

MBLEI 7/26/16 [SL_AS130349] F:\AS130349_NSW SMELTER_LANDFILL DESIGN REV



LEGEND

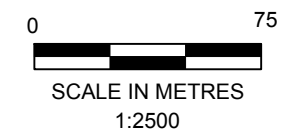
- CONTAINMENT CELL LIMIT (CONCEPTUAL)
- CONTAINMENT CELL CAP LIMIT (CONCEPTUAL)
- 25 EXISTING CONTOUR MAJOR (5 METRE)
- 24 EXISTING CONTOUR MINOR (1 METRE)
- STORMWATER DRAINAGE CHANNEL
- TOE DRAIN
- UNDERGROUND LEACHATE / WWTP PIPING
- EPHEMERAL CREEK

NOTES:

1. THE PRIMARY STOCKPILE WILL STORE EXCAVATED CLAY TO BE REUSED IN THE CONTAINMENT CELL LINER AND CAP, AND CRUSHED REFRACTORY/CONCRETE TO BE REUSED IN ACCESS ROADS. IT IS ASSUMED THAT REFRACTORY AND CONCRETE WILL BE CRUSHED IN THE SMELTER BUILDINGS.
2. THE FOOTPRINT OF THE WWTP IS BASED ON THE SYSTEM SPECIFIED IN "STAGE 2 WATER TREATMENT OPTIONS REPORT" AND IS SUBJECT TO DETAILED DESIGN.
3. THE PROPOSED SUPPORT STRUCTURE DETAILS AND POSITIONING WILL NEED TO BE REASSESSED DURING THE DETAILED DESIGN STAGE.
4. THE ACCESS ROAD CROSSING THE EPHEMERAL CREEK TO BE ASSESSED TO DETERMINE IF UPGRADES ARE NECESSARY TO SUPPORT TRUCK TRAFFIC AND ADDITIONAL HYDRAULIC STRESSES FROM ADDITIONAL FLOW FROM THE PROPOSED STORMWATER OUTFALL.
5. CELL FILLING WILL BE UNDERTAKEN LOGISTICALLY BASED ON SITE SEQUENCING.
6. SEDIMENT BASIN POSITIONING AND DESIGN WILL BE PROVIDED DURING DETAILED DESIGN.

SOURCE:

