COPPABELLA LANDFORM DESIGN REPORT

In accordance with the requirements of PRCP Guideline

REPORT DATE: DECEMBER 4, 2023

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1. PURPOSE

This Landform Design Report has been developed to describe the current planned final landform at the Coppabella Mine, in accordance with the requirements outlined in the Progressive Rehabilitation and Closure Plan (PRCP) Guidelines.

2. LANDFORM DESCRIPTION

2.1. 3D Design Plans of the Final Landform

The final landform has been developed in several 3-dimensional CAD packages, each utilized for the particular capabilities of the software. Namely, the packages used were:

- SPRY for sequencing and bulk volume placement;
- 3D-Dig for reshaping/smoothing; and
- and Vulcan for final drafting and presentation.

The design outcome is presented as contour maps in Figure 1 below.

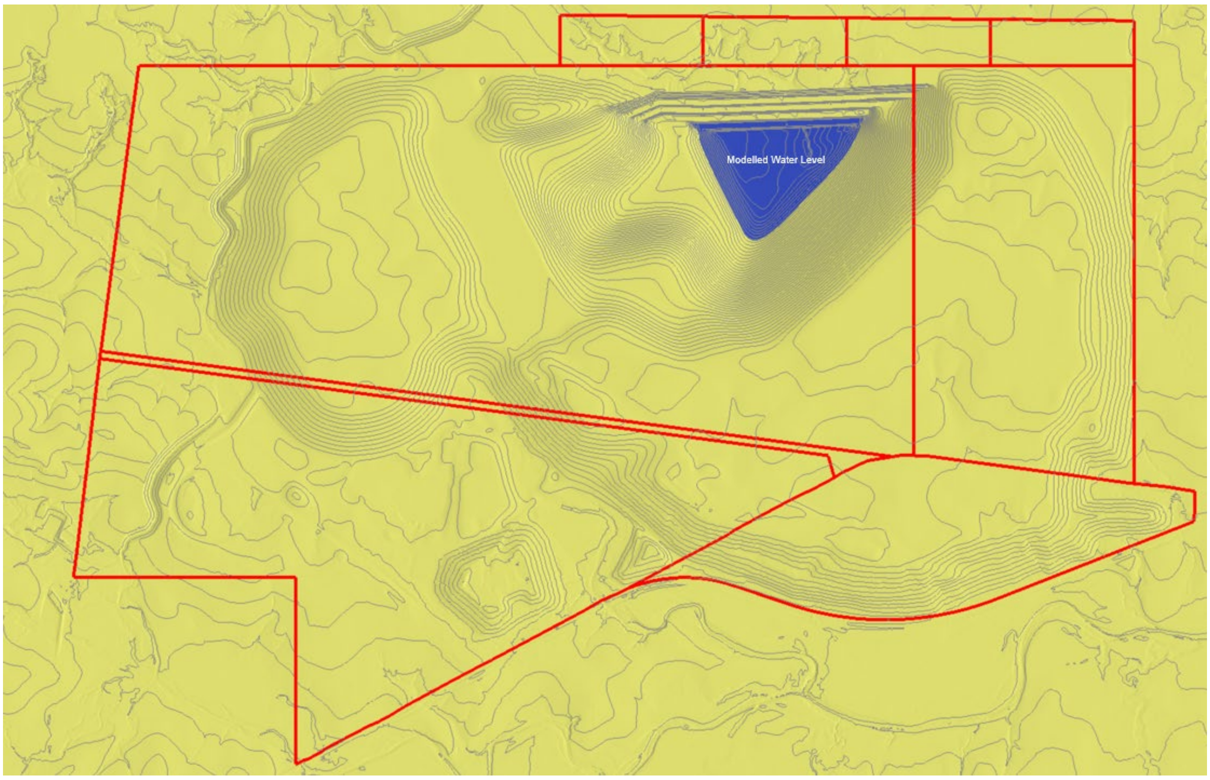


Figure 1: Coppabella Landform Design

2.2. Method of Determining Landform Design

The mine plan utilized for the development of this landform aims to maximise the mining of the coal resource. To identify the area to be mined, a pit optimisation process was undertaken (in the Vulcan software package) using a long-term price set 50% higher than Broker Consensus Long Term Prices at mid-2022. (NOTE: Coal Prices for the last 18 months have been significantly above this level). The optimization was unconstrained, other than to prevent mining disturbance at or beyond the mining lease boundary.

To determine the final landform a mine schedule was first developed utilising the SPRY software package. The model used to develop this schedule includes 'Destination Scheduling', which enables the planner to place excavated material into logical 3-D dumping locations in a sequence relative to a practical mining excavation sequence. An allowance for coal waste material, based on expected coal washing yields, has been included within the overall waste dump volume.

After the 'as-dumped' landform has been determined, a landform smoothing process has been undertaken using the 3D-Dig Reshape software tool to create 'convex-concave' surfaces that mimic 'natural' stable slope profiles, while staying within the maximum slope criteria specified in the Environmental Authority (EA). This surface has then been inspected visually in 3-D to ensure the software has created the desired outcome, and volumetric checks are performed to ensure that sufficient material is available to construct the overall final landform.

2.3. Modelling Predicting the Long-Term Stability of the Final Landform Design

Section 3.1 of the PRCP Guideline states, "Transitional PRC plans are not required to demonstrate how aspects of the mine site have been designed for closure for existing or approved disturbance". The current landform has been designed within the approved requirements of the site's EA, including limitations on maximum slope.

A geotechnical assessment of final voids was conducted by GeoTek Solutions Pty Ltd (GeoTek) in June 2016 (GeoTek, 2016). Although the focus of this report was the Final Void design, it also assessed external dump slopes as well as the in-pit slopes within the voids. The report indicated that slopes designed in accordance with the EA conditions would be geotechnically stable in the long term, although some instability in the low walls may be present as water levels rise. This instability is confined within the footprint of the low wall.

Where landform features have been already constructed in the mine, there are several areas where significant erosion has occurred after rehab activities were completed, particularly where these slopes have been constructed from tertiary or weathered spoil material. The slopes are generally quite stable however, with limited active erosion channels evident. This is particularly true where vegetation has been well established. The historical erosion channels require careful rework to reshape, topsoil and vegetate without disturbing the surrounding established vegetation.

2.4. Method of Construction

The landforms at the Coppabella Mine have been, and will continue to be, constructed using the mine overburden placed in lifts by haul trucks being loaded by excavator / shovel units. The lower levels of the backfill material will be generally placed by the site's dragline. The final surface profile will generally be established utilizing large earthmoving bulldozers (D10, D11, etc.) to regrade these 'as-dumped' lifts according to the final landform design.

Environmentally, the method has advantages in providing for more controlled planning of overburden dump construction, maximizing efficiency in landform development and rehabilitation. Additionally, the truck and excavator / shovel method offers advantages for selective encapsulation of potentially problematic materials that may be identified through operational material characterization and monitoring programs.

2.5. Quality Assurance / Quality Control (QA/QC) requirements

Operator and supervisor training is provided to personnel undertaking rehabilitation earthworks, including the importance of conforming to the design specifications. Works are supervised to ensure compliance with design specifications and relevant procedures.

In addition, constructed landforms are inspected regularly during the construction phase and signed-off as constructed to design following completion of earthworks.

2.6. Trial Methodology to Verify the Predicted Success of the Final Landform Design

The site has established external reference sites and has developed a Rehabilitation Monitoring Program to verify the success of the final landform design.

The monitoring program has two main focuses:

1. Vegetation monitoring; and
2. Final landform monitoring.

The aim of the rehabilitation monitoring program at Coppabella Mine is to collect data that enables an understanding of the success and development of rehabilitation towards the agreed final land use. Specifically, the objectives of the rehabilitation monitoring include:

- Provide an understanding of the way in which the rehabilitation develops over time (successional patterns and trends);
- Identifying significant differences between rehabilitation and reference sites and allowing for supplementation of rehabilitation treatments;
- Identifying successful treatment types and allowing for the refinement of rehabilitation methods;
- Obtaining sufficient relevant data to statistically indicate trends and demonstrate achievement of success/completion criteria;
- Further understanding the chemical properties of the reconstructed topsoil profile;
- Allowing for the development and refinement of land use demonstration studies;
- Determining post mine landform stability;
- Establishing or improving completion criteria for each post-mine land use; and
- Identifying areas and extent of maintenance and management requirements.

