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Landscape Management Plan

Kurri Kurri Aluminium Smelter Decommissioning, Demolition and Remediation

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Prepared by	**C Lawrence**
Checked by	**S Taylor**
Approved by	**S Taylor**
Description	**Ramboll was engaged by Hydro Aluminium Kurri Kurri Pty Ltd to prepare a Long Term Environmental Management Plan (LTEMP) to describe how environmental management will be undertaken at the former Hydro Aluminium Kurri Kurri aluminium smelter at Hart Road Loxford, NSW and the surrounding land owned by Hydro.** **This Landscape Management Plan (LMP) forms a component of the LTEMP and has been prepared with significant inputs from Rob Francis and Darren Golby of Daracon, and Andrew Walker of Hydro.**

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Contents

Table of Figures

Table of Tables

Acronyms and Abbreviations

BC Act	*Biodiversity Conservation Act 2016*
BCD	Biodiversity Conservation Division
DA	Development Application
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
Hydro	Hydro Aluminium Kurri Kurri Pty Ltd
LGA	Local Government Area
LMP	Landscape Management Plan
LTEMP	Long Term Environmental Management Plan
RWEMP	Remediation Works Environmental Management Plan
SSD	State Significant Development

Glossary

Council	Cessnock City Council
Department	Department of Planning, Industry and Environment
Hydro	Hydro Aluminium Kurri Kurri Pty Ltd
Hydro Land	The land owned by Hydro Aluminium Kurri Kurri Pty Ltd which includes the Smelter and surrounding land.
Remediation	Remediation of contaminated land and soils at the Smelter and on Hydro Land, including the construction of a Containment Cell as addressed in the State Significant Development application to the Department of Planning and Environment SSD 6666.
The Smelter	The former Hydro Aluminium Kurri Kurri Pty Ltd aluminium smelter at Hart Road, Loxford
Ramboll	Ramboll Australia Pty Ltd
Stage 1 Demolition	Demolition of Smelter buildings addressed in the development application to Cessnock City Council 8/2015/399/1
Stage 2 Demolition	Demolition of Smelter buildings, three concrete stacks, a water tower, subsurface structures to 1.5 m below ground surface and operation of a concrete crushing plant addressed in the development application to Cessnock City Council 8/2018/46/1
The Smelter	The former Hydro Aluminium Kurri Kurri Pty Ltd aluminium smelter at Hart Road, Loxford.

1. Introduction

1.1 Background

This Landscape Management Plan (LMP) has been prepared by Ramboll Australia Pty Ltd (Ramboll) on behalf of Hydro Aluminium Kurri Kurri Pty Ltd (Hydro) to support the Long Term Environmental Management Plan (LTEMP) for the decommissioning, demolition and remediation activities (the Project) at the former Hydro Aluminium Kurri Kurri Smelter (the Smelter) at Hart Road Loxford and the management of the surrounding land owned by Hydro (the Hydro Land).

1.2 Objective

The objectives of this LMP are to:

- Outline relevant legalisation and guidelines
- Detail the controls and procedures to be implemented during the preparation and completion of landscaped areas following the completion of the Containment Cell
- Identify measures and strategies for weed control once plantings are established
- Establish the roles and responsibilities of all parties involved in landscaping management

1.3 Purpose and Scope

The scope of the LMP applies to the proposed landscaped areas within the Containment Cell requiring revegetation following completion of the Containment Cell as part of remediation activities.

The purpose of the LMP is to:

- Specify the procedures and controls for landscaping related management and impacts during activities at the Smelter and on Hydro Land
- Satisfy the relevant conditions of the development consent for remediation activities (SSD 6666).

1.4 Regulatory Requirements

A list of the development consent conditions related to landscape management and where they are addressed in this document are outlined in **Table 1-1.**

Table 1-1: Project Approval Conditions and Where Addressed in LMP

No.	Condition	Where in LMP
B45	Two months prior to the completion of filling of the containment cell, the Applicant must prepare, to the satisfaction of the Planning Secretary, a containment cell Landscaping Management Plan (LMP). The LMP must form part of the LTEMP required by Condition B7 and must:	
B45(a)	be prepared in consultation with Environmental Services Group of H&P Group or its successors;	Section 2.3.1
B45(b)	include provision of the planting of shallow rooted locally endemic grass species and non-invasive hybrid grass species where appropriate; and	Section 3.2
B45(c)	include details of the management of landscaping post remediation.	Section 3.3
B46	The Applicant must implement the most recent version of the LMP approved by the Planning Secretary.	Noted

2. Existing Environment

2.1 Site Features

2.1.1.1 Landform, Soil and Geology

The Smelter site and Hydro Land are underlain by siltstone, marl and minor sandstone from the Permian aged Rutherford Formation (Dalwood Group) in the Sydney Basin.

The Sydney Basin is a sedimentary basin consisting of Permian and Triassic sedimentary rocks, which extends from Newcastle in the north to Batemans Bay in the south and to Lithgow, just west of the Blue Mountains. The basin overlies older basement rocks of the Lachlan Fold Belt. The sedimentary rocks of the basin generally consist of near horizontal sandstones and shales, with some recent igneous dykes. Only minor folding and faulting has occurred since these sedimentary rock sequences first formed. The Dalwood Group is stratigraphically located near the base of the Sydney Basin below both the Greta Coal Measures and Newcastle Coal Measures and was deposited in a marine environment.

Quaternary sediments which are associated with Swamp Creek (located to the east of the Smelter), Wentworth Swamps and the Hunter River consist of complex interbedded fluvial and marine sands and estuarine muds deposited within an estuarine environment during periods of sea level rise and fall.

2.1.1.2 Surrounding vegetation

Native Flora

The remnant vegetation on the Hydro Land comprises:

- Kurri Sand Swamp Woodland in the Sydney Basin Bioregion
- Lower Hunter Spotted Gum – Ironbark Forest in the Sydney Basin Bioregion
- Parramatta Red Gum - Narrow-leaved Apple - Prickly-leaved Paperbark shrubby woodland in the Cessnock-Kurri Kurri area
- Cabbage Gum-Rough-barked Apple grassy woodland on alluvial floodplains of the lower Hunter
- Forest Red Gum - Grey Gum dry open forest on hills of the lower Hunter Valley, Sydney Basin Bioregion
- Spotted Gum - Red Ironbark - Narrow-leaved Ironbark - Grey Box shrub-grass open forest of the lower Hunter

The Containment Cell area has no existing vegetation due to its disturbed nature. Detailed analysis of existing native flora and management controls within the Smelter site and Hydro land is provided in the *Biodiversity Management Plan* (Ramboll, 2020).