AERIAL IMAGE: GOOGLE EARTH PRO®



SITE LAYOUT

HYDRO ALUMINIUM SMELTER KURRI KURRI
NEW SOUTH WALES, AUSTRALIA



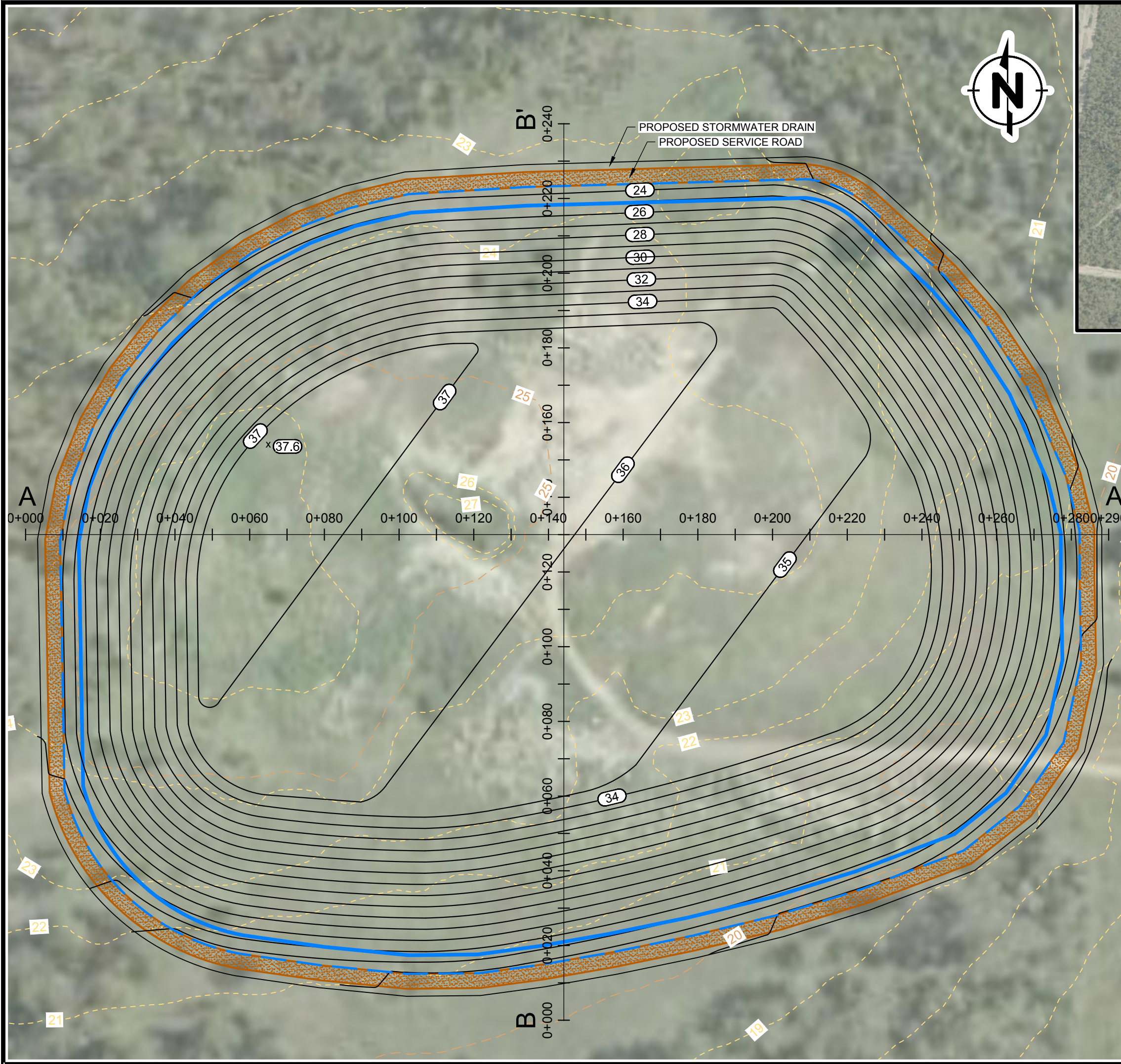
FIGURE
1

DRAFTED BY: PRM/MSB

DATE: 07/26/2016

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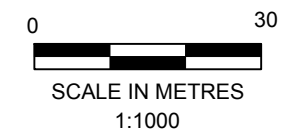
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KEY MAP
1:7,500

- LEGEND**
- CONTAINMENT CELL LIMIT (CONCEPTUAL)
 - CONTAINMENT CELL CAP LIMIT (CONCEPTUAL)
 - EXISTING CONTOUR MAJOR (5 METRE)
 - EXISTING CONTOUR MINOR (1 METRE)
 - PROPOSED CONTOUR MAJOR (5 METRE)
 - PROPOSED CONTOUR MINOR (1 METRE)

SOURCE:
AERIAL IMAGE: GOOGLE EARTH PRO®



**CONCEPTUAL CONTAINMENT CELL
FINAL GRADING**
HYDRO ALUMINIUM SMELTER KURRI KURRI
NEW SOUTH WALES, AUSTRALIA



**FIGURE
2**

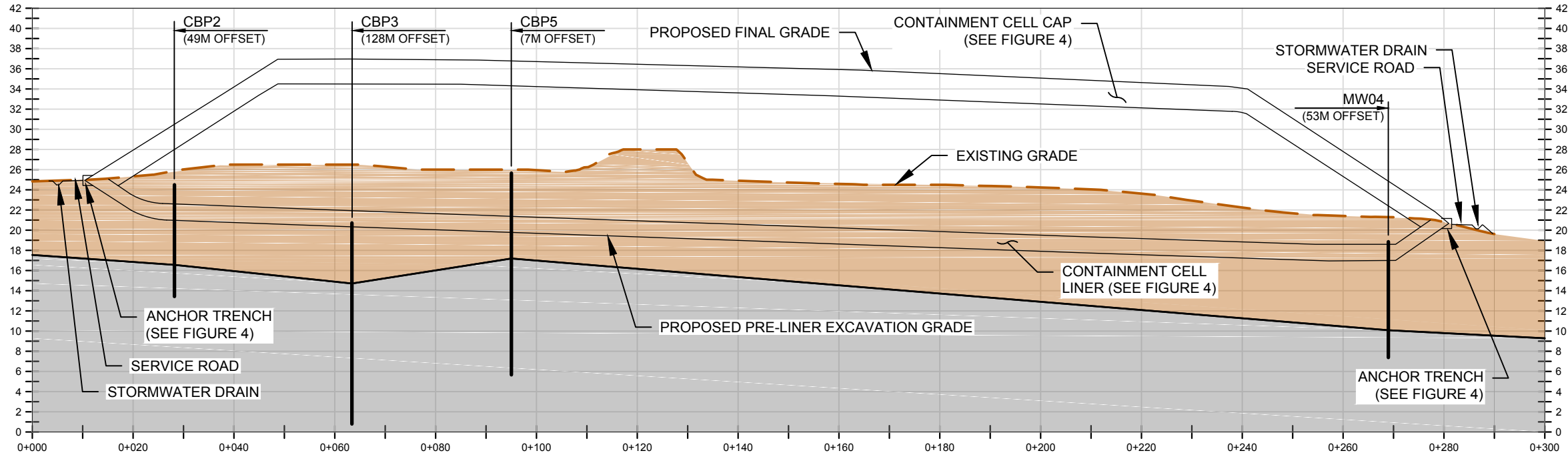
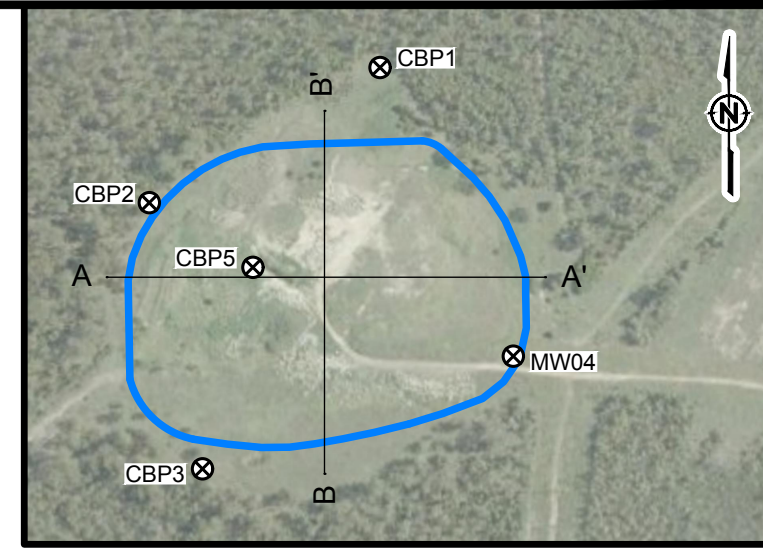
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DATE: 07/26/2016