Peabody's Rehabilitation Monitoring Manual (Eco Logical, 2016) details methods of plot establishment and measurements.

2.7. Limitations and Assumptions of the Landform Design

The landform has been designed to comply with the criteria outlined in the site's Rehabilitation Management Plan and EA, specifically:

Final Void

The final void will be left with an access road or ramp that is suitable for installing and maintaining pump and pipe infrastructure sufficient to recover water to natural ground level if required.

The angle of the highwall slopes will be constructed with slopes less than 84° (10V:1H), therefore complying with the EA. The lowwall will have a crest-to-toe angle of less than the limit of 18.4° (1V:3H) specified in the EA.

Where applicable, lowwalls will be rehabilitated, by profiling, application of topsoil layer, ripping and seeding. A bund and livestock fence will be placed around the perimeter of the final void highwall. These measures will restrict inadvertent access by people and animals and prevent uncontrolled runoff from entering into the pit. Surface water runoff from the off-lease catchment to the north of the void will be allowed to run into the pit via a drop structure integrated into the landform design of the final highwall, to be constructed as part of the final void establishment works. An alternative to this structure may be to develop a diversion drain around the northern and eastern lease boundaries.

The residual void footprint is as small as practicable while balancing economic and technical expectations.

The final landform provides a balanced outcome that achieves maximum resource recovery whilst reducing, where practicable, the size of the residual void.

The void size, defined by the water filled area at the maximum long term pond depth, has been limited to 80 Ha, to comply with EA Condition C4. For the mine plan under consideration, this has required some rehandling of emplaced spoil material, and ensuring the void catchment area is minimised. The 'post-mining' final void size is a function of the depth of the final strips and the establishment of safe slopes and appropriate ramps for spoil waste and coal haulage. The mine plan sequence preferentially places waste material in the lowest available dumps, ensuring that the voids are back-filled as much as possible.

Co-Disposal Area

The Co-Disposal Area facility will be capped using suitable material. The facility will be reshaped to achieve the post mining landform dimensions specified in the EA. The facility will generally be designed as a water shedding section of the landform and water management features will be constructed as required. The facility will be topsoiled, seeded and maintained.

Spoil Dumps

Rehabilitation of this domain includes:

- Placement of overburden waste to stay below the approved levels of 50m of the original ground level (70m is allowed in the Johnson Pit North, South Pit and East Pit South Dump areas);
- Recontouring of slopes to establish slopes less than 1V:7H (~14%);
- Maximum distance between erosion control structures on slopes of 75m;
- Surface water management on slopes and crest to ensure runoff is managed to minimize erosion potential; and
- Application of topsoil onto the re-profiled surface to an approximate depth of 200mm (+/-25mm).

The results of the landform design work are heavily influenced by several assumptions, particularly the assumption relating to the swell factor of the excavated and dumped material. Small variations in this assumption can result in differences in the as-dumped profile, including the size and shape of the void. Additionally, mine sequence changes in response to market demands or operational challenges may result in similar differences. As the mine progresses, some variation in the current proposed landform can be expected and will be updated as required via appropriate amendment processes.

3. Key Considerations of the Landform Design

3.1. Structure Location, Footprint and Height

The proposed post-mining landform is shown in Figure 1 contains the following key features:

- Elevated areas associated with out of pit overburden dumps, being up to 70m higher than the original ground level. and having external batter slopes not exceeding 1V:7H;
- Elevated co-disposal facility, being up to 50m high with external batter slopes not exceeding 1V:7H and a crest area to be free-draining through the development of a gently sloping crown;
- Rehabilitated Infrastructure areas including the CHPP general area and water management structures; and
- Stabilised final void (water filled) areas, less than 80 Ha.

3.2. Lining Requirements

No lining is required for overburden / interburden dump landforms. The co-disposal is designed to have an inert overburden cap (nominally with a minimum thickness of 1m) to limit infiltration of water and oxygen to the contained materials. All landforms are designed to be water shedding to reduce infiltration and seepage.

3.3. Landform 'water-retaining' or 'water-shedding'

The landform design has been developed to be generally water-shedding, with only the areas in close proximity to the final void area being water-retaining. During construction of the landform, as part of the operational management of water on-site, much of the surface runoff water will be retained. As the rehabilitation objectives of the landform are achieved, runoff on these areas will be eventually returned to the natural receiving waterways.

It is noted that there are currently areas of 'saline seep' evident at the base of several of the out of pit dumps. These will be monitored over the next several years to determine if the salinity observed is likely to persist, or if it is a transient effect caused by the disturbance of the soils and placement of fractured overburden. If the salinity observed is predicted to continue, it may be necessary to retain the water associated with this seepage, and any catchments above the observed seepage area utilizing a simple drainage system to place this water into the pit void, or a retention feature in the in-pit dump area. Minimization of surface water retention on site is preferred.

3.4. Identification of Materials Available for Landform Rehabilitation

Material Characteristics

Materials to be rehabilitated and/or used in the rehabilitation process have been assessed to determine their suitability relative to vegetation establishment, erosion and landform stability and potential for pollution. The assessments provided information regarding potentially limiting factors which were considered in the development of the proposed final landform and post-mining land use (PMLU).

Topsoil Resources

The Coppabella Mine has a Topsoil Management Plan which describes the nature and quantity of the topsoil resources on site, as well as the process for removal, storage and replacement of topsoil on rehabilitated slopes.

Studies performed before the mine commenced (Ison 1997) describe the surface soils as being satisfactory for use as plant growth medium. The subsoil of some soil types are high in clay and have chemical properties affecting use as soil – the topsoil management plan describes taking a maximum of 400mm to avoid integration of this material into the topsoil balance.

The current Life of Mine plan, which seeks to maximise extraction of coal resources from the Coppabella Mining Leases by opencut methods, exhibits an overall topsoil deficit. The plan requires some removal of 'recovered topsoil' which has already been placed on previously rehabilitated waste dumps that were placed coal resources originally deemed too deep to mine. This 'topsoil recovery' is considered in the Topsoil Management Plan. To cover any subsequent shortfall, the use of hay/lime mixtures may be used.

Spoil Characteristics

The coal at Coppabella Mine is overlain by weak sandstone with lesser interbedded siltstone, which is covered by a sandstone unit overlain by mudstone. The surface soils are generally 25-30m depth of heavily weathered Tertiary sediments, which comprise of unconsolidated sand and some gravel at the base overlain by clay sand and silt (Henderson Geotech, 2009).

Characterisation of this overburden material during pre-mining assessments found waste material at the Coppabella Mine is largely sodic and non-saline. The high proportion of sodium relative to other cations in the spoil material results in clay dispersion on wetting. On drying the material becomes dense and structureless resulting in low water percolation. The unstable and highly dispersive overburden has a high risk of erosion, compaction, hard setting and subsequent impacts on plant establishment and growth (Ison Environmental Planners, 1997b).

The pH of overburden was also generally found to be strongly alkaline (8.5 to 9.5) except for the shallower clay material (5.3 to 6.4). Plants are relatively tolerant of pH range, however pH can indirectly affect the availability of plant nutrients and microbrial activity. Metal levels were also found to be consistent with normal background levels (Ison Environmental Planners, 1997b).

Based on the spoil characteristics at Coppabella Mine exposure of tertiary spoil is generally avoided through the use of Permian capping, and augmenting through the addition of fertiliser treatments (Ison Environmental Planners, 1997b).

In order to further minimize risks to the landform and erosion potential the following landform design and rehabilitation criteria are utilized:

- Create overburden dumps as water shedding structures: By reducing the amount of water that will infiltrate the material the risks of tunnel erosion will be minimized;
- Limit batter slope gradient: Regrading will target a maximum external slope gradient not exceeding 1V:7H for overburden dumps. Internal slope gradients not to exceed 1V:3H adjacent to the final pit voids (above long-term standing water level);
- Construction of drainage control structures: By constructing appropriately spaced graded banks and rock lined water ways on batters, surface runoff velocities will be limited and infiltration opportunity will be reduced by removing runoff water from the dump surface;
- Covering of the surface of the regraded overburden with topsoil: This will limit surface exposure of material to runoff and rainfall thus reducing surface erosion risks; and
- Establish vegetation cover on the dumps: The root systems of established vegetation will stabilize the surface of the dumps.

