CHAPTER 23 – MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE – PART 1

STANMORE ID EXTENSION PTY LTD

ISAAC DOWNS EXTENSION PROJECT

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23. MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE – PART 1

23.1 Executive Summary

23.1.1 Project Overview and Proponent

Stanmore ID Extension Pty Ltd (ID Extension), a wholly owned subsidiary of Stanmore Resources Ltd (Stanmore), proposes to develop the Isaac Downs Extension (IDE) Project (the Project). The Project will extend the life of mining operations at Isaac Plains Complex (IPC) through the development of an open cut coal mine pit and associated infrastructure, primarily mining metallurgical (steel making) coal. Approximately 46 million tonnes (Mt) of run of mine (ROM) coal will be mined over 15 years, at a rate of approximately 2 – 4.5 million tonnes per annum (Mtpa).

IPC comprises Isaac Downs Mine (IDM) and Isaac Plains Mine (IPM), operated by wholly owned subsidiaries of Stanmore (refer to Figure 23-1).

The Project adjoins IDM and will be integrated into IPC (refer to Figure 23-1) with ROM coal washed at the IPM coal handling and preparation plant (CHPP), shared mine infrastructure area (MIA) at IDM, and connecting infrastructure such as water management infrastructure and power supply.

The Project is located in the Bowen Basin of central Queensland approximately 15 km southeast of Moranbah and 150 km southwest of Mackay, with the Project's mining lease (ML) application areas shown in Figure 23-1.

Mining of ROM coal at IDM is expected to ramp down between 2026 and 2028, with Project construction commencing late 2027 / early 2028 and ROM coal extraction in 2029. The IPC workforce will transition to IDE as mining ramps down at IDM and IPM, and ramps up at IDE. The Project, being an extension of mining activities at IPC, is therefore important to ensure a near steady state workforce across IPC beyond 2027 and 2028.

23.1.2 Approvals Process

The primary Project approvals required to commence the Project are:

- State:
  - MLs under the *Mineral Resources Act 1989* (MR Act)
  - an environmental authority (EA) under the *Environmental Protection Act 1994* (EP Act)
  - a progressive rehabilitation and closure plan (PRCP) schedule under the EP Act
  - estimated rehabilitation cost (ERC) decision under the EP Act.
- Commonwealth:
  - Approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The proponent applied to Queensland Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development (DNRMMRRD), under the MR Act, for four MLs for the Project on 24/06/2025; ML application (MLA) 700081, MLA 700082, MLA 700083 and MLA 700084.

On 17/06/2025 the Queensland Department of the Environment, Tourism, Science and Innovation (DETSI) approved an application by the proponent under the EP Act to prepare a voluntary environmental impact statement (EIS) for the Project. ID Extension will apply, under the EP Act, for an EA and PRCP (inclusive of PRCP schedule) for the Project.

The Project was referred under the Commonwealth's EPBC Act on 28/04/2025 (EPBC 2025/10183). On 06/06/2025 the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) determined that the Project was a controlled action under the EPBC Act subject to the following controlling provisions for matters of national environmental significance (MNES):

- listed threatened species and ecological communities
- water resources that relate to a large coal mining development.

The voluntary EIS for the Project will support the EA and PRCP applications. On 23/06/2025 DCCEEW decided that the Project would be assessed by an accredited assessment process under the bilateral agreements between the State and Commonwealth, being the voluntary EIS required under the under EP Act.

ID Extension applied for the draft terms of reference (ToR) for the EIS on 06/08/2025, supported by an initial advice statement (IAS) for the Project. Following ID Extension's responses to the comments received on the draft ToR, the final ToR was issued on 11/12/2025.

The Project does not require approvals for activities that are not on a ML.