Weed species

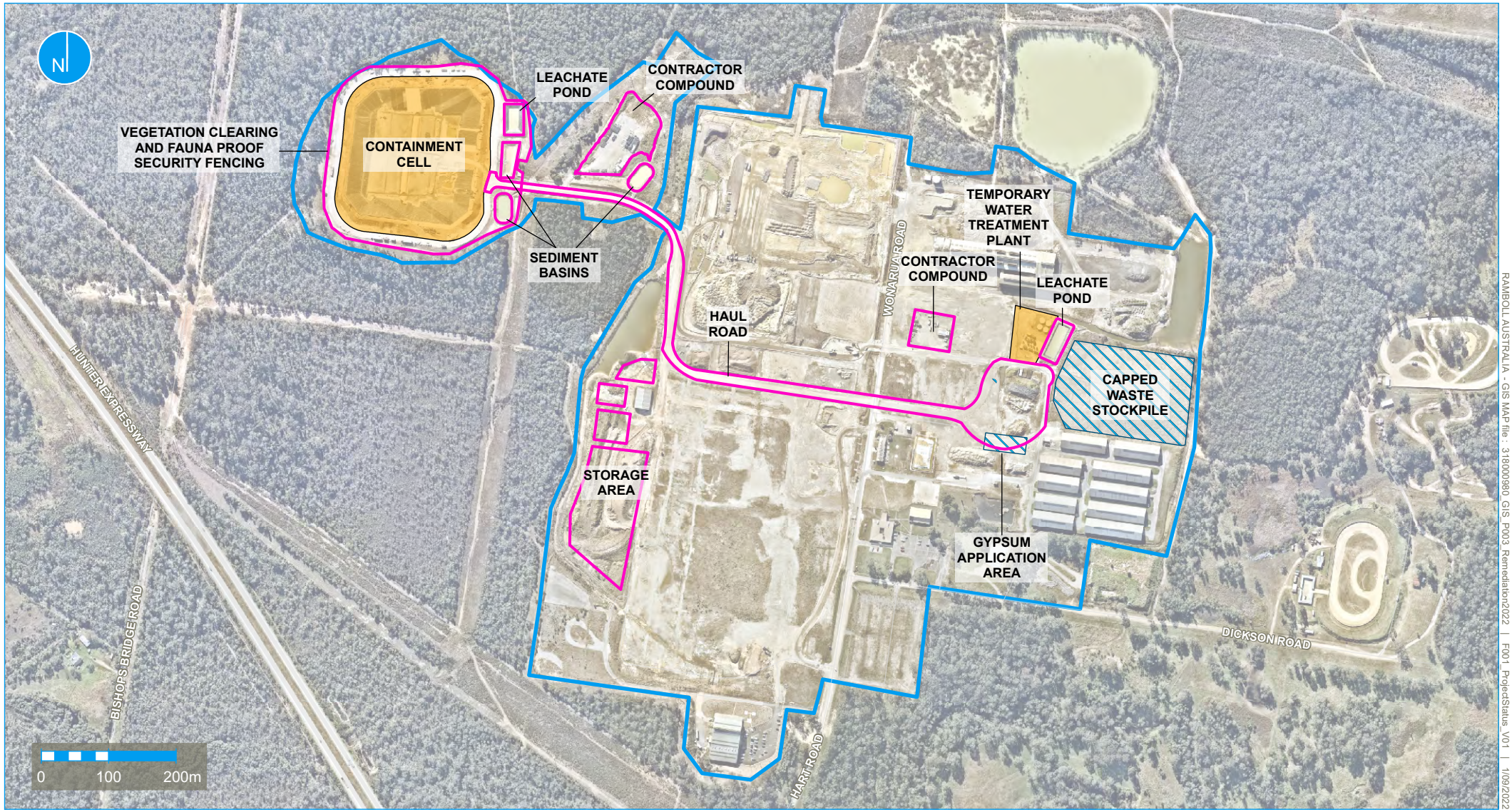
Hydro implements a weed management program to limit the spread and colonisation of terrestrial and aquatic weeds. The weed control class is determined in accordance with the *Biosecurity Act 2015*, which describes the legal control requirements for any weed. Findings from the most recent Property Management Report (Hydro, 2014) have been summarised and updated as of 17 July 2023 in **Table 2-1** to include only those species listed as priority weeds within the *Hunter Regional Strategic Weed Management Plan 2023-2027* (Local Land Services, 2022) which encompasses the Cessnock Local Government Area (LGA). Table 2-1The current list of priority weeds for the Hunter region can be found at http://weeds.dpi.nsw.gov.au/WeedBiosecurities?AreaId=4

Table 2-1: Priority Weeds within the Cessnock and Maitland LGAs

Species	Location	Duty
Green Cestrum	Waterways, banks	Land managers should mitigate the risk of new weeds being introduced to their land. Land managers should mitigate spread from their land. The plant should not be bought, sold, grown, carried or released into the environment. Land managers reduce impacts from the plant on priority assets.
Paterson's Curse	Throughout cleared former grazing paddocks	Land managers should mitigate the risk of new weeds being introduced to their land. Land managers should mitigate spread from their land. The plant should not be bought, sold, grown, carried or released into the environment. Land managers reduce impacts from the plant on priority assets.
Salvinia	Swamp Creek and Wentworth Swamp	Land managers should mitigate the risk of new weeds being introduced to their land. Land managers should mitigate spread from their land. The plant should not be bought, sold, grown, carried or released into the environment. Land managers reduce impacts from the plant on priority assets.
Water Hyacinth	Swamp Creek and Wentworth Swamp	Land managers should mitigate the risk of new weeds being introduced to their land. The plant should be eradicated from the land and the land kept free of the plant. Notify local control authority if found.
Lantana	Waterways, banks	All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.
Blackberry	Throughout cleared former grazing paddocks	The plant should not be bought, sold, grown, carried or released into the environment. Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread from their land. Land managers to reduce impacts from the plant on priority assets.
Pampas Grass	Occasional specimen throughout Hydro Land	The plant should not be bought, sold, grown, carried or released into the environment. Exclusion zone: The plant should be eradicated from the land and the land kept free of the plant. Land managers should mitigate the risk of the plant being introduced to their land. Core infestation area: Land managers should mitigate spread from their land. Land managers to reduce impacts from the plant on priority assets.

2.2 Containment Cell

Remediation of the Smelter site involves material emplacement within the Containment Cell, constructed in the northwest area of the Smelter site as shown in **Figure 2-1**. The design of the containment cell is described in the following sections and in accordance with the *Hydro Aluminium Kurri Kurri Pty Ltd Containment Cell Design Report* (GHD, 2018).



Aerial photography by Nearmap, flown 14.06.2022

Legend

- Project site
- Status of project activities
  - Completed
  - In progress
  - In progress

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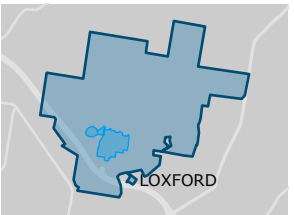


Figure 2-1 | Smelter Site Layout

2.2.1.1 Cap Design

The capping layer is shown in **Figure 2-2** and is comprised of the following (top to bottom):

- 100 mm soil topsoil layer to be revegetated
- 1300 mm soil subsoil layer
- Separation geotextile
- 300 mm drainage aggregate
- Protection geotextile
- Linear Low Density Polyethylene (LLDPE) geomembrane (2mm double sided textured)
- Geosynthetic clay liner (GCL)
- Geocomposite drainage (GCD)
- 300 mm seal bearing layer
- Separation geotextile (GHD, 2018)