Co-Disposal Area, ROM pad and Coal Stockpile Areas

The Co-disposal area (CDA) will require a period of time post operations to dry before presenting a stable land formation for capping. The CDA will be capped with suitable material and rehabilitated to achieve the desired PMLU.

An assessment of infrastructure requirements associated with the final end land use will be undertaken to determine the extent of removal. If required, infrastructure will be decommissioned, demolished and removed from site. Materials such as heavy gauge steel and non-ferrous scrap will be cut to size and trucked to offsite for recycling if considered cost effective. Concrete and non-recyclable waste including light steel will be disposed of in-pit. Rehabilitation of infrastructure areas will require minimal earthworks prior to rehabilitation treatments being applied. Main treatments will involve de-compacting the surface through deep ripping prior to topsoil application and seeding.

ROM or product coal areas will include the removal of carbonaceous material to a depth or approximately 500mm and disposed of in pit or within the CDA. Following the removal of the carbonaceous material minor earthworks including deep ripping prior to topsoil application and seeding will be undertaken.

The kinetic geochemistry of coal reject materials has been undertaken by SGME using several fine and coarse reject samples. Columns were used to give an indication of the likely quality of leachate over time and the potential constituents of concern. The kinetic test method used was a leach column test, which ran for 24 weeks (~6 months).

A Ficklin diagram was used to classify leachate from the kinetic tests. All leachate was classified as near neutral with low metals.

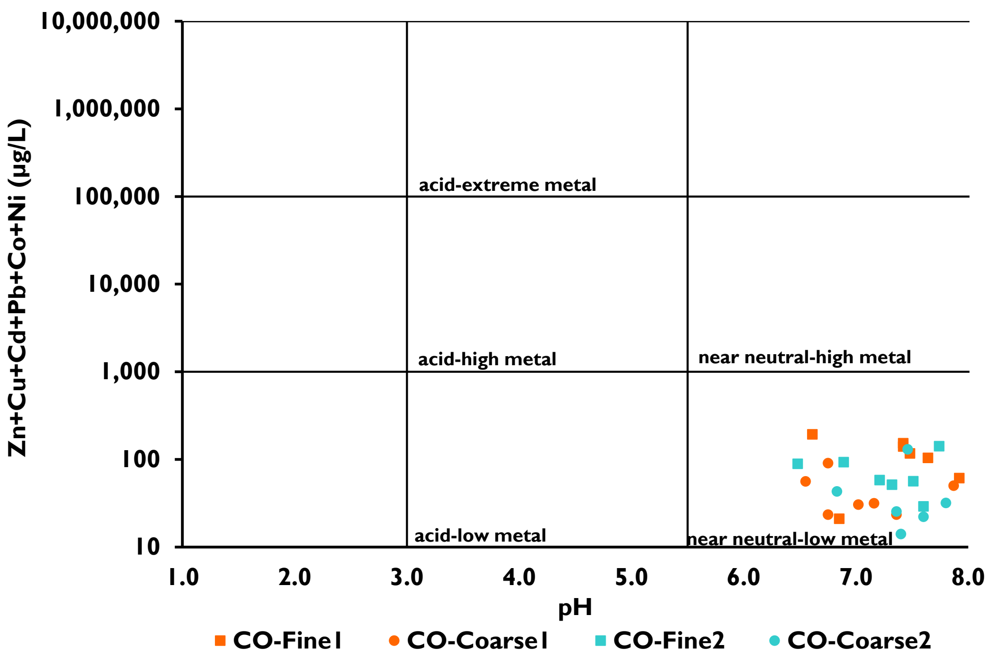


Figure 2: Ficklin Diagram of Coppabella CDA Material (SGME 2023)

Mitigation of limitations

Relative to coarse reject, co-disposal, ROM pad and coal stockpile and handling areas, the geochemistry analysis highlights very low risk of acid generation or metals contamination. However, the following mitigations will be undertaken to ensure appropriate rehabilitation of these areas.

- Where possible encapsulate materials within overburden dumps with at least 1m of cover: This will limit infiltration of water and oxygen to the materials.

- Cover co-disposal, ROM pad and coal stockpile areas with a minimum of 1m inert overburden capping: This will limit infiltration of water and oxygen to the materials. The overburden capping will provide a more fertile growth medium than the underlying materials.
- Create the landforms as water shedding structures: By reducing the amount of water that will infiltrate the underlying material the potential for production of poor-quality leachate will be minimized.
- Limit batter slope gradient: Regrading will target a maximum slope gradient of 1V:7H for the outer batters of the co-disposal facility and ROM pad.
- Construction of drainage control structures: By constructing appropriately spaced graded banks and rock lined water ways on batters, surface runoff velocities will be limited, and infiltration opportunity reduced.
- Covering the surface of the overburden capping with topsoil: This will limit surface exposure of overburden material to runoff and rainfall and provide a more fertile growth medium for vegetation.
- Establish vegetation cover on the landforms: The root systems of established vegetation will stabilize the capping and topsoil surface of the landforms.

3.5. Erosion Assessments

Operational experience at both Coppabella and Moorvale Coal Mines has demonstrated success with graded banks spaced between 75m and 88m respectively for slopes of 1V:7H on landforms. Detailed design and construction, of graded banks and rock lined waterways will be dependent on site specific factors and will be based on the most relevant industry standards available.

3.6. Slope Profile Design

The slope profile design criteria for the Coppabella Mine varies by domain. Exterior slopes are designed to be 1V:7H or less. Interior slopes are designed to be 1V:3H. Dump top surfaces are designed to be free draining from relatively gentle slopes.

The Figures below show the designed slope profiles at a selection of locations along the length of the mine.

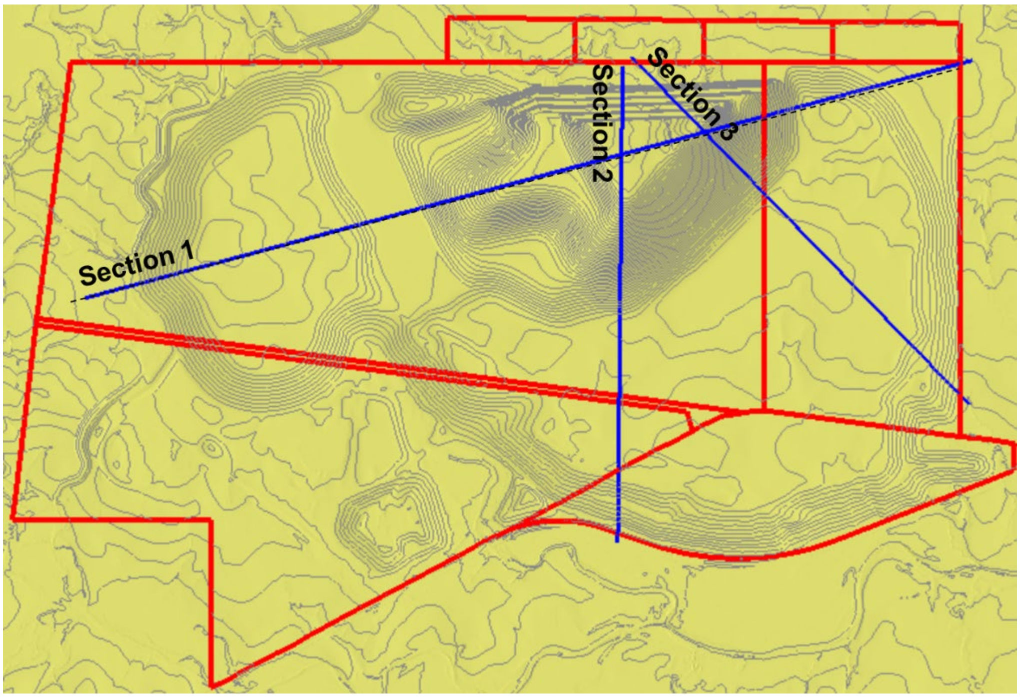


Figure 3: Plan view of Profile Sections

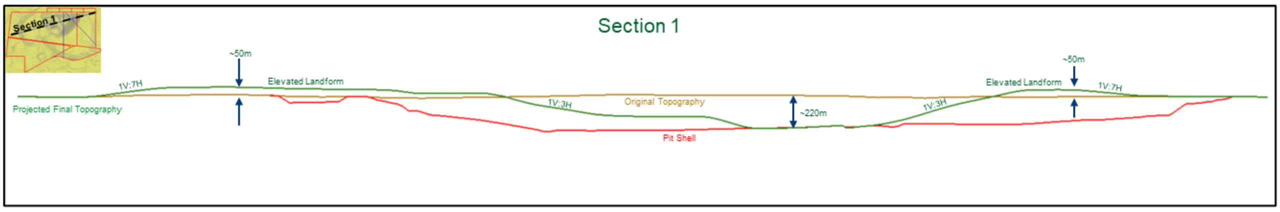


Figure 4: Section 1 – Elevated waste dump area (including CDA on western side) and partially backfilled pit

