH BUND
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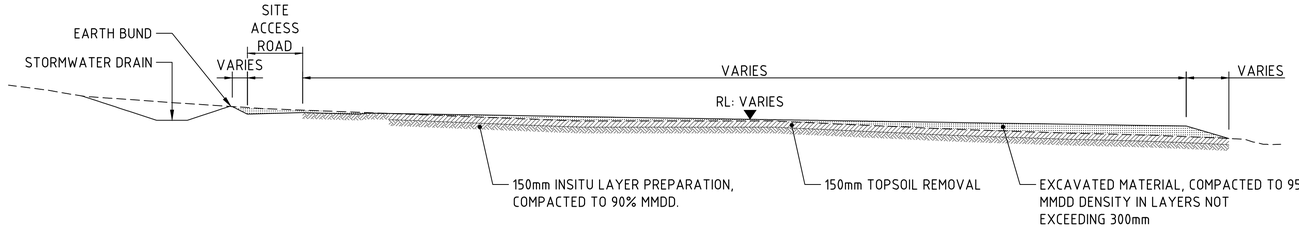

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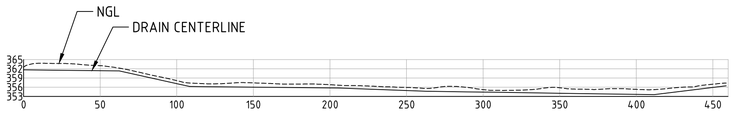
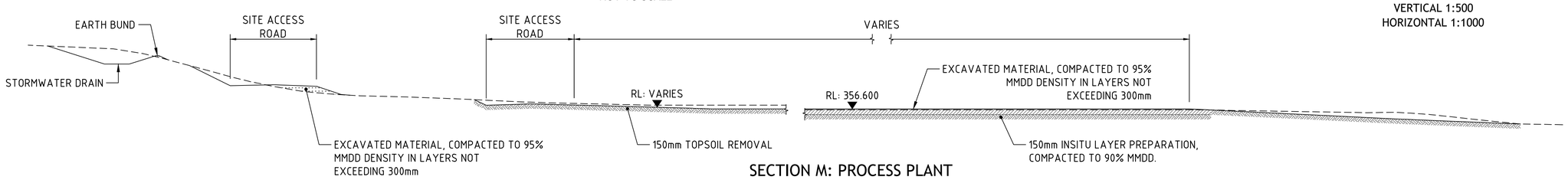


STORMWATER DRAIN: PROFILE
VERTICAL 1:500
HORIZONTAL 1:1000



SECTION M: PROCESS PLANT
NOT TO SCALE

PRELIMINARY FOR CLIENT REVIEW

REV	DATE	REVISION DESCRIPTION	DRAWN	CHECKED	ENGINEER	APPROVED
A	22.07.2022	ISSUED FOR REVIEW	J.G	D.P	S.W	S.W

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DRAWN	J.GREEFF	22.07.2022
DESIGNED	S.GELDENHUYS	22.07.2022
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ENGINEER	S.WOLMERANS	22.07.2022
APPROVED	S.WOLMERANS	22.07.2022