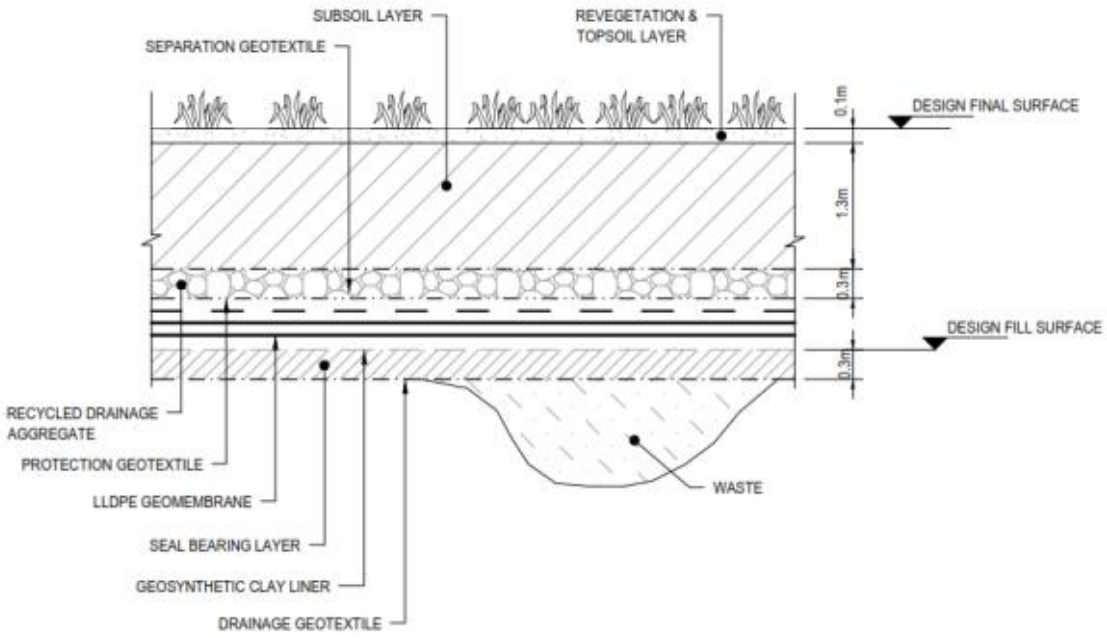


Figure 2-2: Containment Cell Capping Layer (GHD, 2018)

The provision for a soil based revegetation cover system of approximately 1.4 metres depth below the final landform surface has been included in the design of the Containment Cell capping layer. The revegetated cover is to be populated with native flora species and hybrid grasses with species selection primarily focused on native flora that will not comprise the integrity of the final cover system, will minimise the post closure maintenance requirements and will not negatively impact on the neighbouring flora and fauna. Hybrid grasses will be used in areas where access is required for monitoring and maintenance of the cell.

Subsoil Drains - there is provision for a subsoil drainage system at the perimeter of the cell to remove any accumulated water that is not removed by the evapotranspiration process. Refer to **Figure 2-3**.

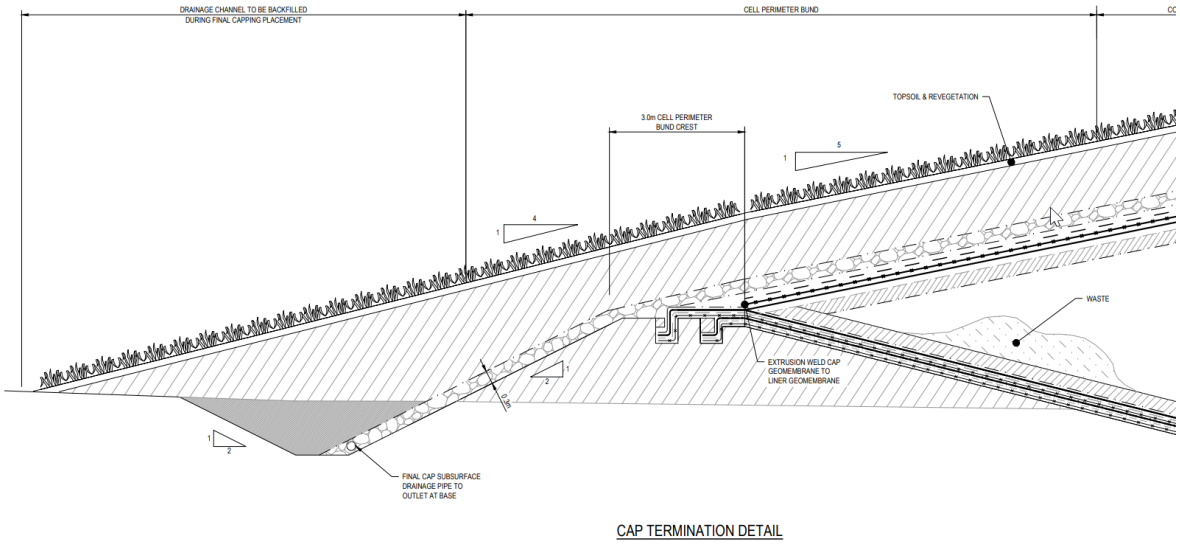


Figure 2-3: Profile of cap showing subsoil drainage (GHD, 2018)

The outlet of the subsoil drains will connect to the two existing swale drains on either side of the cell access road via the existing culverts under the cell perimeter road. A subsoil drain will also be installed between the two culverts on the eastern edge of the cell. Sediment detention basins 1, 2 and 3 will be decommissioned as part of the final landscaping process and new swale drains will be installed where sediment basins 1 and 2 are currently located to connect from the existing culverts 02 and 03 to swale drains 02 and 01 either side of the cell access road respectively. At this stage it is planned to leave the leachate buffer storage dam for as long as it is needed so that it is available for leachate storage. It will most likely be decommissioned several months after capping and landscaping of the cell is completed. Refer to **Figure 2-4**.

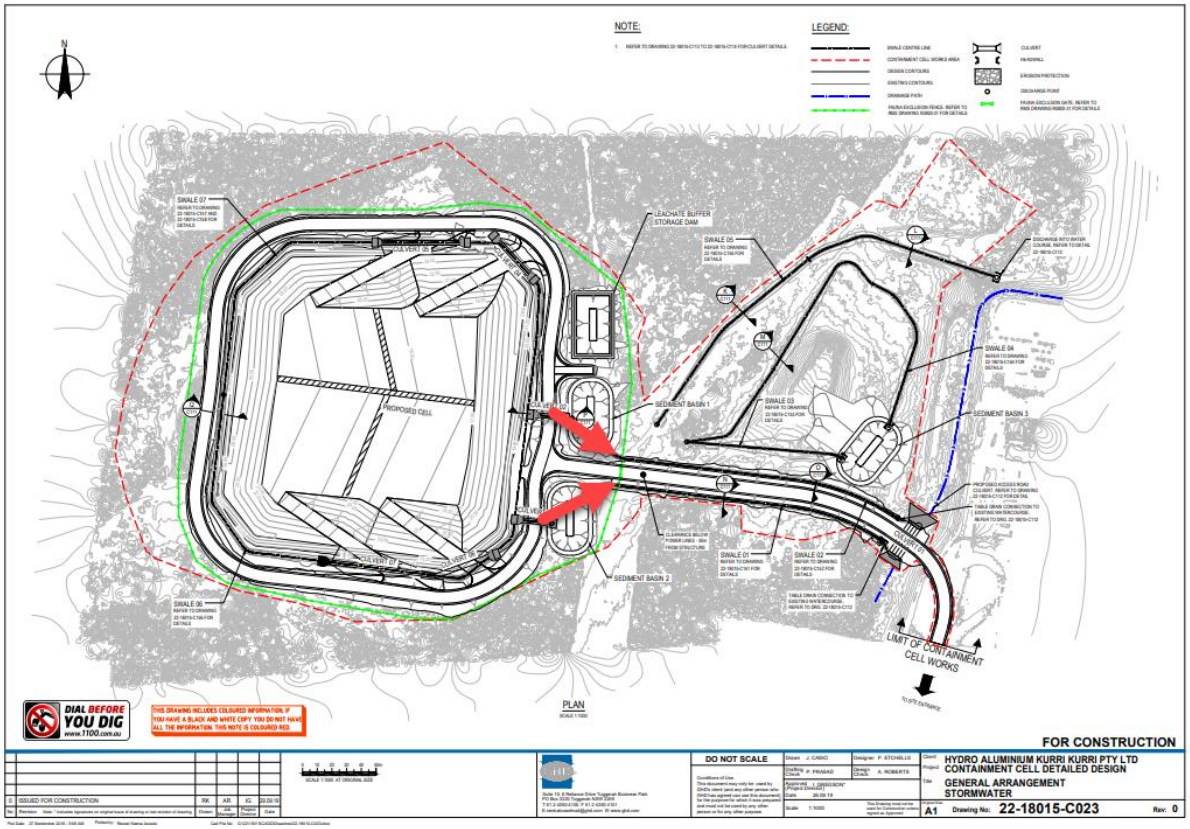


Figure 2-4: Plan showing changes to the stormwater management system (GHD, 2018)