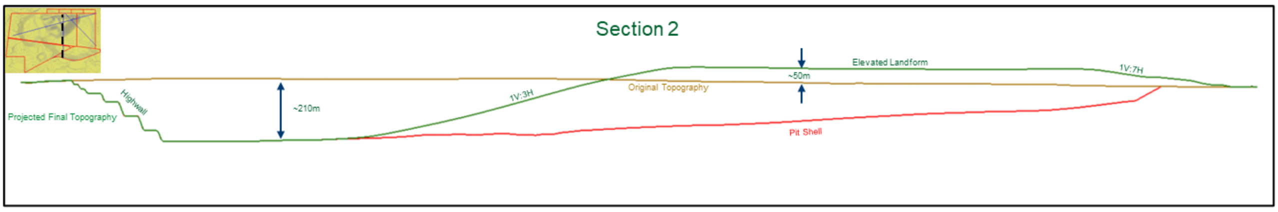


Figure 5: Section 2 – Partially backfilled pit and elevated waste dump to the south of the final pit

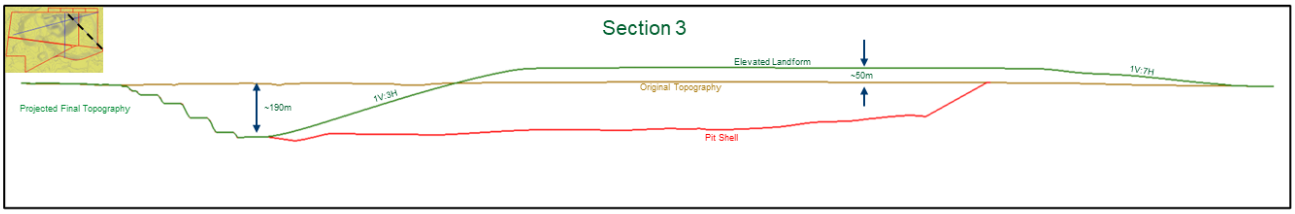


Figure 6: Section 3 – Partially backfilled pit and elevated waste dump

3.7. Settling and Subsidence

There have been few studies on the impacts of subsidence / settling over time for the design landforms at the Coppabella Mine. However, much of the out of pit dump has been in place now for several years and has experienced limited settlement over that time. A short report on regraded landform stability completed internally using LIDAR data in 2021 showed minimal subsidence or settling of the dumped landform had occurred over a 3 year period (less than 0.4m generally).

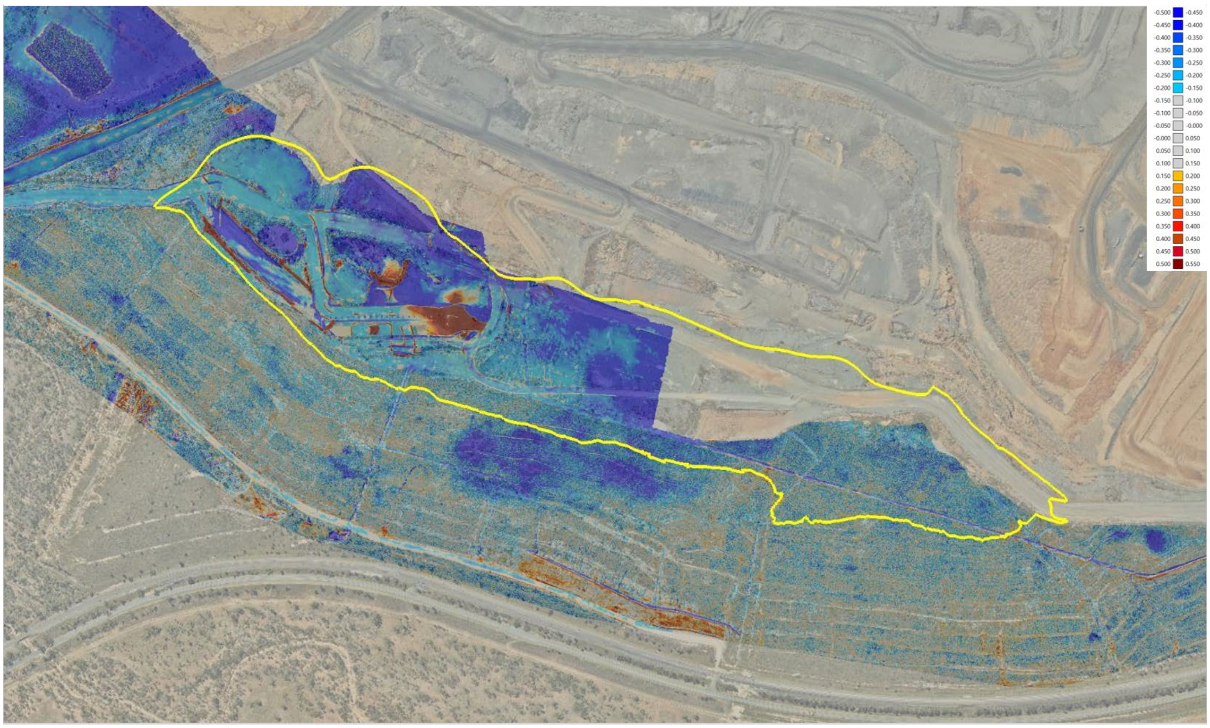


Figure 7: South Pit Landform settling between June 2018 and Sept 2021

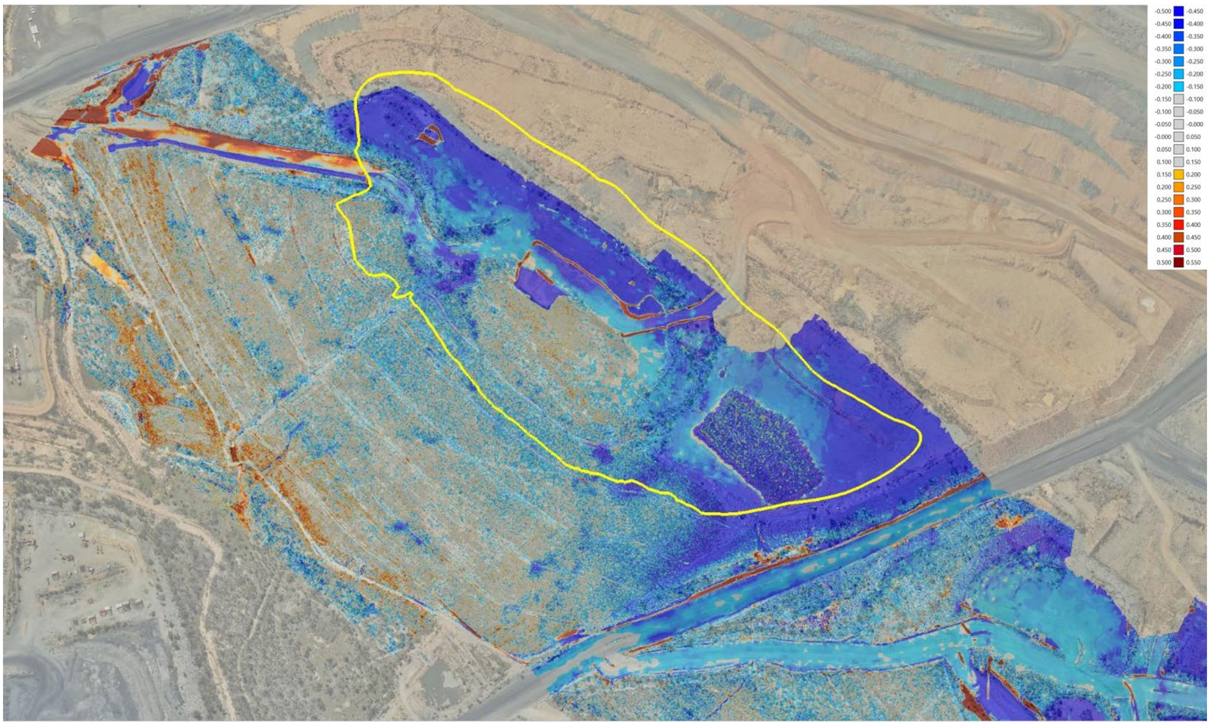


Figure 8: Johnson Pit Landform settling between June 2018 and Sept 2021

Settlement of dump areas will continue to be monitored post-placement to ensure rehabilitation activities are undertaken when the areas are considered stable.