23.1.3 Consultation

The consultation program for the Project has been comprehensive, transparent and responsive, ensuring that stakeholders were informed, engaged and able to contribute meaningfully throughout the EIS process. Engagement commenced early and continued throughout Project development, including with directly affected and adjoining landholders, the native title holder, neighbouring tenure holders, infrastructure and service providers, government agencies and community groups. This process enabled stakeholders to raise issues relevant to their interests and ensured their feedback was incorporated into technical studies and Project planning.

The consultation objectives were met by maintaining open communication channels, addressing stakeholder concerns and integrating their input into the EIS and the social impact assessment. This engagement has refined Project design, informed mitigation measures and strengthened the alignment between Project planning, social values and community expectations. Consultation will continue in the construction, operations and closure phases to ensure continued transparency and responsiveness across the life of the Project.

23.1.4 Project Description

The proposed Project layout, MLA areas (i.e. the Project area) and proposed disturbance area are shown in Figure 23-2. The proposed disturbance allows for sufficient working and construction areas within and around proposed Project activities and infrastructure. The disturbance area has been refined to minimise and / or avoid sensitive ecological features (e.g. habitat for listed threatened species, and riparian areas). The Project is located in the Isaac River catchment of the Fitzroy Basin and is bounded by the Isaac River and Cherwell Creek (see Figure 23-1 and Figure 23-2).

The open cut mining methods for the Project will be similar to those at IDM, including:

- clearing of vegetation, stripping and stockpiling of topsoil
- drilling and blasting of pre-strip overburden
- removing the pre-strip overburden using mining equipment at IDM being a dragline and / or truck and shovel fleets and / or dozers
- drilling and blasting of overburden
- drilling and blasting of pit floor for geotechnical stability to allow for in-pit dumping
- overburden removal using the dragline at IDM and / or truck and shovel fleets
- coal mining using excavators
- formation of out of pit and in-pit overburden dumps as mining progresses

- progressive rehabilitation of overburden dump areas.

ROM coal will be transported from the Project's ROM coal pads to the CHPP at IPM for washing, utilising existing haul roads at IPC and new haul roads, including a bridge across the Isaac River, constructed in the Project area. The dragline will be walked from IDM to the Project via a temporary crossing of the Isaac River.

Product coal from the IPM CHPP will be railed along the Goonyella rail line to Dalrymple Bay Coal Terminal (DBCT) for export with a small percentage railed via the Newlands rail system to the Port of Abbot Point. No changes are required at the CHPP to allow washing of the Project's ROM coal. Rejects and tailings from the IPM CHPP will be transferred to existing voids at IPM authorised, and with sufficient capacity, for the storage of rejects and tailings.

A satellite go line and crib area will be constructed at the Project, with the existing MIA at IDM continuing to service Project activities.

The primary access to the Project for workers and deliveries will be via IDM's existing access road to the Peak Downs Highway and new access roads connecting with the Project, utilising the bridge to be constructed across the Isaac River. There is potential for a secondary access route to the Project between the Project and Stanmore's Eagle Downs project, utilising new and existing roads to connect with the Peak Downs Mine Road.

During operations, levees will be constructed to protect the open cut pit area from flooding of the Isaac River, Cherwell Creek and Conrock Gully up to a 0.1% annual exceedance probability (AEP) (1:1,000 year) flood event. Conrock Gully will be diverted around the active mining areas into the Isaac River, with the diversion remaining post mining.

A mine affected water dam will store water from the pit, ROM pad, go line and crib area, with the ability to transfer mine affected water to and from IDM and IPM within IPC's integrated water management system, thereby enabling the balancing of water supply and demand. Sediment water drains and dams will be constructed to capture runoff from overburden dumps. Clean water drains and dams will be constructed to separate clean water from mine affected water and sediment water.

IPC has access to external raw water supplied from Sunwater and has excess storage capacity for water within existing mined voids and dams. As the Project's water management systems will be integrated into the rest of IPC, water supply will be available during dry periods, and storage capacity will be able to receive any excess water during wet periods. Therefore, no new sources of water supply will be required.