Gas Collection - a gas collection system is incorporated into the design of the cell. This includes eight vertical gas bores comprised of 300mm diameter slotted PVC pipe filled with drainage aggregate that penetrate the waste to within 2m of the base. The vertical gas bores then connect into eight horizontal gas trenches comprised of DN160 slotted HDPE pipe within a 600mm x 600mm trench in the surface of the waste filled with drainage aggregate. Refer to **Figure 2-5**.

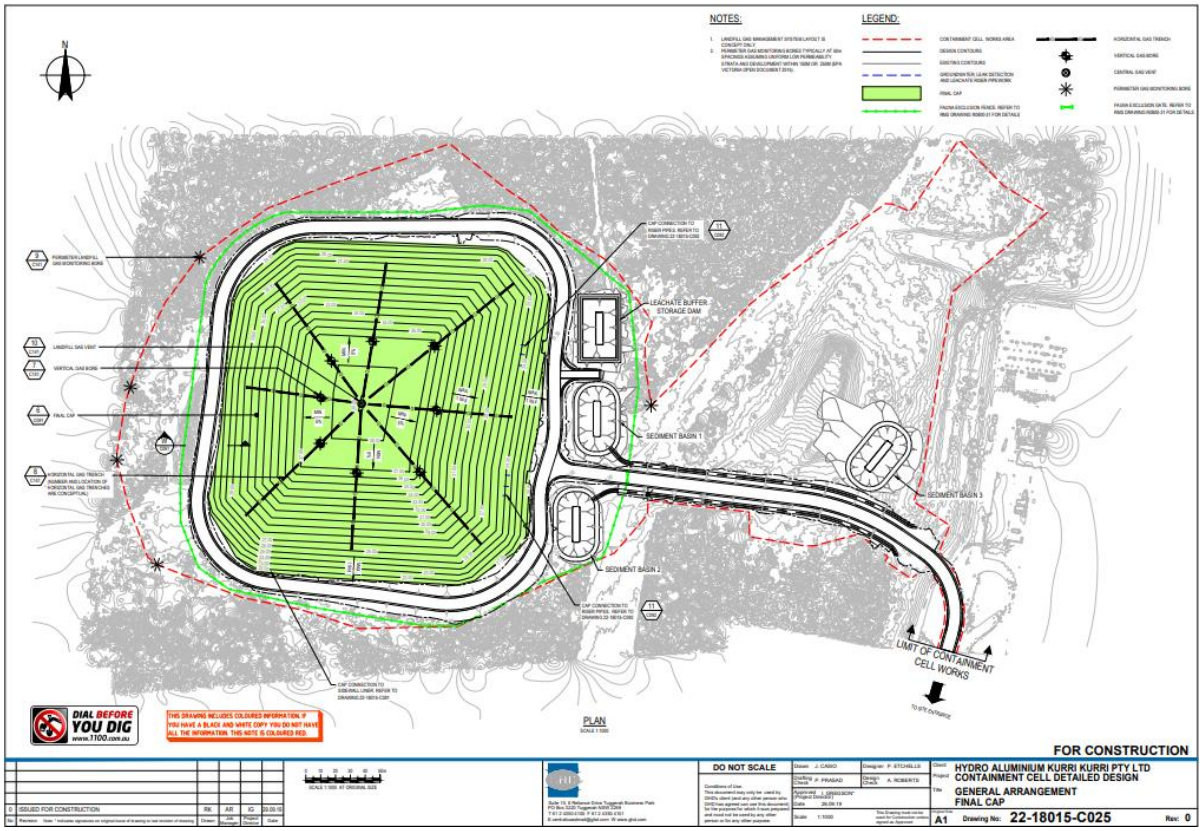


Figure 2-5: Plan showing the gas collection infrastructure in the cap (GHD, 2018)

The eight horizontal gas trenches then feed into a solid (no slots) DN150 HDPE pipe central gas vent that is located within a 1.5m L x 1.5m W x 1.05m H mass poured concrete footing. Beneath the subsoil layer, a pipe boot is used to seal around the DN150 HDPE pipe where it penetrates the LLDPE liner. Above the subsoil layer, the DN150 HDPE pipe sits within a 230mm diameter galvanised steel educt ventilation shaft that is anchored to the concrete block footing. A wind-operated rotating educt cowl sits at the top of the 6m high central gas vent. This is the only gas collection infrastructure that protrudes through the cap. Refer to **Figure 2-6**.