DRAWING NUMBER | DESCRIPTION
DRAWING REFERENCE

TENNANT MINING

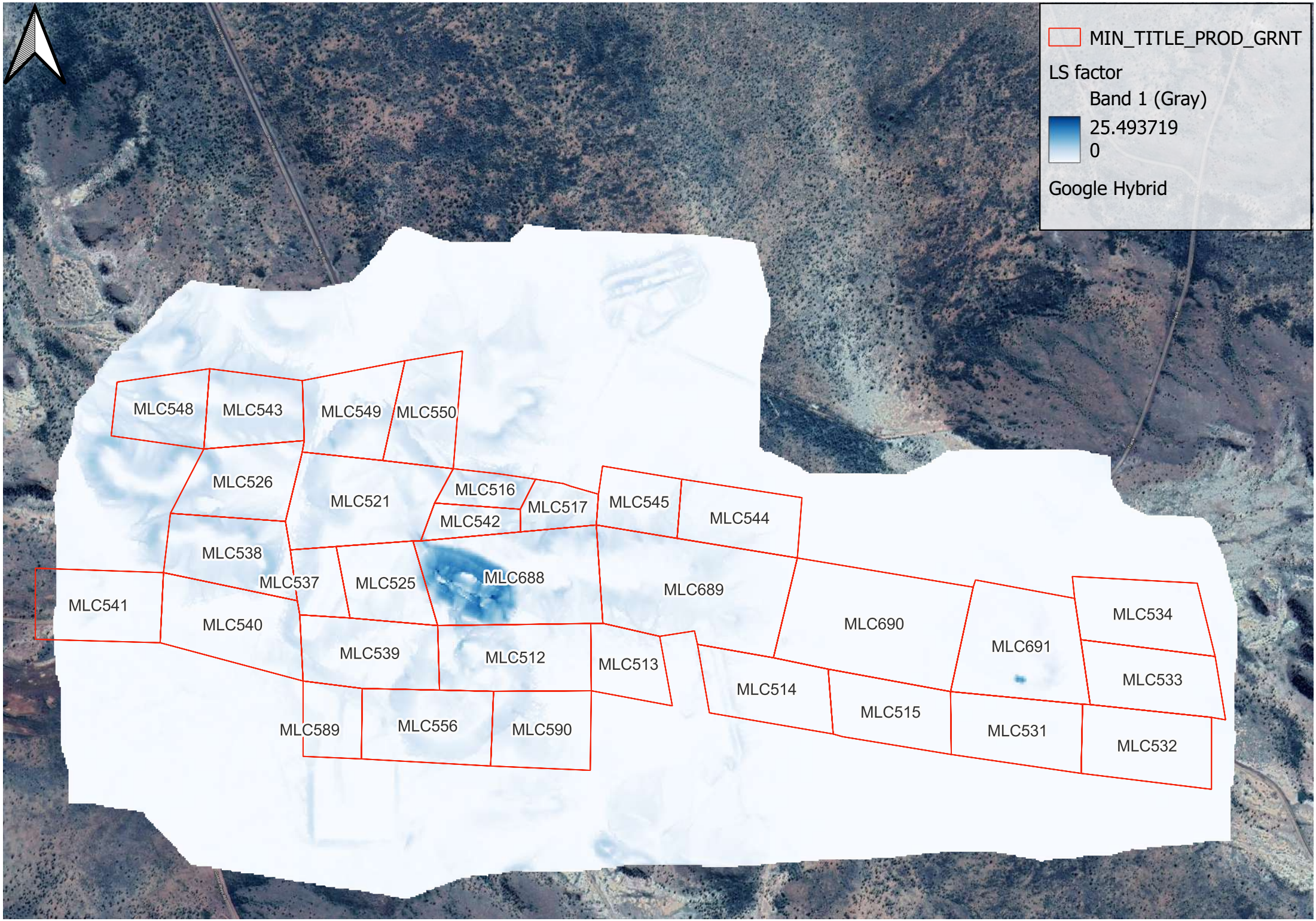
wave international
DETERMINE • DESIGN • DELIVER

CLIENT: TENNANT MINING
PROJECT: NOBLES NOB GOLD MINE
TITLE: TAILING STORAGE FACILITY EARTHWORKS - PROCESS PLANT PLATFORM - CROSS SECTIONS & STORMWATER DRAIN PROFILE

DRAWING STATUS: ISSUED FOR REVIEW
CLIENT DWG NO
AS1100-1992 ALL DIMENSIONS IN mm

SCALE	GRID	DATUM	SIZE
AS SHOWN	MGA94 Z 53	GDA94	A1

DWG NO: 5449-40-DWG-CI-00006 REV: A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Google Hybrid
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MLC690
MLC691
MLC534
MLC533
MLC514
MLC515
MLC531
MLC532
MLC589
MLC556
MLC590

Appendix B. Site Inspection Checklist

ESC INSPECTION CHECKLIST

INSPECTION CHECK SHEET Sheet__of__

GENERAL INFORMATIONS

Project Name: _____File No: _____

Developer Name: _____ Contractor Onsite:_____

Inspection Date: _____Time: _____Weather: _____mm of Rain Last Week:_____

Inspection Type: { } Routine Weekly { } Pre-Rain { } During Rain { } Post Rain

STAGE OF CONSTRUCTION

{ } Pre-Construction Conference: { } Clearing and Grubbing: { } Rough Grading:

{ } Finish Grading: { } Building Construction: { } Final Stabilization:

INSPECTION CHECKLIST

YES NO NA (Not Applicable)

Part 1 : Inspection on Erosion Controls Measures

{ }	{ }	{ }	Is the clearing of the construction area carried out in phase?
{ }	{ }	{ }	Are the areas which designated to be preserve of the existing vegetation intact is not disturbed?
{ }	{ }	{ }	Are all temporary stockpiles or construction material located in approved areas and protected from erosion?
{ }	{ }	{ }	Are soil stockpiles adequately stabilized with seeding and/or sediment trapping measures?
{ }	{ }	{ }	Have all denuded areas requiring temporary or permanent stabilization been stabilized? Seeded? yes/no Mulched? yes/no Gravelled yes/no
{ }	{ }	{ }	Does permanent vegetation provide adequate stabilization?
{ }	{ }	{ }	Are all exposed slopes protected from erosion through the implementation of acceptable soil stabilization practices?
{ }	{ }	{ }	Are finished cut and fill slopes adequately stabilized?
{ }	{ }	{ }	Is there any evidence of erosion of cut or fill slope?