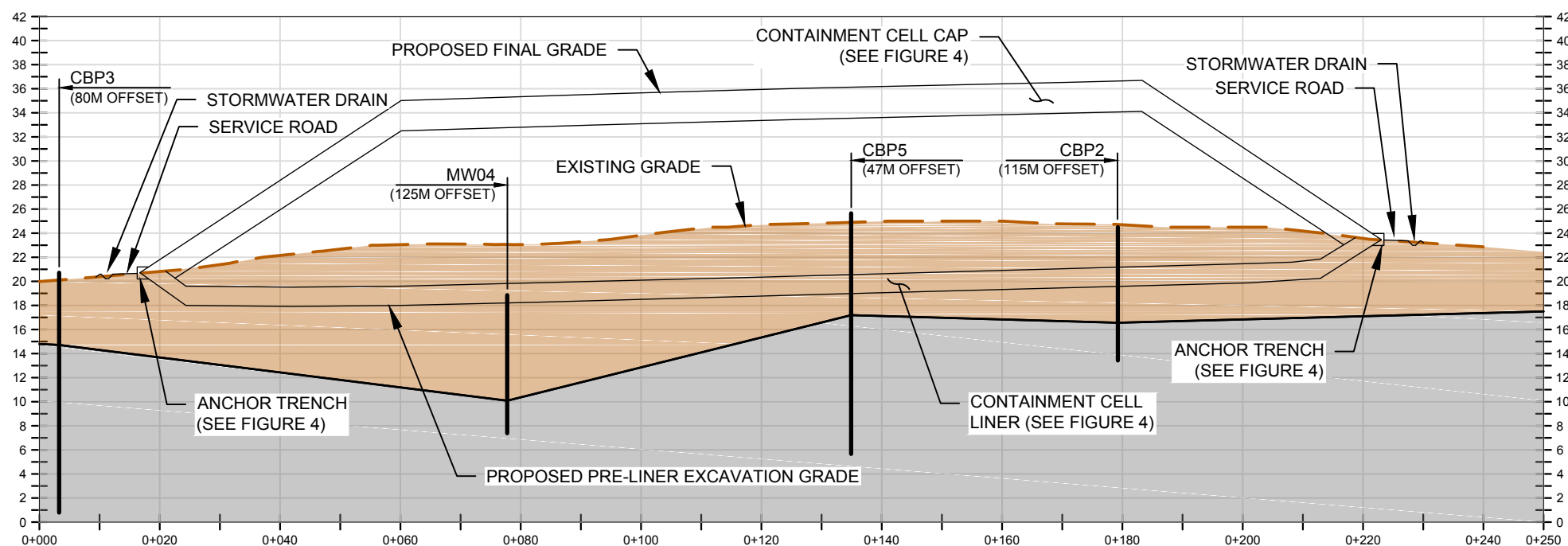
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NOTES:

1. THE PROPOSED CONTAINMENT CELL FOOTPRINT HAS A CAPACITY OF 410,000 CU. M. THE CAPACITY WILL ACCOMMODATE THE MAXIMUM VOLUME OF MATERIAL FOR ON-SITE CONTAINMENT PRESENTED IN THE REMEDIAL OPTION STUDY REPORT - 265,000 CU. M - PLUS DAILY COVER. IF NEEDED, ADDITIONAL CAPACITY CAN BE REALIZED BY INCREASING THE HEIGHT OF THE CONTAINMENT CELL WITHOUT ADJUSTING THE FOOTPRINT.
2. CONTAINMENT CELL DIMENSIONS WERE DETERMINED BASED ON EXISTING TEST PIT AND SOILING BORING LOGS, AND ASSUMING 3:1 (H:V) SIDE SLOPES, A 2% GRADE FOR LEACHATE DRAINAGE, AND MAINTAINING 3 M DISTANCE BETWEEN THE BEDROCK AND THE BOTTOM OF THE CONTAINMENT CELL LINER.
3. EXPECT NATIVE MATERIAL TO BE ADEQUATE FOR REUSE FOR CLAY IN THE LINER AND CAP, BUT THIS WILL NEED TO BE VERIFIED BY A LICENSED GEOTECHNICAL ENGINEER.
4. SURFACE DRAINAGE FOLLOWING CAPPING WILL BE DESIGNED AND IMPLEMENTED TO PROMOTE SURFACE RUNOFF AND PREVENT SCOURING OF THE CAP SURFACE.
5. CELL FILLING WILL BE UNDERTAKEN LOGISTICALLY BASED ON SITE SEQUENCING.