Topsoil stockpile areas will be used for storage of topsoil that has been stripped from mining and infrastructure areas, for future use in rehabilitation.

Power for the dragline will be supplied to the Project via powerline connections with existing power supply at IDM. The Project may require additional linear infrastructure at IDM to facilitate the extension of IDM mining activities to the Project, however this will be within areas authorised for disturbance.

The area of the four MLAs is 2,707 ha and the proposed disturbance area is 2,080 ha. There are an additional 2.5 ha of disturbance on IDM ML 700046 (see Figure 23-2) for Project linear infrastructure in areas not already authorised for mining activities.

The Project operational workforce will be similar to, but lower than that for current operations at IPC, with around 300 - 400 workers, compared to around 400 - 450 workers. Approximately 100 – 150 workers will be engaged at the Project for infrastructure construction. The Project, being an extension of mining activities at IPC, is therefore important to ensure a near steady state workforce across IPC beyond 2027 and 2028.

Workforce accommodation arrangements will continue in a similar manner to those for the current IPC workforce, being a mix of residences in Moranbah and other local or regional towns, and mine accommodation villages in the region. Through the Project, Stanmore will continue to support local and regional suppliers and contractors, providing additional economic benefits and employment in the region.

The Project is not proposing any novel or unproven resource extraction process, technology or activity.

Feasible alternatives and constraints were assessed for the Project's proposed activities. The Project has avoided impacts to the Isaac River and Cherwell Creek by not seeking to divert, and mine beneath, these watercourses despite there being economic resources in these areas. Alternative mining methods were assessed, with the preferred method including a dragline (increased efficiency and lower greenhouse gas emissions) and maximising in-pit dumping. By utilising existing infrastructure at IPM and IDM, the Project's disturbance and impacts will be reduced.

23.1.5 Land and Geology

The properties within and surrounding the Project area are shown in Figure 23-5. The properties intersecting the Project's MLAs are Winchester Downs (pastoral holding), a State Reserve (a stock route for grazing purposes) and cadastral boundaries for watercourses and unformed roads. Prior to the grant of the Project's MLs, the proponent will enter into a compensation agreement with Winchester Downs, and seek consent from the State for access to Reserve land.

The primary land use within the Project area is grazing on native and modified pastures. In addition, in the vicinity of the Project, coal mining and pastoral activities are the predominant land uses. The Project's planned coal mining activities are consistent and compatible with the surrounding land uses. No areas of regional interest, key resource areas or protected areas are within or in close proximity to the Project area.

The Project's regional and local geology, including coal seams have been described based on geological studies. The Project's coal deposit is located in the northern part of the Permo-Triassic Bowen Basin. The Leichhardt Seam and the Vermont Seam form the principal economic coal resources in the Project area and are located in the Rangal Coal Measures. The coal seams will be mined to a depth of around 100 m. The Rangal Coal Measures are underlain by the Fort Cooper Coal Measures and overlain by the Late Permian to Early Triassic Rewan Group. Non-coal Permian sediments consist of moderately weak to strong sandstones, siltstones and minor mudstones. The Project area and surrounds contains Quaternary sediments that range in thickness from 2 to 20 m, which are present along the banks of the Isaac River and, to a lesser extent, along Cherwell Creek.

23.1.6 Rehabilitation and Closure

23.1.6.1 Progressive Rehabilitation and Closure Plan

A PRCP and draft PRCP schedule have been prepared for the Project as part of the EIS, in accordance with State regulatory requirements. The draft PRCP schedule defines rehabilitation areas, rehabilitation milestones and the schedule for achievement of each of the rehabilitation milestones for each rehabilitation area. Rehabilitation milestone criteria have been developed to assess whether rehabilitation milestones have been achieved. Achievement of rehabilitation milestone criteria will result in a safe, stable and non-polluting rehabilitated closure landform that can support the planned post-mining land uses (PMLUs). Rehabilitation will occur progressively as land becomes available for rehabilitation.