3.8. Hydrological and Hydrogeological Assessments

The impact of mining on groundwater has been assessed on the Coppabella Mining Lease with results outlined in a report prepared by AGE in 2010. Since that time, the anticipated mining method has changed from underground longwall mining to a continuation of opencut operations over largely the same footprint.

A groundwater monitoring program has been in place at the Coppabella Mine for several years.

Groundwater levels within the Permian coal measures are generally 19-34 m below surface (approx. RL180-190mAHD), with localized depressurization of the coal measures evident with progression of the pit to the west.

Groundwater quality data shows the coal measures have salinity (as inferred from EC) which is roughly equivalent to the upper limit of water quality required for cattle grazing. Concentrations of dissolved metals are relatively low and within published guidelines for livestock, however when exposed to high salinity for prolonged periods, loss of production and decline in animal health are expected to occur (ANZECC Guidelines 2000). The groundwater salinity has been measured at ~15,000 µS/cm and is not considered suitable for agricultural use. It may be useful for industrial purposes such as dust suppression or process water.

A study into the hydrology of a final void was conducted in 2016 by Hatch, on a different void to that proposed by the current landform design – this study is included here to illustrate the impact to final void hydrology under an alternate scenario. That study showed the long-term water level of the pit would remain lower than the pre-mining groundwater level, with evaporation exceeding runoff contributions as the surface area of the pit lake increases. A sensitivity assessment was done using higher than expected groundwater make volume (to 24L/s or 2ML/day) which showed the long-term water level in the void would remain well below the pre-mining groundwater level.

This modelling has been updated internally (in 2023) using similar input parameters on the current landform design to confirm that the resulting void will continue to perform as a groundwater sink, with long-term water salinity in the void area predicted to gradually increase.

2016 Final Void Water Balance Modelling Report Summary

The figures below have been extracted from the Final Void Water Balance Modelling Report developed by Hatch in 2016 using a Final Landform that had been developed at that time. The modelling examined two Groundwater contribution cases – 1ML/day, and 2ML/day with levels and void water volumes illustrated in the figures below.

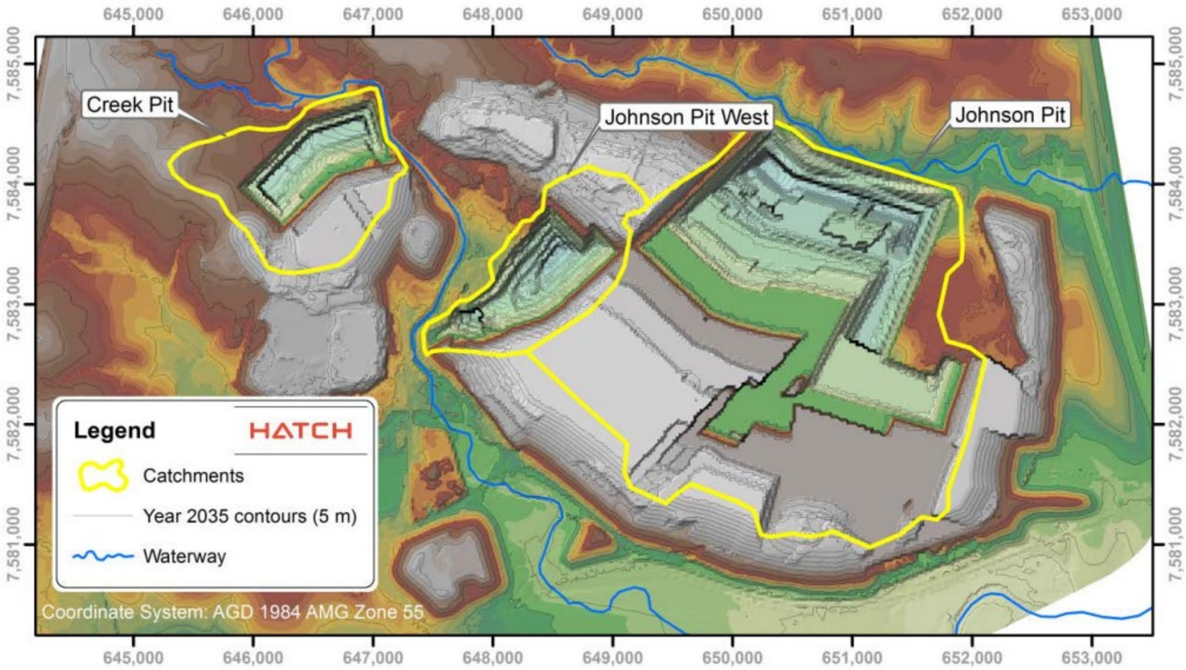


Figure 9: 2016 Study Final Landform and catchments considered for Void Water Balance Model