CROSS SECTION A-A'
 HORZ: 1:1000 (VERTICAL EXAGGERATION OF 2)
 VERT: 1:500



CROSS SECTION B-B'
 HORZ: 1:1000 (VERTICAL EXAGGERATION OF 2)
 VERT: 1:500

KEY MAP
 1:5,000

- LEGEND**
- CONTAINMENT CELL LIMIT (CONCEPTUAL)
 - RESIDUAL CLAY (SANDY/SILTY)
 - SILTSTONE

SOURCE:
 AERIAL IMAGE: GOOGLE EARTH PRO®

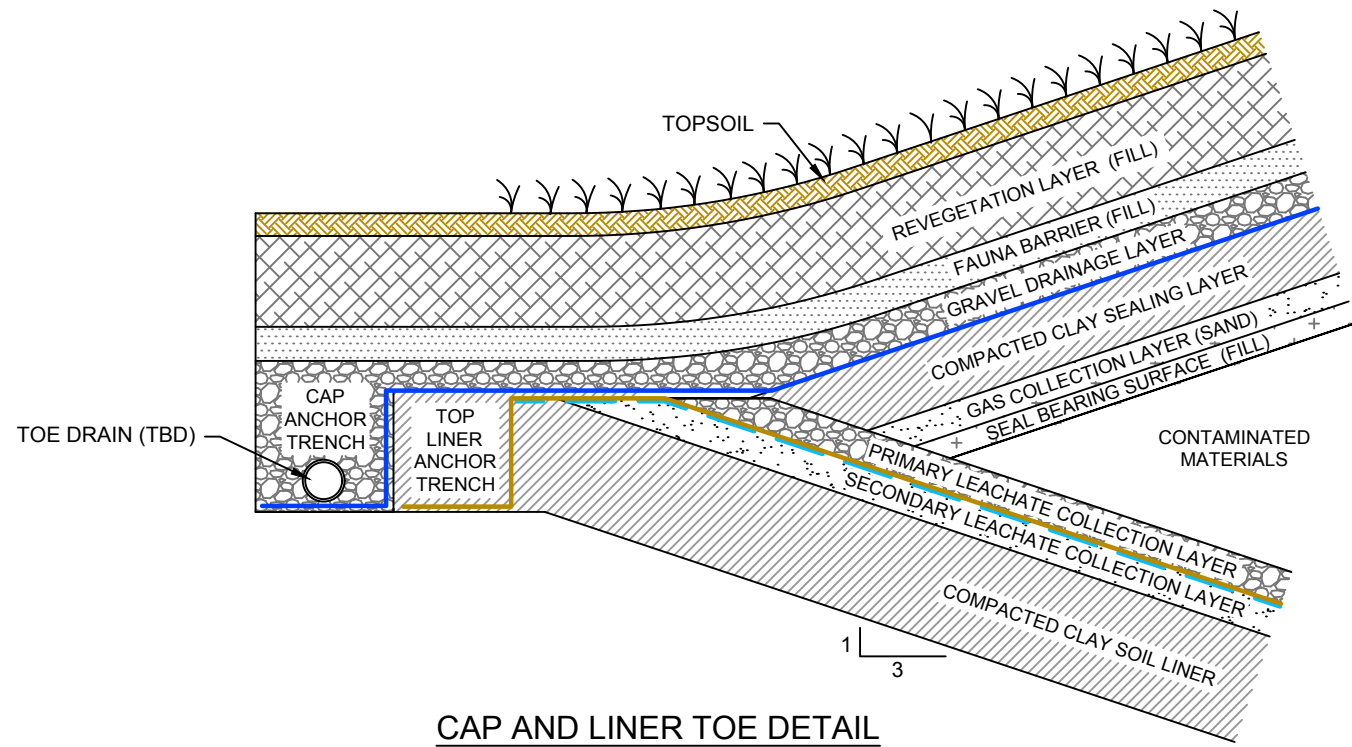
SCALE IN METRES
 1:1000

**CONCEPTUAL CONTAINMENT CELL
 CROSS SECTIONS**
 HYDRO ALUMINIUM SMELTER KURRI KURRI
 NEW SOUTH WALES, AUSTRALIA

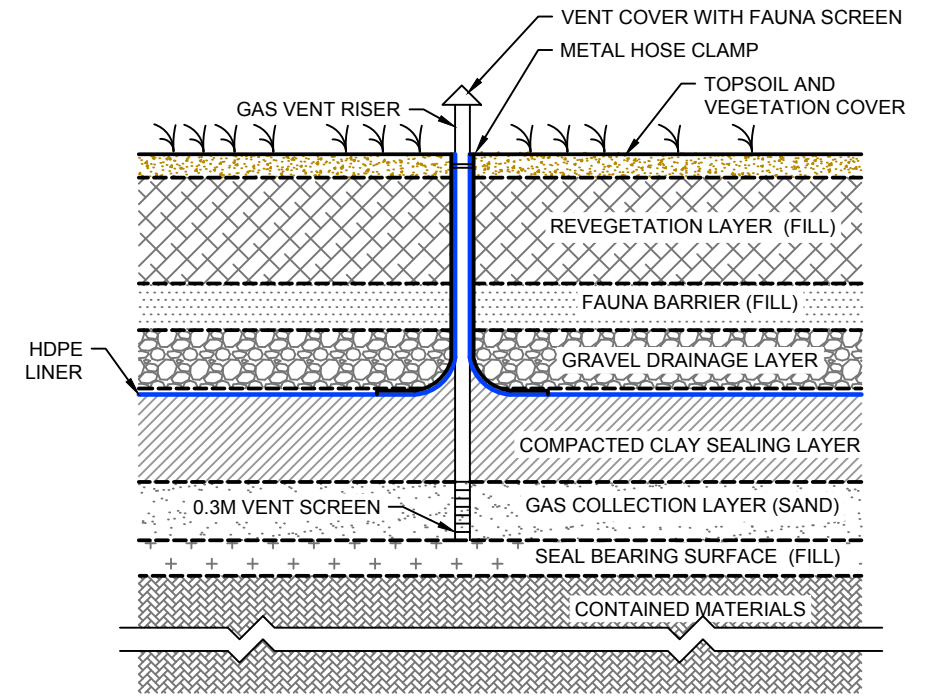


**FIGURE
 3**

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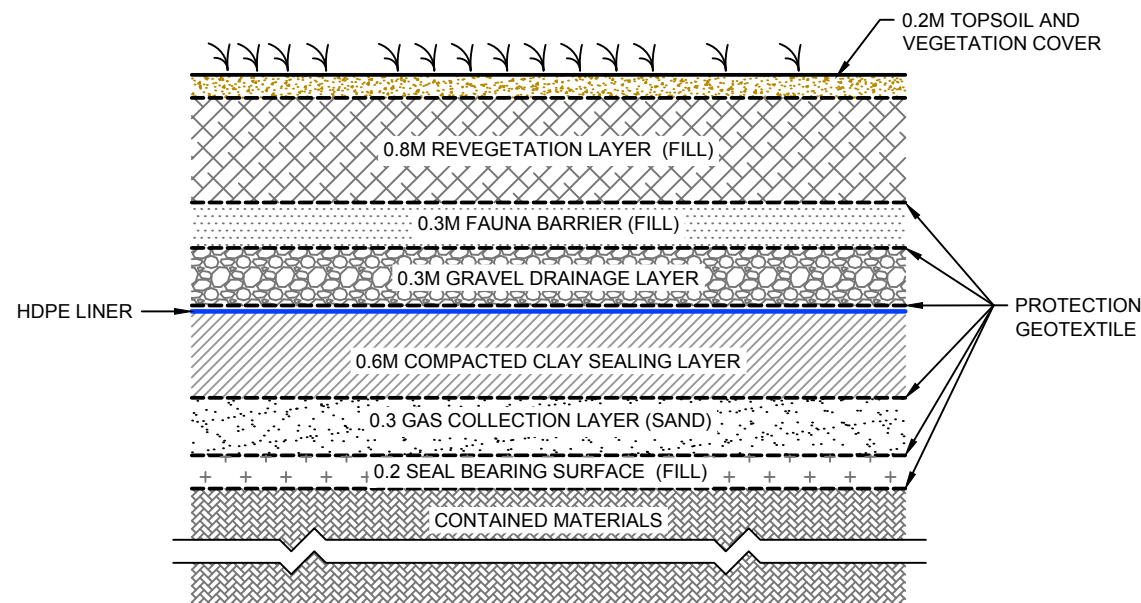
CAP AND LINER TOE DETAIL
N.T.S.