The PRCP includes rehabilitation monitoring and maintenance activities, and an assessment of the potential risks associated with planned rehabilitation not achieving a stable condition. With the implementation of proposed management and mitigation measures, residual risks were assessed as low to medium (i.e. acceptable).

23.1.6.2 Final Landform Design to Achieve Post Mining Land Uses

Options for the final landform were assessed, based on identified constraints and achieving a PMLU for all rehabilitation areas. Non-use management areas (NUMAs) are not proposed for the Project. The proposed final landform is shown in Figure 23-8, and the design includes:

- a permanent, hydraulically stable diversion of Conrock Gully to access resources in the central mining area
- a residual void, with the void size minimised
- rehabilitating the Isaac River levee and reinstating the floodplain
- locating the residual void outside of the 0.1% AEP (1,1000 year) flood event, requiring backfilling of the northern pit area to pre-mining topographical levels
- consideration of landholder and stakeholder preferences for PMLUs supporting pastoral activities and future economic, non-mining activities.

The majority of disturbance areas are proposed to be returned to a grazing PMLU, similar to pre-mining. Native vegetation PMLUs have been proposed for Conrock Gully diversion (riparian woodland), crossings of watercourses (riparian ecosystems) and a small portion of the internally draining low wall slope (woodland). Beneficial uses have been identified for the residual void lake.

A lake will form in the residual void post mine life as a result of the balance between sources of water inflow and outflow (e.g. rainfall, evaporation, groundwater inflows). An iterative process was used in the design of the residual void and associated modelling of lake levels and water quality to achieve beneficial uses for the residual void. Options considered for the residual void included a maximum void size and partial backfill of the void. Void lake water quality modelling demonstrated that these options did not result in a lake with long term water quality suitable for livestock, and would therefore potentially result in the void being a NUMA. The partial backfill of the void would have a significant costs with no improvement in environmental or social outcomes. The preferred option is to minimise the void size, whilst maximising the catchment to the void from the in-pit dump, which resulted in modelled long term water quality being suitable for livestock. The southern portion of the mine pit will be partially backfilled to create a low angle ramp for stock access to the void lake.

In addition to the beneficial use of void water as a livestock drinking water supply, the commercial and technical feasibility of other potential PMLUs for the void lake were assessed. Based on years of research from the University of Queensland and associates, use of void water to supply an algae production facility was found to be commercially and technically feasibility, with markets for algae products in existence, and algae suited to growing in water sourced from the void. The potential for a small scale pumped hydroelectricity energy scheme (PHES) ('pumped hydro') was investigated, and was found to be commercially and technically feasibility based on utilisation on water storages, infrastructure and power supply developed for mining activities.

The residual void design was found to be geotechnically stable. The residual void lake will be a long term groundwater sink (see Section 23.1.10). Complete backfill of the residual void is not economic, with the residual identified as achieving PMLUs.

Out of pit dump locations were selected to avoid interactions with the Isaac River and Cherwell Creek floodplains, stay within the ML boundaries and avoid remnant vegetation as far as reasonably practical. The design of overburden dumps was based on achieving long-term erosional and geotechnical stability, with a non-polluting and sustainable PMLU, and was supported by:

- slope angles (≤ 15% on all dump slopes other than a small portion of internally draining low wall slope which is ≤ 25% and will be rock armoured)
- recovered soils proposed for use as the primary growth media
- geochemistry of overburden and interburden (spoil)

- vegetation cover (≥ 65% on all slopes, other than the rock armoured portion of the internally draining low wall slope, with ≥ 30%)
- landform erosion modelling
- ability to support the proposed PMLU, primarily grazing
- geotechnical modelling.