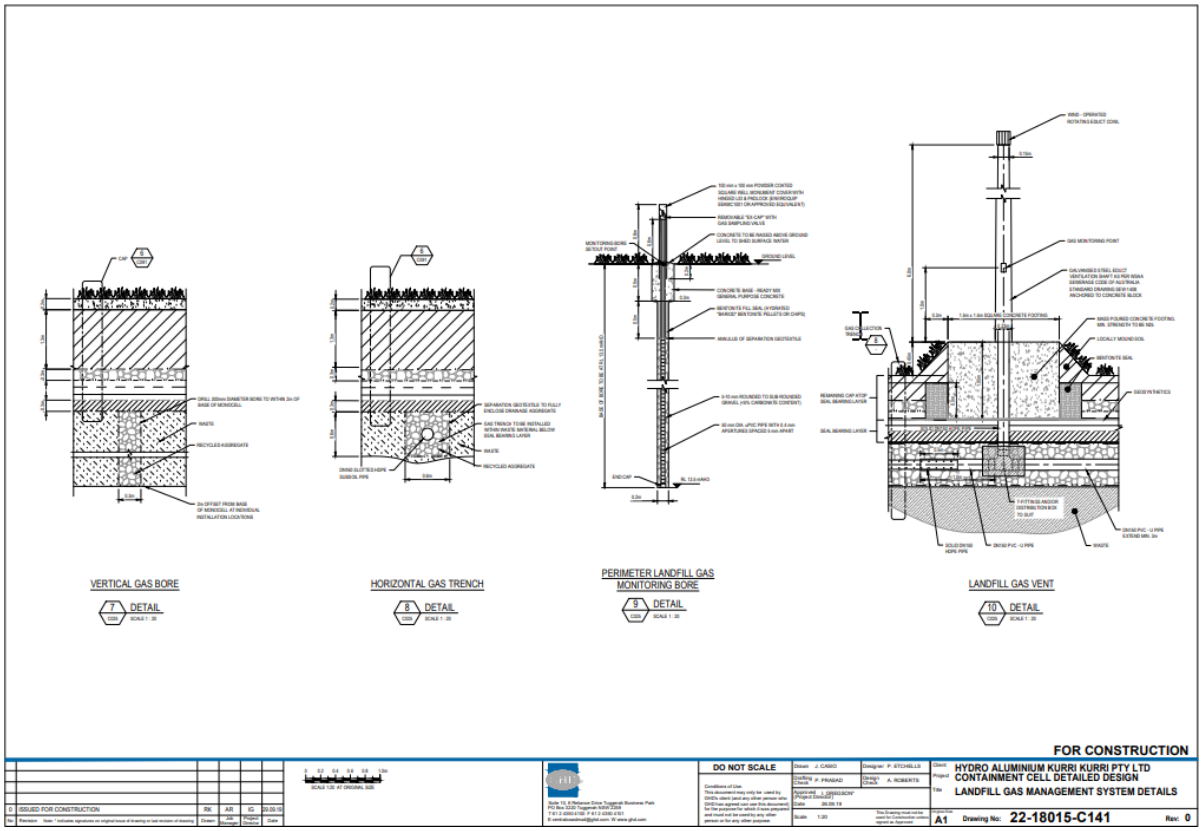


Figure 2-6: Gas collection system details in elevation views (GHD, 2018)

Leachate Extraction - twelve DN450 HDPE riser pipes for leachate extraction (six for each sump including two for each of the sub-compartments - groundwater, leak detection and leachate) protrude through the cap. A pipe boot is used to seal between the HDPE pipe and the LLDPE liner. Access to each of these pipes will be required by maintenance personnel so that groundwater from beneath the secondary liner and leachate from above the primary liner in the base of the cell can be removed as the waste dries out. A leak detection sump is included in the event of leachate leaking downwards through the primary liner into the sand drainage layer or groundwater leaking upwards through the secondary liner also into the sand drainage layer. A submersible pump will be either lowered into each of the riser pipes or will be left in the sumps to extract these liquids. Groundwater if uncontaminated will be pumped into the stormwater system and leachate will be periodically transferred either to a holding tank. A concrete headwall, base slab and wing walls will be installed at both sumps to provide a working platform for maintenance personnel. Concrete steps or a footpath will be required to gain access from the perimeter road to the access platforms. Refer to **Figure 2-7**.

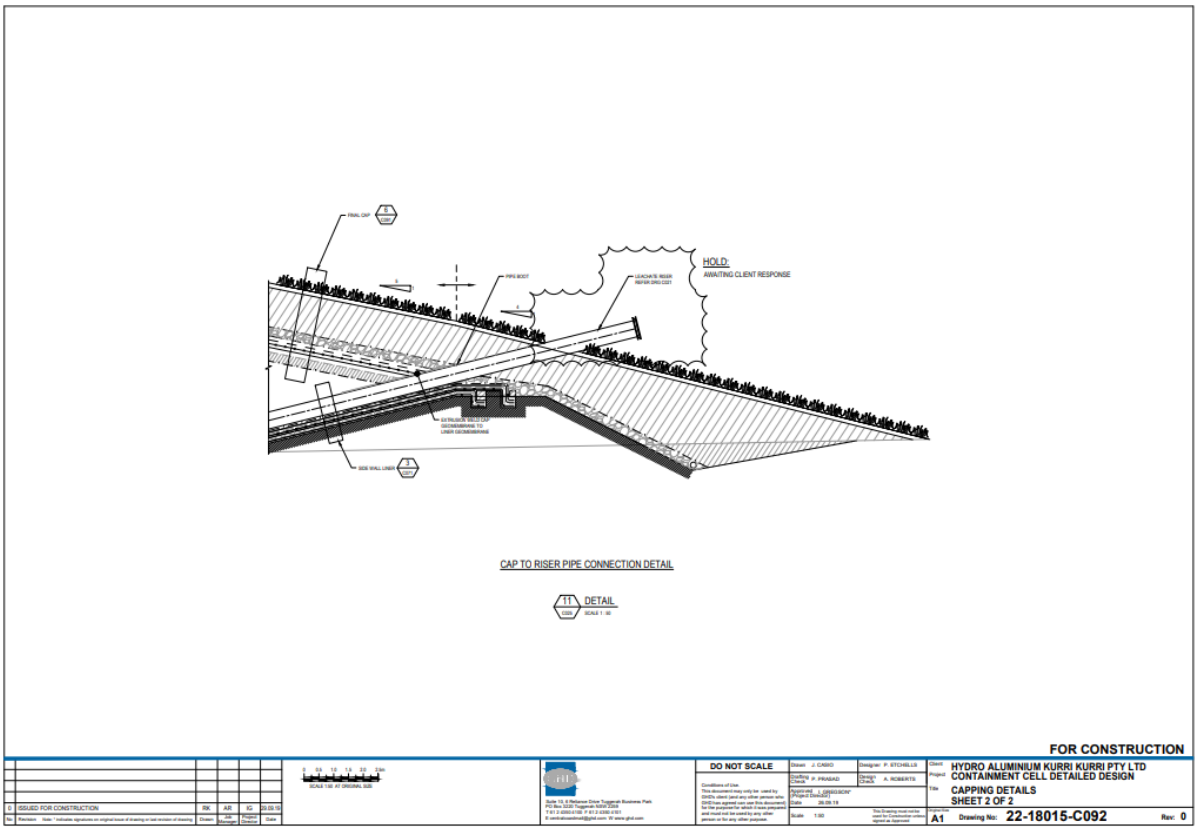


Figure 2-7: Elevation View of Riser Pipes Protruding Through the Cap (GHD, 2018).

2.3 Development of landscaping strategy

2.3.1 Authority consultation

Hydro and Ramboll held a meeting on 8 May 2023 with Peter Lowery of the Housing and Property Group (the group) of the Department of Planning and Environment. The purpose of the meeting was to discuss the objectives of the Landscape Management Plan, the group's experience in the management of other landscaped containment cell capping, and issues to be addressed in this plan.

The following are the key issues that were raised by the group:

- establishment of vegetation is to consider the fertility of soil and nutrient availability
- flora species selection to be local, native vegetation suitable for the local climate
- species selection is to consider appropriate root depth
- species selection should also consider quick growing vegetation in terms of erosion prevention
- maintenance: lawns require more mowing compared to grasslands
- plants that have died or failed should be replaced with the same species and variety as the closest commercially available size to ensure density mass maintained
- three options were discussed for planting: -
  - individual plants (tube stock) at the rate of five plants per square metre (250,000 plants for five hectares). This would be expensive and slow to be established but will provide the best results long term (could take three years to fully establish)
  - direct seeding of native grasses. This would be cheaper but might not be successful
  - Hydromulching. This method is very similar to Option 2 but with the addition of wood fibre mulch.

A draft copy of this plan was issued to the group on 01 August 2023 with an invitation to review and comment. The group provided a response on 15 August 2023. The issues raised by the group and Hydro's response is presented in **Table 2-2**.