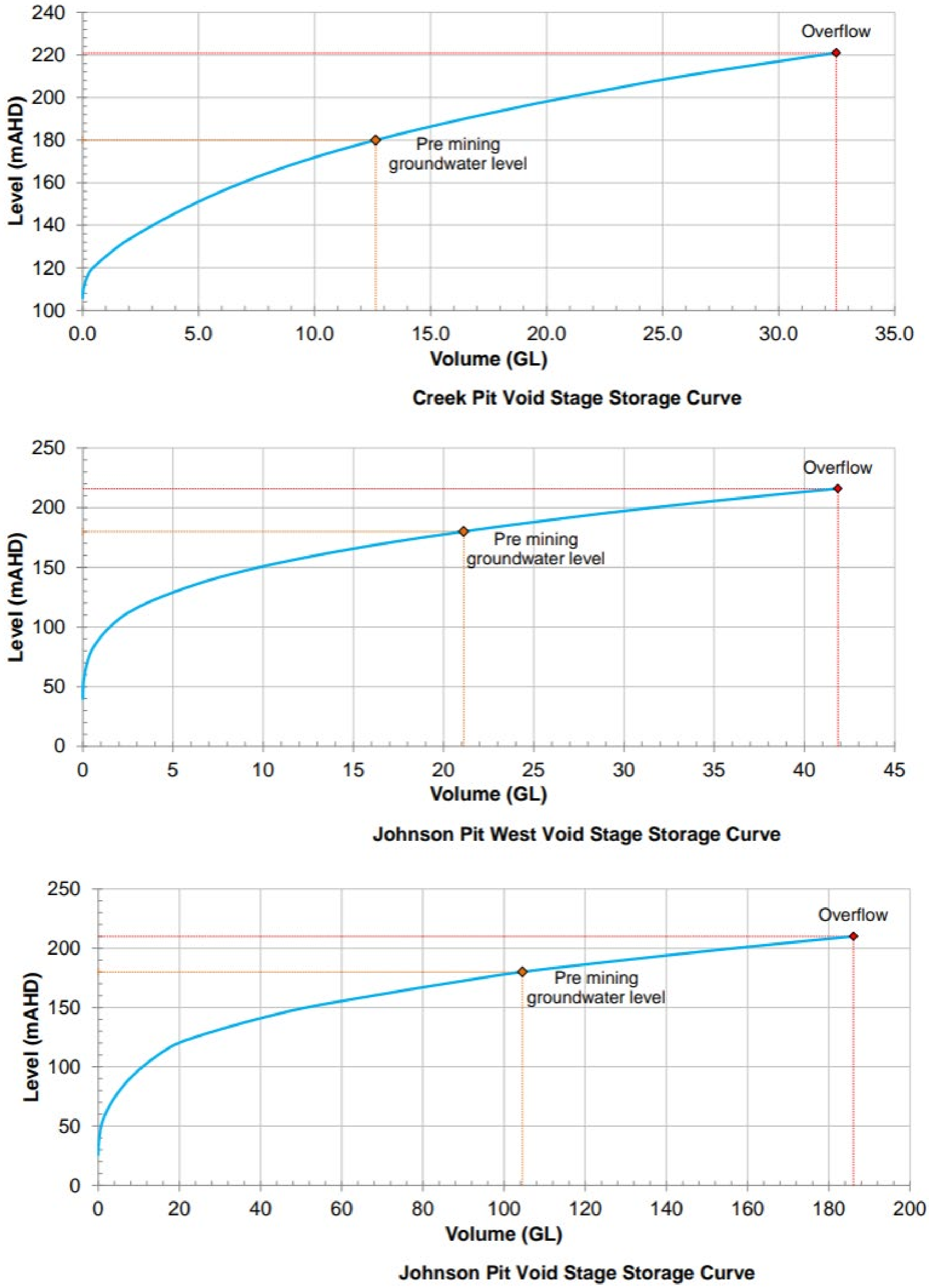
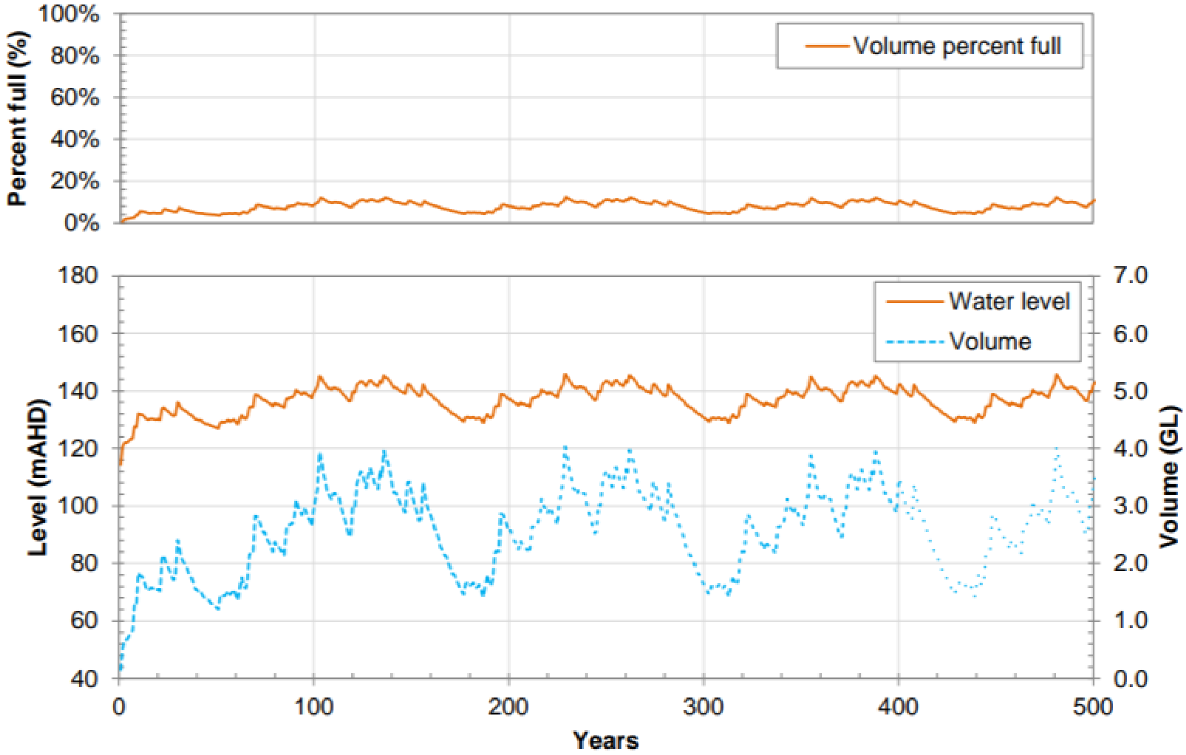
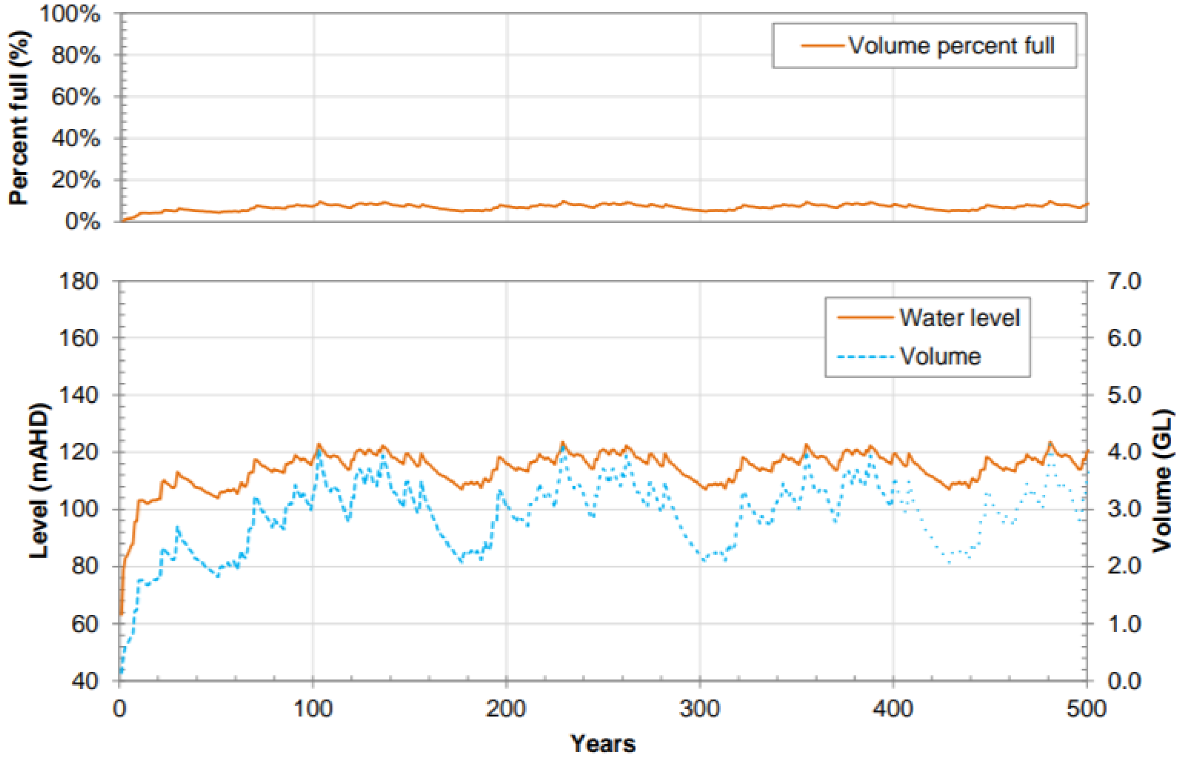