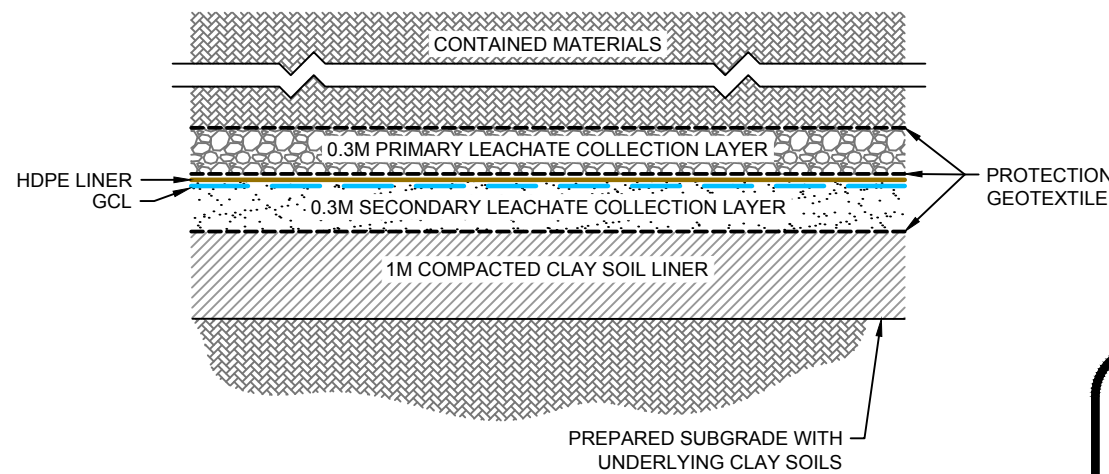
TYPICAL GAS VENT PENETRATION THROUGH CAP DETAIL
N.T.S.

NOTES:

1. THE NUMBER AND DIMENSIONS OF THE GAS VENTS TO BE DETERMINED DURING DETAILED DESIGN.
2. THE GAS VENT DETAIL SHOWN IS SUBJECT TO CHANGE DURING DETAILED DESIGN. CONSTRUCTION METHODS WILL FOLLOW THE MANUFACTURER'S RECOMMENDATIONS, THE REQUIREMENTS OF THE QUALITY CONTROL PLAN, AND THE MATERIALS WILL BE BUSHFIRE, CHEMICAL AND CORROSION RESISTANT.
3. HDPE LINER SPECIFICATIONS TO BE DETERMINED DURING DETAILED DESIGN. TYPICAL CONTAINMENT CELL HDPE LINERS ARE SPECIFIED AS 1.5-2.0 MM THICK TEXTURED SURFACE, FORMULATED TO BE RESISTANT TO THE CHEMICALS EXPECTED IN THE LEACHATE, AND CONSTRUCTED PER A SPECIFIC QUALITY CONTROL PLAN.
4. GEOSYNTHETIC CLAY LINER (GCL) OF PERMEABILITY LESS THAN 5×10^{-11} M/S, TO MEET SPECIFICATIONS OUTLINED IN NSW EPA SOLID WASTE GUIDELINES 2016.
5. THE LINER AND CAP DETAILS ARE SUBJECT TO CHANGE BASED ON ECONOMIC OR FUNCTIONAL CONSIDERATIONS DURING DETAILED DESIGN.
6. GRAVEL DRAINAGE LAYER IS TO COMPRISE ROUNDED GRAVEL OR ALTERNATE GEOSYNTHETIC MATERIAL COULD BE CONSIDERED, EG/ GEONET OR SIMILAR.