Table 2-2: Housing and Property Group Comments and Hydro Response

Housing and Property Group Comment	Hydro Response
Reference to "noxious" weeds in Table 2-1 should be changed to "priority" to reflect the repeal of the *Noxious Weeds Act* (and the enactment of the *Biosecurity Act*)	Table 2-1 amended as appropriate
The individual planting methodology (described in Section 2.3.2.2) will require a ground cover layer on top of the topsoil (e.g. weed mat or a suitable alternative) to inhibit the germination of weeds and non-native grasses.	Daracon proposes to use a 75 mm thick mulch layer on top of the topsoil to inhibit weed germination, as well as to promote retention of moisture in soils. Further detail is presented in **Section 3.1.4**
The soil placement methodology (as described in Section 3.1.3) will need a strategy to avoid excessive compaction of the topsoil and the subsoil. Allowing 40t trucks to compact the subsoil and covering it with 100mm of topsoil is no good.	Due to the significant quantity of soil that is required, it is time and cost effective to use 40 tonne trucks. However to minimise potential compaction issues Daracon proposes to scarify the topsoil. Further detail is presented in Section **3.1.3**.
Section 3.2.2 (seed application methods) repeats Section 2.3.2.2	This is acknowledged but retained.

2.3.2 Evaluation of landscaping options

2.3.2.1 Vegetation species selection

It is proposed to use, where available, a selection of the following native grasses that are hardy and native to the lower Hunter Region and do not contain any invasive root systems:

- *Lomandra longifolia,* Spiny Headed Mat Rush
- *Themed australis,* Kangaroo grass
- *Dianella caerula ,* Blue Fax Lily
- *Austrodanthonia fulva,* Wallaby grass
- *Cymbogan refractus,* Barbed Wire grass
- *Echinopogon caepitosus,* Hedge Hog grass
- *Erogrostis brownie,* Love grass
- *Chrysocepholum apiculatum,* Yellow Buttons

A sterile cover crop such as Japanese millet or rye will be included in the seed mix for initial protection to minimise erosion.

Common couch along with a cover crop will be used for areas that need to be slashed for access by maintenance personnel to conduct monitoring and maintenance.

2.3.2.2 Planting methodology

Appendix 1 contains the proposed layout of the planting arrangement. The areas are split into three distinct planting methods selected dependent upon the topography and aesthetic features of the cell cap. The three selected planting process as shown on the plan in **Appendix 1** are:

- hydro-mulching – selected for most of the cell area due to the slope of the cell and minimal after-planting irrigation required. Generally the batters will be hydro-mulched with pocket plantings of tubestock as detailed below. Follow up watering of hydro-mulched areas will be via natural rainfall to start the germination process. A cover crop such as Japanese Millet in Summer, or Rye Grass in winter will be used for initial protection and generally appear within two to three weeks. The native grasses will take approximately one to two years to germinate
- direct drill seeding – as shown in **Appendix 1** this will be used for the flatter area at the top of the cell, where a tractor can be safely used to drill the seed. The same cover crop as the hydro-mulching methodology will be employed for this process, and watering will also be dependent on rainfall
- individual planting – selected for the steeper and more visual areas that have been identified as a high erosive risk initially. This will be employed as blocks as shown in **Appendix 1** and a process that takes the most time to implement. A temporary irrigation system, or similar such as watercart attendance, will be required initially until established.

A trial is planned to be conducted in an area adjacent to the cell known as AEC30. It is 300-400m away from the cell. The same 100mm layer of topsoil that is proposed for the cell will be used to evaluate the success of the above three planting methods. The trial will also be used to evaluate the species proposed in **Section 2.3.2.1**. An area with both flat and sloping landforms will be included. The sloping landforms will be both east and west facing. The trial will take place over the next six months to help inform what methods of planting and what species will be suitable for the containment cell cap. Refer to **Appendix 2**.

2.3.2.3 Soil sourcing and treatment

Site sourced topsoil is proposed to be utilised with some minor treatment required, refer to **Section 3.1.1**.

3. Landscaping methodology

3.1 Preparatory works

3.1.1 Environmental controls

The key environmental controls to be implemented during the landscaping activities (particularly soil placement and seeding and planting) are the following:

- a watercart will be on site during the works to mitigate dust generation
- areas will be re-vegetated as soon as possible after topsoiling is completed to minimise the duration of fully exposed areas
- erosion and sediment controls will be installed to minimise the potential for erosion, and to capture any sediments in run off. This will include:
  - coir logs placed in specific locations where high velocity is expected to slow surface water runoff and minimise the potential for erosion prior to the sterile cover crop germinating and stabilising soils
  - sediment fencing installed downslope of the placed topsoil. In the event that sediment is eroded the topsoil captured in the sediment fencing will be replaced on the capping.

3.1.2 Topsoil characteristics and treatment

Appendix 2 contains the test results for the proposed site-sourced topsoil to be used at the cell cap. The topsoil will be placed at a nominal 100mm thickness.

The topsoil would be improved with the addition of the following:

- application of composted green waste material (compliant to AS4454 or equivalent) at 10% v/v to increase organic matter
- application of gypsum at 1.2 kg/m^3 (approximately 6 tonnes) to improve cation balance
- for native plantings apply Neutrogs Bush Tucker (or equivalent nitrogen phosphorus potassium (NPK) post spread at 100 g/m^2 (approximately 5 tonnes) to increase all nutrients for native species

3.1.3 Soil placement

The topsoil will be transported to the cell from the stockpile on site using 40T dump trucks and placed over the installed capping layer at a nominal 100mm thickness by positrak or small dozer.

Following placement of the topsoil a dozer or equivalent will be used to scarify the soil and top 200mm of subsoil horizontally to loosen any topsoil or subsoil that may have been compacted during its placement, and to aid water retention during rainfall that will maximise propagation. If required lime will be added to the soil to raise the pH. The lime would be tined in with a lightweight dozer.

The final profile of the topsoil will be left rough to promote growth such that the topsoil is not compacted.

3.1.4 Mulch placement

Following the placement and scarification of the topsoil, a 75 mm thick layer of commercial grade forest mulch will be placed over the topsoil. The mulch layer will assist in weed suppression, as well as moisture retention in the topsoil. The mulch will be transported to the cell using dump trucks. Mulch will only be used where direct planting is specified and will be at the location of each tubestock.

3.2 Seeding and planting

3.2.1 Seed mix

The proposed seed mix is as follows:

- *Lomandra longifolia*, Spiny Headed Mat Rush
- *Themeda australis*, Kangaroo grass
- *Dianella caerula*, Blue Fax Lily
- *Austrodanthonia fulva*, Wallaby grass
- *Cymbogan refractus*, Barbed Wire grass
- *Echinopogon caepitosus*, Hedge Hog grass
- *Erogrostis brownie*, Love grass
- *Chrysocepholum apiculatum*, Yellow Buttons

3.2.2 Seed application methods

Three types of seed application are proposed as follows:

- hydro-mulching – selected for the majority of the cell area due to the slope of the cell and minimal after planting irrigation required. Generally the batters will be hydro-mulched with pocket plantings of tubestock as detailed below. Follow up watering of hydro-mulched areas is best left to natural rainfall to start the germination process. A cover crop such as Japanese Millet in Summer, or Rye Grass in winter are used for initial protection and generally appear within two to three weeks. The native grasses will take approximately one to two years to germinate
- direct drill seeding – as shown in **Appendix 1** this is selected for the flatter area, being the top of the cell, where a tractor can be safely used to drill the seed. The same cover crop as the hydro-mulching methodology will be employed for this process, and watering will also be dependent on rainfall
- individual planting – selected for the steeper and more visual areas that have been identified as a high erosive risk initially. This is employed as blocks as shown in **Appendix 1** and is a process that takes the most time to implement. Temporary irrigation or watercart attendance is required to water the plantings until they are established.