Figure 10: 2016 Study Final Landform Void Storage Curves



Creek Pit Void Water Level and Volume



Johnson Pit West Void Water Level and Volume

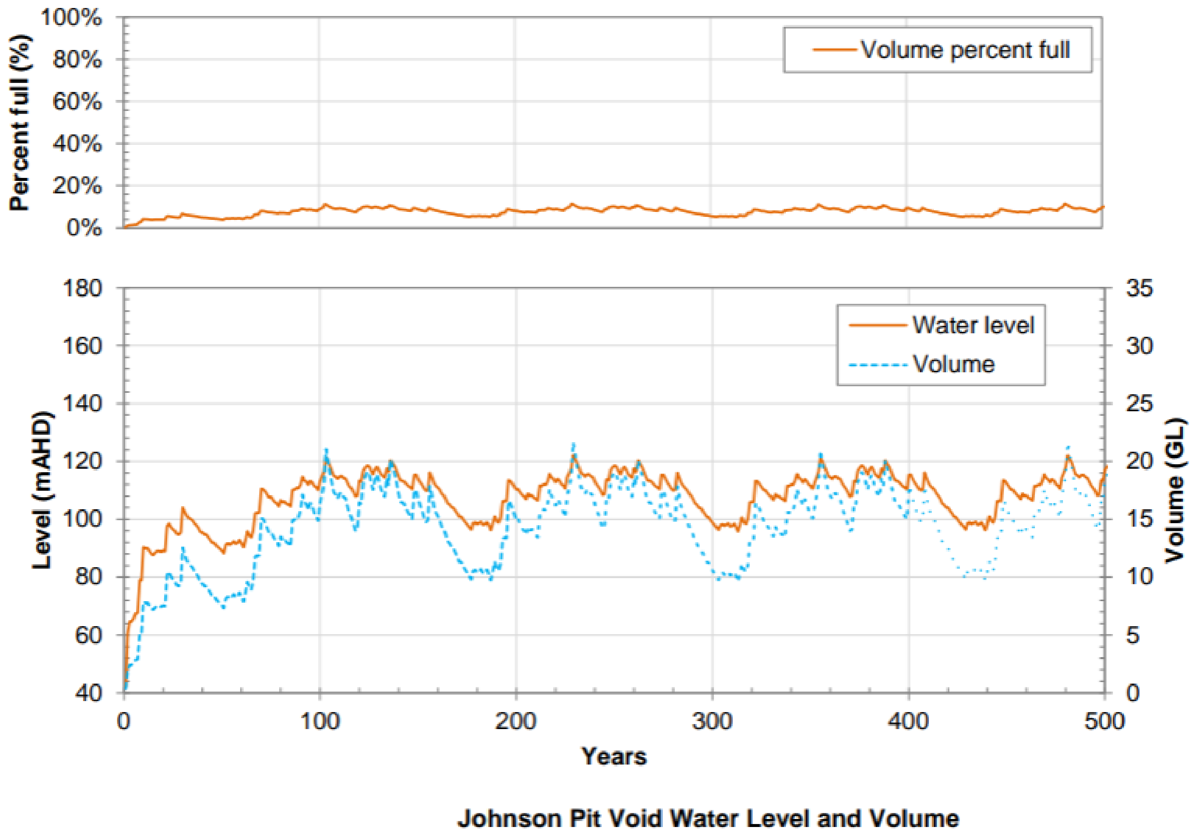


Figure 11: 2016 Study Final Landform Void long-term modelled water levels and volumes

2023 Final Void Water Balance Modelling Summary

The 2016 study has been updated using an internally prepared Australian Water Balance Model (AWBM) spreadsheet. The landform used is the subject of this report, developed using a higher revenue factor to illustrate the maximum potential disturbance of the Coppabella Mine.

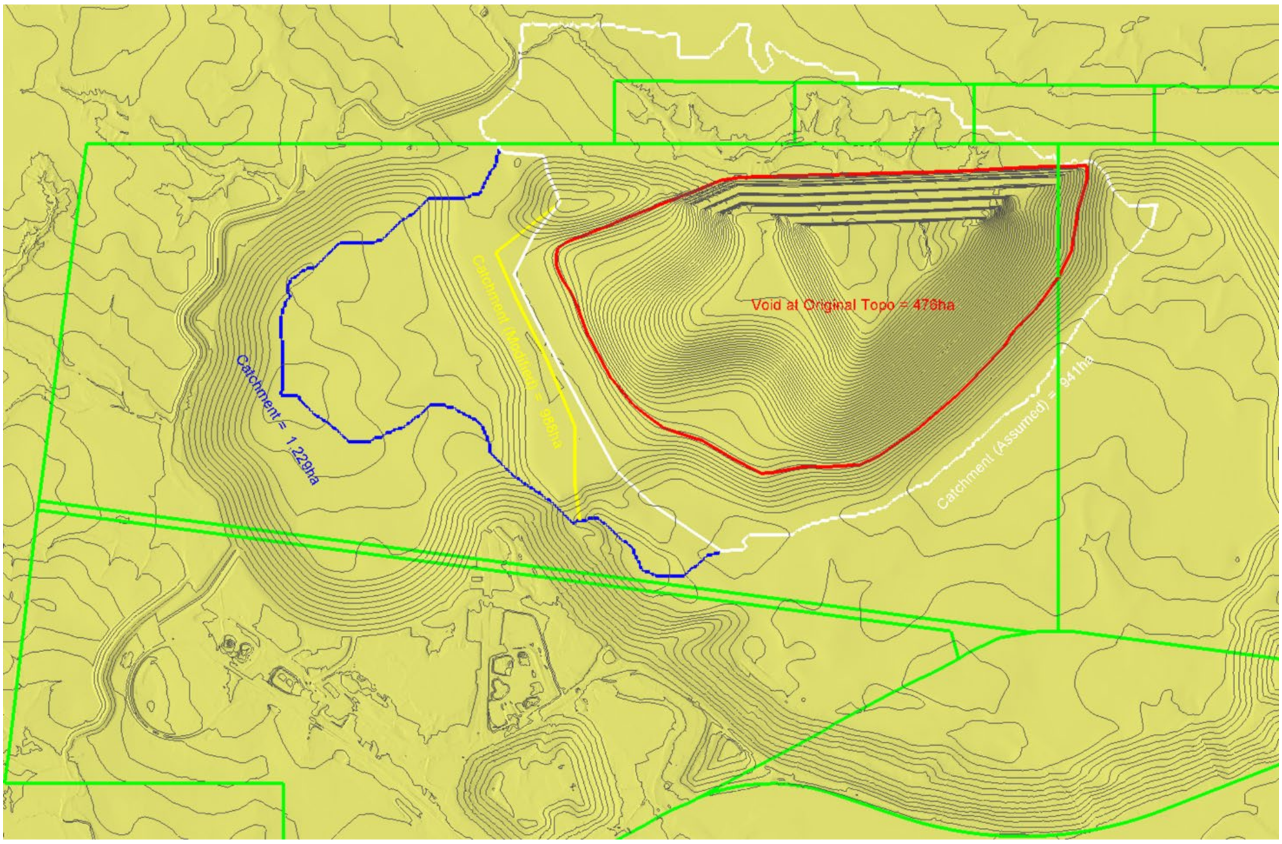


Figure 12: 2023 Final Landform with Void Catchment Areas

The catchment area for the final void has been determined to be ~941 Ha. A sensitivity assessment has been run on a slightly larger catchment of ~988 Ha, which may eventuate from a flatter in-pit dump and regrading profile.

It is noted that due to the increased mining depth of the 2023 landform, equivalent final pit void volumes are found at much lower levels than the previous 2016 modelling (i.e. at RL150mAHD, the 2016 modelling has ~65 GL of capacity across the three identified pits, whereas the 2023 modelling has a volume of ~1300 GL at that level) When the interstitial space of the spoil backfill is considered (assumed to be 15%), that volume increases to ~1450GL. This additional volume was not considered in the 2016 modelling.

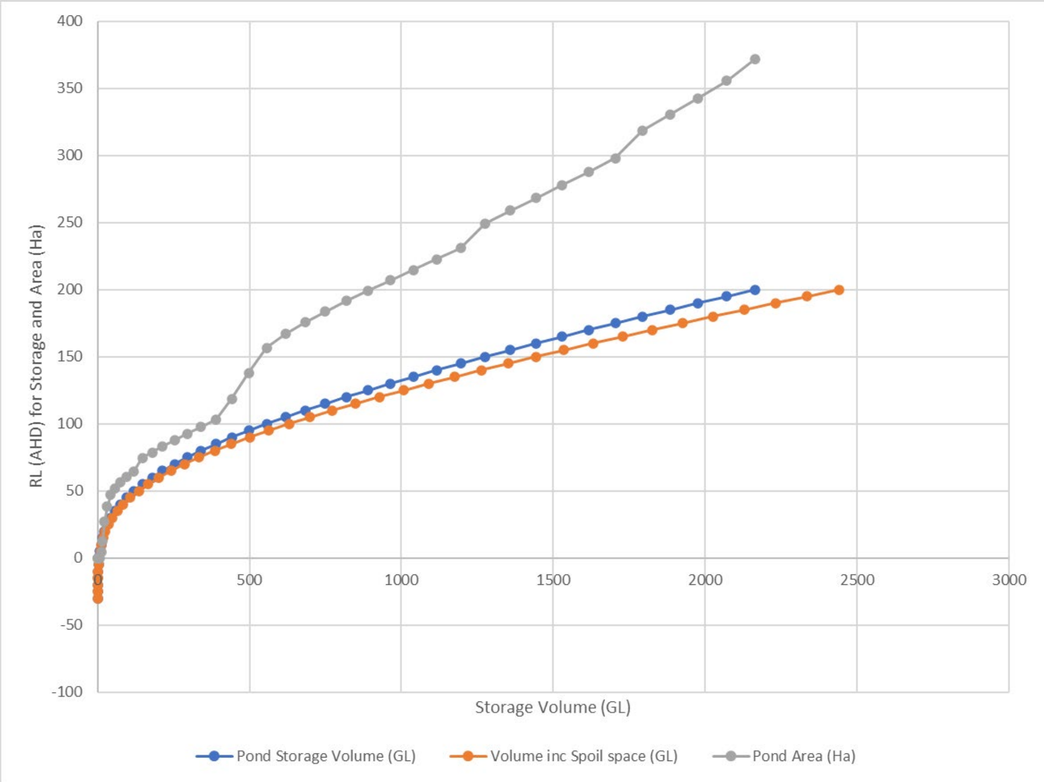


Figure 13: 2023 Final Landform Void Storage and Surface Area Curves

The following figures show the results of the updated void water level modelling for both watersheds (minimum of 941 Ha and maximum of 988 Ha), and with expected groundwater contribution of 12L/s (~1ML/day).