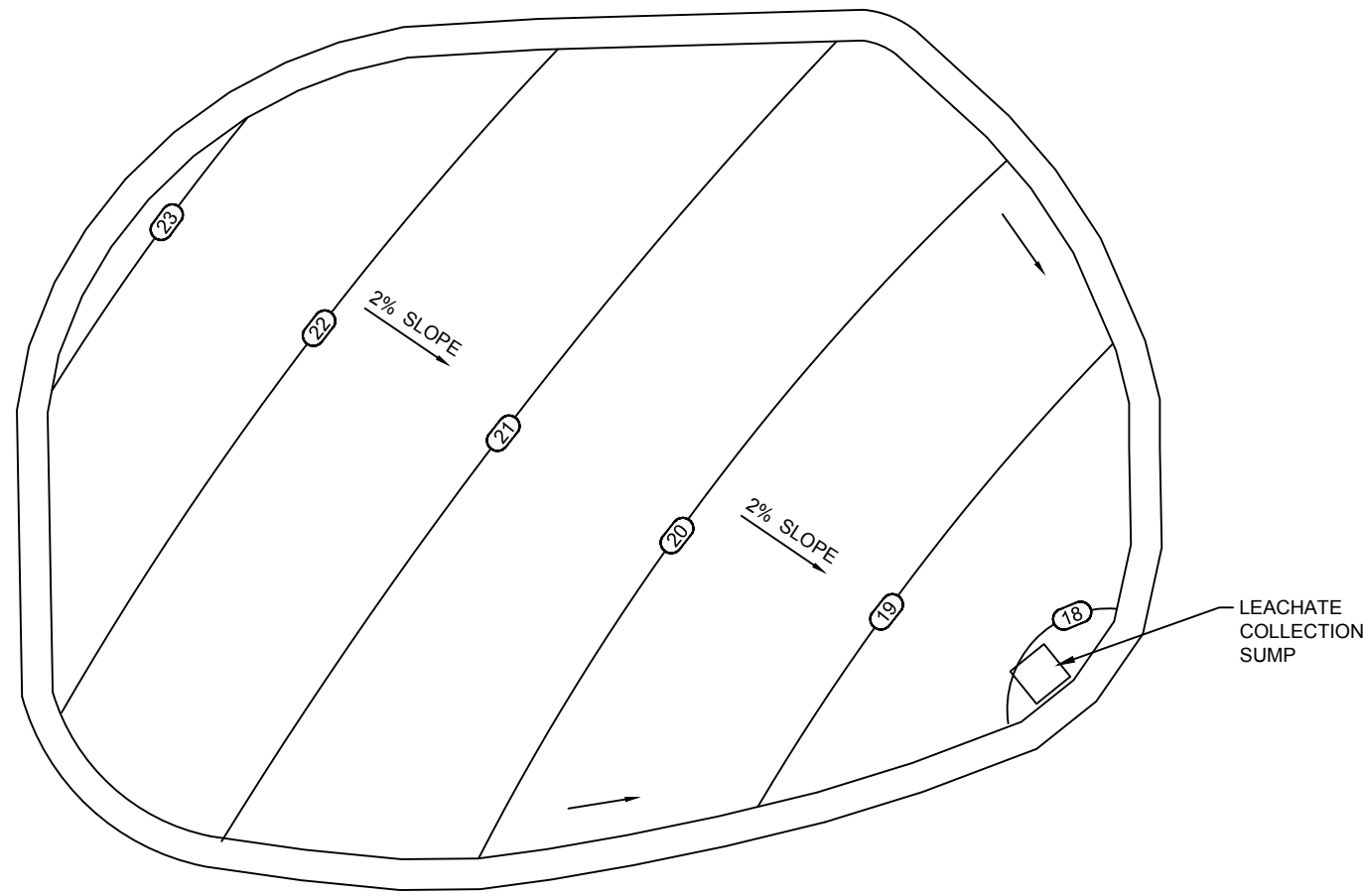
CAP DETAIL
N.T.S.



LINER DETAIL
N.T.S.