3.3 Post-planting management

3.3.1 Inspections

In accordance with the LTMP the installed vegetation will be inspected with the following frequency:

- monthly for the first 12 months
- quarterly for two years following the 52 weeks maintenance period
- annually thereafter

Inspections will also be undertaken in response to the following events:

- immediately (within 24 hours) following a 5% Annual Exceedance Probability or greater storm event as determined by BOM 061260, Cessnock Airport
- immediately following an earthquake event of a magnitude of ≥ 5 recorded within a 20km radius
- in response to a report of potential damage
- in response to a bushfire reported within 500 metres of the Containment Cell

3.3.2 Maintenance

The following maintenance is required for each type of planting:

1. hydro-mulching – follow up watering is not included as it is best to allow germination of the seed by natural rainfall
   The native grasses may take several months to between one and two years to germinate, which is dependent upon the climatic conditions, soil moisture, temperature conditions, light availability, and time of year.
   A period of more than three years maintenance will be beneficial to confirm that the native grasses have germinated, and weeds are kept to a manageable level (using, as required, the methods described in **Section 3.3.3**). Grasses will be mowed periodically to minimise the potential fire risk.
2. direct drill seeding – As for hydro-mulching a period of more than three years maintenance will be beneficial to confirm that native grasses have germinated, and weeds are kept to a manageable level. Grasses will be mowed periodically to minimise the potential fire risk.
3. individual planting – follow up watering is required for this planting with accessible water from site for approximately one to two growing seasons until the plants are established.

3.3.3 Weed and Inappropriate Species Management

If the inspections identify weeds or other in appropriate species (trees and/ or species with deep roots) the following will be undertaken in accordance with the LTMP:

- physically remove inappropriate vegetation species, ensuring that roots have been removed
- minimise damage to vegetation to be retained
- compact soils if they have been loosened/ disturbed through plant removal
- cover disturbed weed removal area with mulch.

3.3.4 Plant Replacement (where required)

In accordance with the LTMP, if the vegetation cover has not established within the expected timeframe, or areas of vegetation have been damaged or subject to dieback, the Containment Cell Manager is to commission an appropriately qualified specialist to investigate the cause of the issue and develop a Contingency Strategy. This strategy would then be implemented.

4. Implementation

4.1 Roles and Responsibilities

4.1.1 Landscaping and Initial Management

Table 4-1 identifies the personnel with key roles and responsibilities in implementing the landscaping installation and initial management (for the period prior to the NSW Government accepting ownership of the Containment Cell) methodology and environmental management measures described in **Section 3**.

Table 4-1: Project Personnel and Environmental Management Responsibilities

Position	Responsibilities
OVERALL SITE MANAGEMENT	
Managing Director	Make certain that the Hydro Team and contractors are implementing this LMP. Provide adequate resources and funding for the implementation of this LMP. Review and approve LTEMP and sub-plans (including this LMP). Liaise with government and community stakeholders regarding the activities at the Smelter, including the landscaping activities. Provide adequate resources and funding for the monitoring and auditing of: the implementation of this plan and overall environmental performance.
Principal Environmental Consultant	Provide advice in relation to environmental management and performance. Review and modify the LTEMP and sub-plans (including this LMP) as directed by the Managing Director/Project Manager. Review and approve the contractors' environmental management documentation prior to commencement of activities and inform contractors of changes to the LTEMP and sub-plans (including this LMP). Assist in the response and investigation of environmental incidents and implement corrective actions arising from environmental incidents and audits.
Principal Communications Consultant	Manage the mechanisms available for the community to receive information and to make enquiries or complaints about activities.
REMEDIATION (INCLUDING CELL CAPPING AND LANDSCAPING) ACTIVITIES	
Hydro Project Manager	Provide relevant environmental legislative, regulatory and management requirements in tender documentation. Verify that the work of contractors is undertaken in accordance with this LMP. Undertake a weekly inspection of the Project activities (including landscaping activities), for the duration of the Project.
Commercial Manager	Coordinate environmental background checks to determine whether potential contractors have been involved in court proceedings or have been issued with environmental penalty notices from Government Departments. Coordinate the inclusion of relevant environmental legislative, regulatory and management requirements in tender and procurement documentation.

Position	Responsibilities
Workplace Health and Safety (WHS) Manager	Provide Hydro personnel with the necessary tools and training to enable effective implementation of the LMP. Implement and maintain an induction package to be provided to all personnel working at the Smelter, including landscaping installation and short term management activities. Coordinate the response and investigation of environmental incidents and implement corrective actions arising from environmental incidents. Maintain a record of personnel induction and training records.
Remediation Contractor	Implement the environmental measures and actions as described in the LTEMP and supporting sub-plans and specific procedures that comply with this LMP. Develop and implement procedures for self-checking management compliance with the Remediation Contractor's procedures and this LMP. Report potential or actual environmental incidents associated with remediation activities at the Smelter and assist as required in the investigation, implementation of corrective actions and recording of the incident.
Site Manager	Coordinate and implement the management requirements of this LMP. Verify that the landscaping work of contractors and Hydro personnel are undertaken in accordance with this LMP. Undertake a weekly inspection of activities on the Hydro Land that will occur for two weeks or more.
LANDSCAPING INSTALLATION AND MANAGEMENT ACTIVITIES	
Landscaping Contractor	Implement the environmental measures and actions as described in this LMP. Coordinate and develop a maintenance program to assist with vegetation establishment. Maintain the revegetation for the duration of the maintenance period.
ALL AREAS AND ACTIVITIES	
Contractors	Comply with the requirements of this LMP as applicable. Implement the measures and actions as described in the LMP (as applicable) through procedures and management plans that comply with this LMP. Develop and implement procedures for self-checking environmental management compliance with Contractor's procedures and this LMP.
Personnel	Implementation of the relevant environmental measures described in this LMP applicable to their activities.