Part 2 : Inspection on Sediment Controls Measures

{ }	{ }	{ }	Have sediment-trapping facilities been constructed as a first step in stripping and grading?
{ }	{ }	{ }	For perimeter sediment trapping measures are earthen structures stabilized?
{ }	{ }	{ }	Are sediment basins, sediment traps, sediment fence/barriers and check dam/rock weir installed where needed as per ESC plan?
{ }	{ }	{ }	Are sediment basins, sediment traps, sediment fence/barriers and check dam/rock weir properly maintained, repairs and sediment was regularly removed and clean as per ESC Plan maintenance schedule?
{ }	{ }	{ }	Are sediment controls in place at site perimeter and storm drains inlets?
{ }	{ }	{ }	Is the water from the construction site adequately prevented from directly entering the permanent drainage system unless it is relatively sediment free (i,e the catchment area has been permanently landscaped and/or any likely sediment has been treated)?
{ }	{ }	{ }	Are the sediment controls measure onsite adequately installed and the sediment are effectively treated from the stormwater runoff from the construction site?
{ }	{ }	{ }	Is there any evidence that the sediment is leaving the construction site without adequately treated?

Part 3 : Inspection on Conveyances and Flows Controls Measures

{ } { } { } Are on-site channels. Inlet and outlet are adequately stabilized and protected?

{ } { } { } Do all operational storm drainage inlets have adequate inlet protection?

{ } { } { } Are stormwater conveyance channels adequately stabilized, protected and lined with suitable material at badly eroded stretches?

{ } { } { } Are stormwater conveyance channels, culvert, conduit, roadside ditches, toe of slopes etc, adequately stabilized and with proper inlet/outlet protection and energy dissipater?

{ } { } { } Are the outlet of sediment basins and sediment traps are adequately stabilized with proper outlet protection and energy dissipater?

{ } { } { } Are adequate check dam/rock weir or any others energy dissipater method which are used to reduce the erosive effects of flows velocity in the stormwater conveyance channels

{ } { } { } Are temporary stream crossings of non-erodible material installed where applicable?

{ } { } { } Are the stormwater conveyance channels, the riprap, check dam, rock weir, stream crossing, etc, properly maintained repairs and deposited sediment was regularly removed and clean as per ESC Plan maintenance schedule?

Part 4 : Others

{ } { } { } Are properties and waterways downstream from development adequately protected from erosion and sediment deposition due to increases in peak stormwater runoff?

{ } { } { } Are soil and mud kept off public roadways at intersections with site access roads?

{ } { } { } Are utility trenches stabilized properly?

{ } { } { } Is there any self-auditing of **ESCP** was carried out onsite (based on onsite records of inspection check sheets and inspection log book)

{ } { } { } Have all temporary control structures that are no longer needed been removed?

{ } { } { } Do any structural BMPs practices require repair or clean-out to maintain adequate function? If yes, indicate in details.

{ } { } { } Does the ESCP require revisions? If yes, explain:

Comments:

Inspected by:_____ Developer's Representative: _____

Position:_____ Position:_____

Signature: _____ Signature: _____

ESC INSPECTION CHECKLIST

EROSION AND SEDIMENT INSPECTION LOG

Site: _____ **Contractors on Site:** _____

Heavy Equipment on Site: _____ **Activities on Site:**

Date: _____ **Weather:** _____ **mm of rain in the last week:** _____

Note condition of the following measures and sediment levels where applicable

MEASURE	CONDITION/LOCATION	SEDIMENT LEVEL	ACTION REQUAIRED YES/NO	TYPE OF ACTION	ACTION COMPLETED (DATE)	INITIALS
Silt fences						
Temporary Storage Facilities						
Outlet of temporary storage facilities						
Interceptor Swales						
Steeper Slopes						
Cover of Rough Grades						
Catchbasins Filtering Controls						
Dust Control						
Mud Tracking						
Debris Control						

Other Comments (Summarize):

_____

_____

Inspectors Signature: _____ **Inspectors Name** _____

Appendix C. Letter of Endorsement

EcOz Environmental Consultants

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E: ecoz@ecoz.com.au
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Darwin, Northern Territory
Level 1, 70 Cavenagh St,
GPO Box 381, Darwin, NT 0801

08 February 2023

Our ref.: EZ22220

Dr Ashish Mishra
Groundwater Manager & Principal Hydrogeologist
Tennant Consolidated Mining Group
amishra@tennantmining.com.au

Re: Erosion and Sediment Control Plan – Nobles Nob Gold Project

Dear Ashish,

I make reference to the following documents prepared by Tennant Consolidated Mining Group for the Nobles Nob Gold Project:

- *Erosion and Sediment Control Plan, Nobles Nob Gold Project* by Tennant Consolidated Mining Group Pty Ltd, ER012/Version 3.0, January 2023

This Primary ESCP provides a general overview of the erosion and sediment control measures that will be implemented to minimise impact on proposed activities to the environment.

As a Certified Professional in Erosion and Sediment Control (CPESC #11426), I certify that the plans and associated drawings and checklists in this document are fit for purpose for the approvals process.

This Primary ESCP has been developed in accordance with the following 'best practice' guidelines:

- IECA 2008, *Best Practice Erosion & Sediment Control*. International Erosion Control Association (Australasia), Picton NSW.

Progressive ESCPs for construction and operation are required to be developed by TCMG prior to the commencement of site clearing and construction works.

These documents may require multiple revisions to remain appropriate and consistent with site conditions.

Yours sincerely,

Adele Faraone
CPESC #11426

Environmental Engineer
EcOz Environmental Consultants
adele.faraone@ecoz.com.au