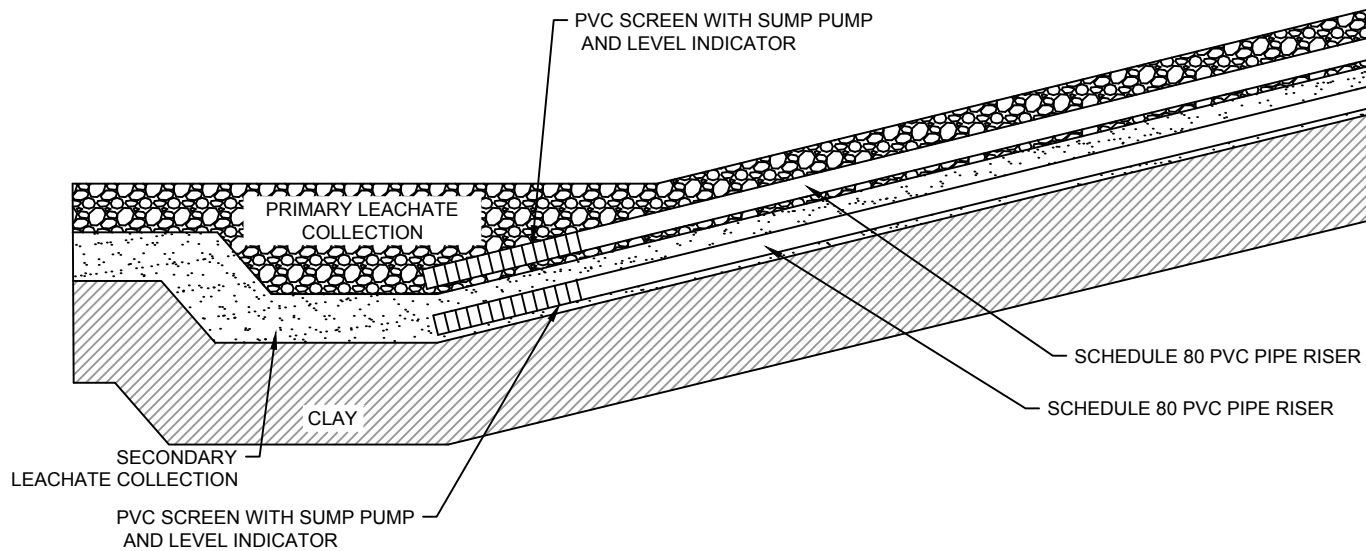
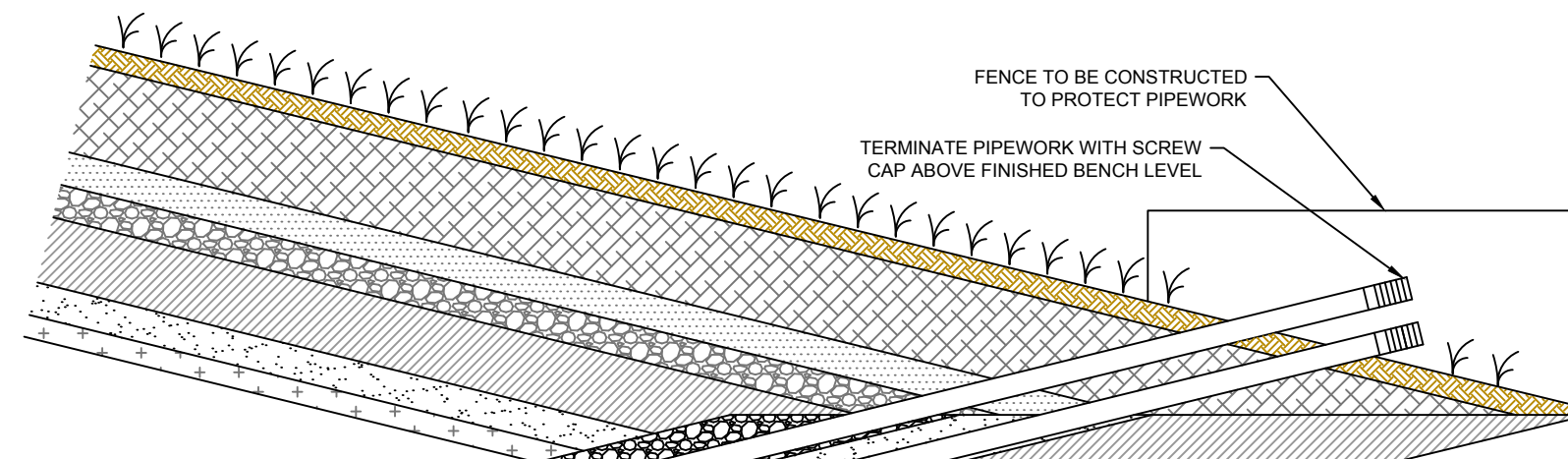
**CONCEPTUAL
CONTAINMENT CELL DETAIL
CAP AND LINER**

HYDRO ALUMINIUM SMELTER KURRI KURRI
NEW SOUTH WALES, AUSTRALIA



TYPICAL LEACHATE COLLECTION DRAINAGE LAYOUT
N.T.S.

- NOTES:**
1. LEACHATE COLLECTION SYSTEM MAY INCLUDE PERFORATED COLLECTION PIPING. SPACING AND QUANTITY OF PIPING WILL BE DETERMINED DURING DETAILED DESIGN.
 2. WATER MANAGEMENT DURING CONSTRUCTION AND FILLING WILL COMPRISE SEGREGATION OF CLEAN AND DIRTY WATER. THE WATER MANAGEMENT PLAN WILL BE DEVELOPED DURING DETAILED DESIGN.
 3. CONTAINMENT CELL LINER ELEVATION AND GRADE SHOWN IS APPROXIMATE AND IS SUBJECT TO CHANGE DURING DETAILED DESIGN.



TYPICAL SUMP AND LEACHATE DETECTION DETAIL
N.T.S.

**CONCEPTUAL
CONTAINMENT CELL DETAIL
LEACHATE COLLECTION
AND LEAK DETECTION**
HYDRO ALUMINIUM SMELTER KURRI KURRI
NEW SOUTH WALES, AUSTRALIA

	FIGURE 5
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