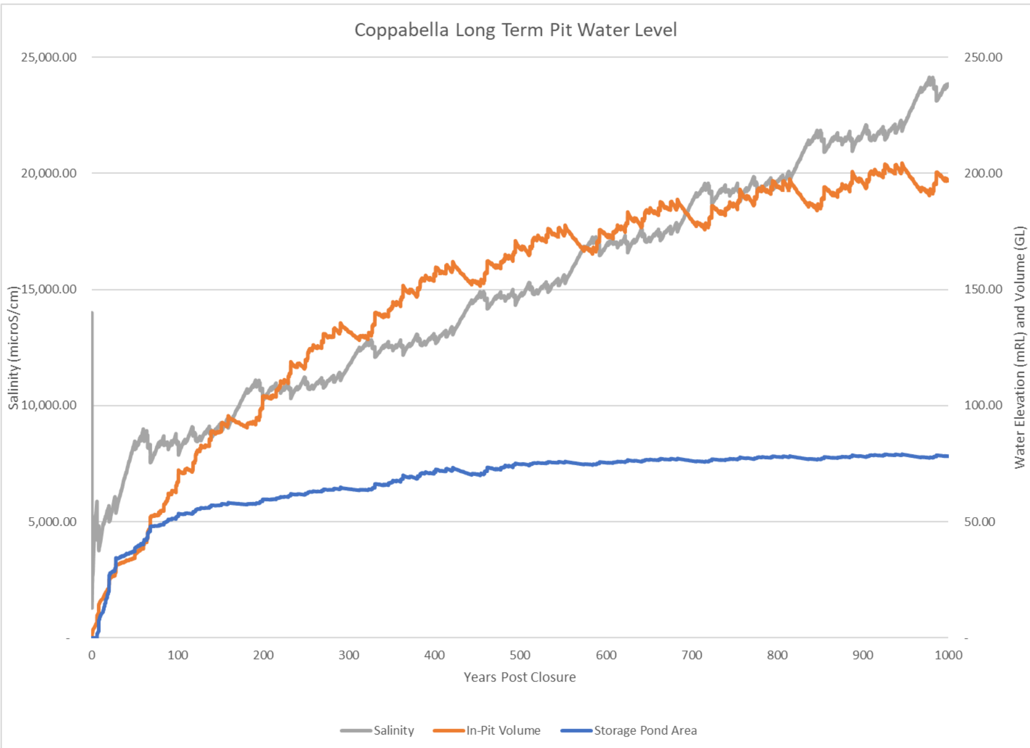


Figure 14: 2023 Final Landform Void long-term modelled water levels, volumes and quality (941Ha watershed, 1ML/day GW contribution)

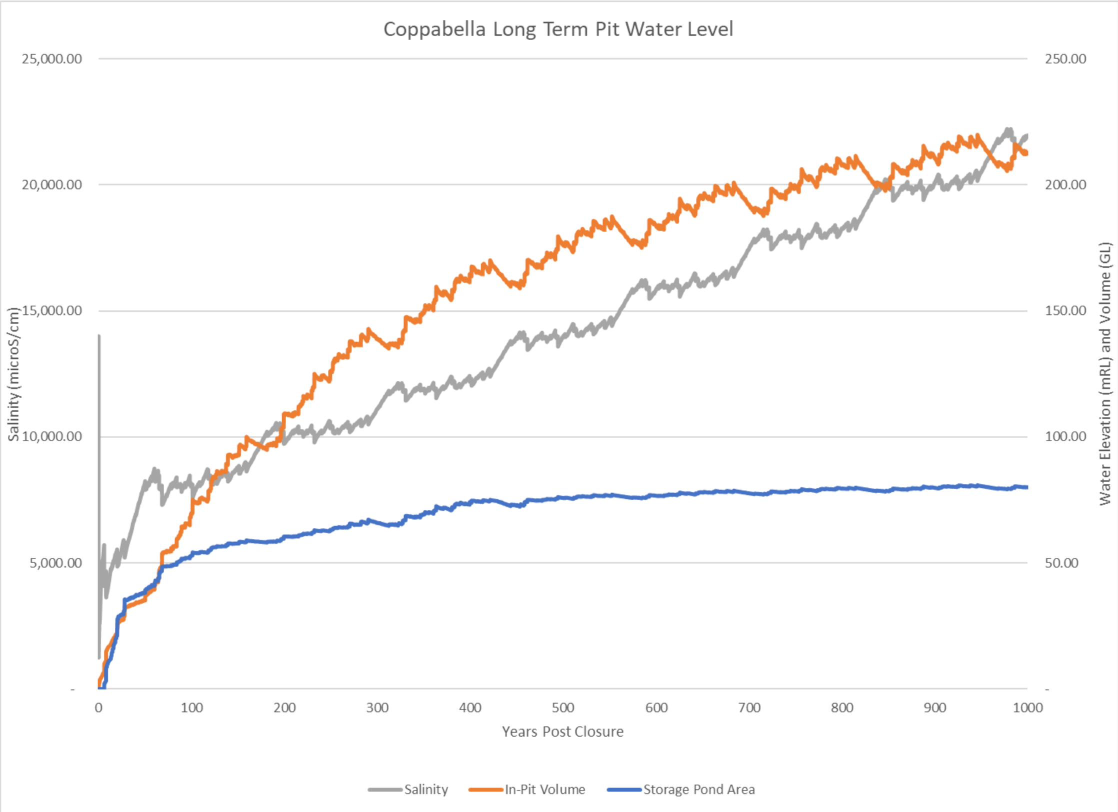


Figure 15: 2023 Final Landform Void long-term modelled water levels, volumes and quality (988Ha watershed, 1ML/day GW contribution)

Modelling of the smaller watershed (941Ha) over a 1000 year period results in a long term pond area of 79.1Ha @ 60.3mRL

Modelling of the larger watershed (988Ha) over a 1000 year period results in a long term pond area of 80.9Ha @ 62.3mRL. The area of this pond exceeds that allowed within the EA, so it is clear that the extent of the catchment to the final void needs to be carefully developed to maintain a lower long term water level.

In all cases considered, the final void water level remains well below the pre-mining Groundwater level of RL 180mAHD, with the worst-case scenario being ~ RL 62mAHD.

3.9. Waste Placement Strategy Developed to Mitigate Environmental and Rehabilitation Risks During the Construction and Decommissioning Phase

The landform construction through designed placement and re-shaping of overburden/interburden, and co-disposal will largely be undertaken while the mine is operational, with impacts on the receiving environment limited by conditions contained within the site's EA.

Sediment-laden surface water runoff will be managed, with most water retained on-site until rehabilitation objectives have been met.

3.10. Specific Landform Requirements

With respect to specific landform requirements committed to in stakeholder consultation, mine planning or other sources, all landform features have been designed in accordance with the conditions outlined in the site's EA.

3.11. Monitoring to Determine Performance of Control Measures

Monitoring will be undertaken at rehabilitation sites 1, 2, 5, 7, 10, 15 and 20 years after establishment in accordance with Peabody's Rehabilitation Monitoring Manual (Peabody Energy, 2016). Monitoring after years 1 and 2 (initial establishment) will identify areas requiring improvements as well as remedial action required. Monitoring will be undertaken during the dry season to minimize seasonal effects on results between monitoring events.