4.1.2 Long Term Management

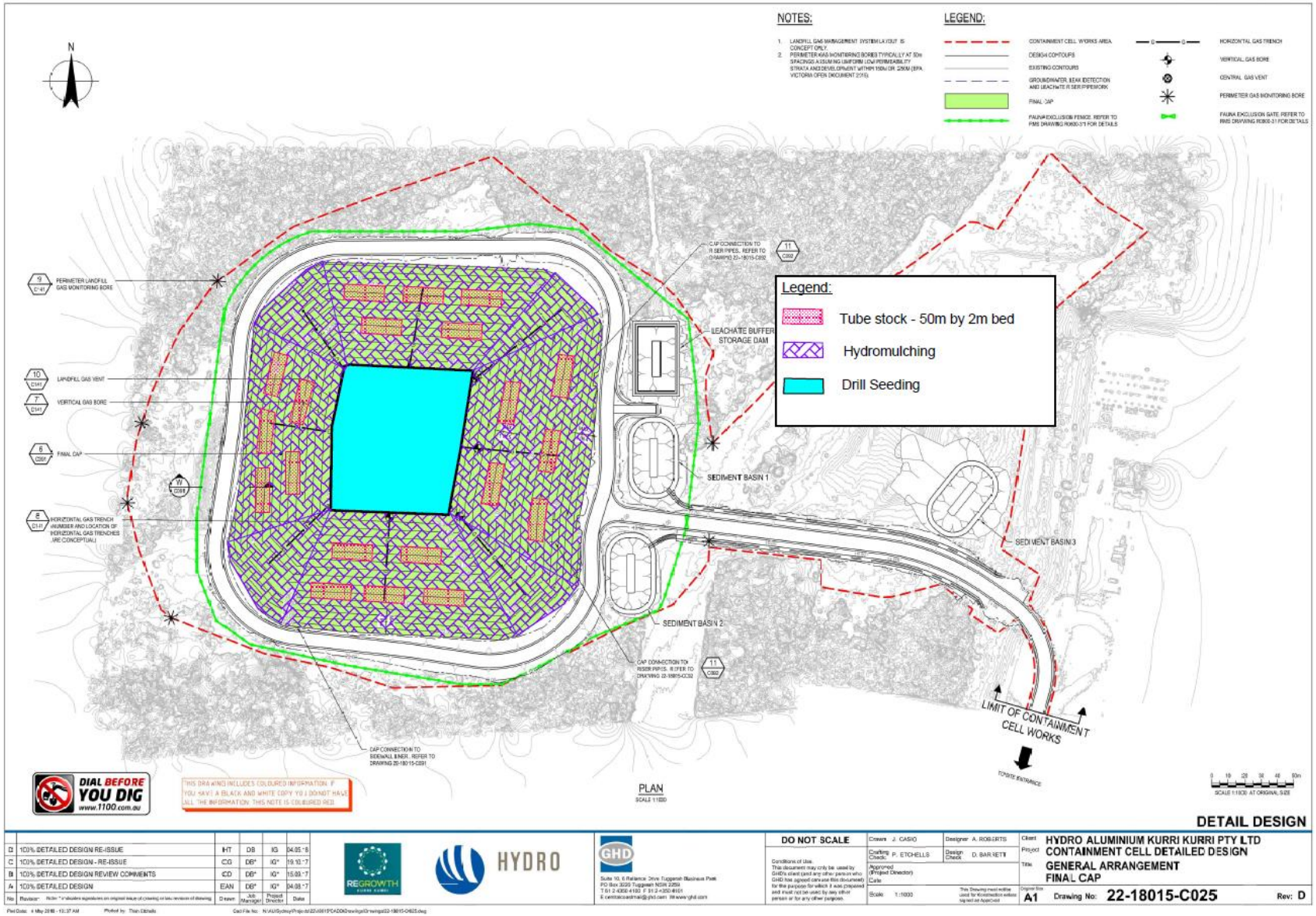
Table 4-2 identifies the personnel with key roles and responsibilities in implementing the ongoing management (following the NSW Government accepting ownership of the Containment Cell) methodology and environmental management measures described in **Section 3.3**.

Table 4-2: Ongoing Management Roles and Environmental Management Responsibilities

Position	Responsibilities
OVERALL SITE MANAGEMENT	
Containment Cell Owner	Make certain that the Landscaping Maintenance Contractor is implementing this LMP. Review and approve any amendments to the LMP, and submit to DPE in accordance with SSD 6666. Provide adequate resources and funding for the monitoring and auditing of: the implementation of this plan. Implement the ongoing management measures and actions as described in this LMP.
Containment Cell Manager	Coordinate and develop an inspection and maintenance program consistent with this LMP. Coordinate the development and implementation of the Contingency Strategy in the event of damage to or death of vegetation.

Appendix 1

Landscaping Design Concept Plan (planting method and species to be confirmed as part of the trial at AEC30)



Confidential

Appendix 2

Landscaping Trial at AEC30

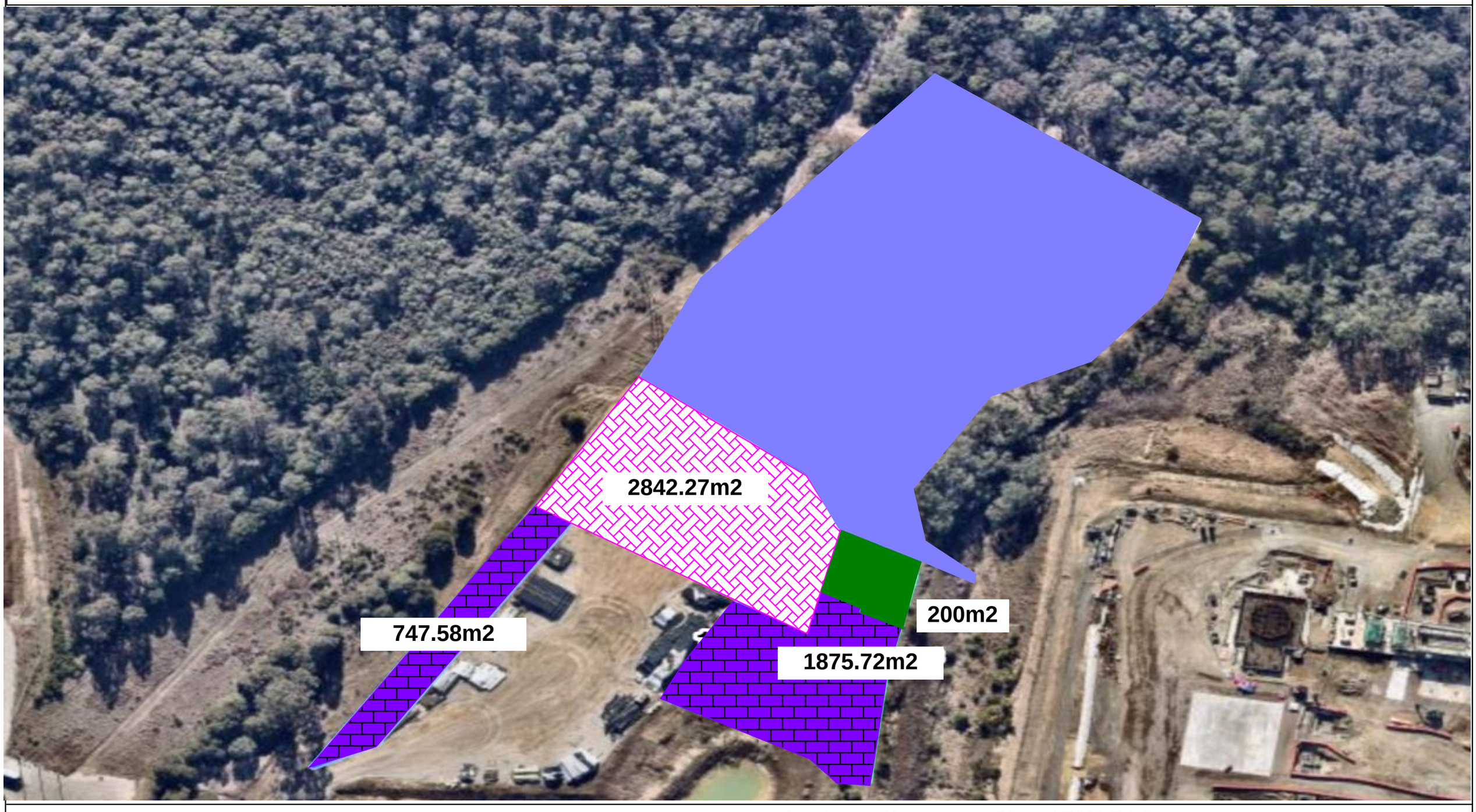
LEGEND:

Hydromulched Area

Tube stock Area

Drill Seeded Area

APA Laydown & Access Areas
- not revegtated



Project: Hydro Aluminium Kurri Kurri remediation Works

Landscape Management Plan - AEC30 Trial

Date: 5.9.2023 Rev 1