23.1.7 Final Landform Studies

Soils sampling and analysis enabled characterisation of the soil resources of the Project area for future use in rehabilitation, and informed the proposed management and handling of soils. Sufficient volumes of good quality topsoil (unlikely to require amelioration) and marginal topsoil (requiring limited amelioration) can be recovered for use as a growth medium in rehabilitation, with a 0.3 m depth of placement.

The Project's soils assessment included a classification of the pre-mining land suitability for grazing purposes, with the majority (93%) of the land being Class 4 (suitable with management) and a small proportion (6%) being Class 3 (suitable) for grazing on improved pastures. The Project's soils study area was largely unsuitable for cropping. Therefore, achievement of a land suitability of Class 4 is proposed for rehabilitation areas with a grazing PMLU.

An assessment of erosion potential for the rehabilitated final landform was informed by soils data, geochemical and geophysical properties of spoil, rainfall simulation, vegetation cover estimates and landform evolution modelling. The assessment was used to predict maximum erosionally stable slope lengths for the Project's spoil dumps and demonstrated that the final landform slopes are expected to erode at an acceptable annual average erosion rates of less than 5 tonnes per hectare per year (t/ha/y).

The geochemical assessment involved laboratory analysis of spoil and coal samples taken from core holes in the Project's pit area, a geochemical hazard assessment and a post-closure source-pathway-receptor (SPR) assessment for seepage from spoil. The Project's spoil has a very low potential to generate acid mine drainage (AMD), low metals concentrations and low salinity, and therefore poses a low hazard potential. The SPR assessment concluded that the overall risk rating for seepage from the Project's closure landforms was low based on the low geochemical hazard rating and inward hydraulic gradient towards to the pit during mining and closure (i.e. the pit will be a groundwater sink).

Geotechnical modelling was undertaken for the proposed residual void slopes, out-of-pit spoil dump slopes and in-pit spoil dump slopes. This modelling demonstrated that the final landform slopes should be geotechnically stable in the long-term because they meet or exceed the design acceptance criteria of a factor of safety of ≥ 1.5.

Ecological studies and information were used to develop proposed species for use in rehabilitation and seeding rates.

These studies demonstrate that the rehabilitated closure landform is predicted to be safe, stable, non-polluting and able to sustain the planned PMLUs.

23.1.8 Surface Water and Water Management

The Project is located within the Isaac River sub-catchment of the greater Fitzroy Basin (Figure 24-2). The Isaac River is the main watercourse in the vicinity of the Project area, and flows in a northwest to southeast direction to the east of the Project. The southern extent of the Project area is bordered by Cherwell Creek which is a major tributary of the Isaac River. The small catchment of Conrock Gully intersects the Project area.

The environmental values of surface waters within and surrounding the Project area, including catchments, watercourses, drainage features, regional and local water quality and streamflows, were identified through field based monitoring and studies and desktop information. Water quality objectives for surface waters were developed through regulatory guidelines, and regional and local water quality sampling.

A water management system was developed for all water types for the Project, and is the primary management measure to mitigate potential impacts to surface waters. The water management system involves separation of mine-affected water, sediment water and clean water. Raw water will be imported to site under existing allocations from Sunwater for IPC. The Project's water management system has been integrated into IPC's water management system, which allows for balancing of mine-affected water flows, transfers of raw water, and hence a reduction in storage requirements at the Project.

Mine-affected water dams and sediment dams have been designed to achieve the objective of the water management system to protect downstream environmental values. A preliminary consequence category assessment has been completed for all water storages which, based on the low consequence of failure, were not assessed as 'regulated structures' in accordance with the States regulatory framework.

A comprehensive numerical water balance model was developed to test the performance of the water management system. The model simulated water inflows and outflows through the various stages of mine development with different climatic sequences. The model maximises the recycling of water from water storages to meet Project water demands. The system assessment found the following:

- There would be no uncontrolled releases of mine-affected water.
- Controlled releases of mine-affected water would be undertaken in accordance with flow and water quality criteria designed to protect downstream environmental values and water quality objectives, including negligible change in the salinity of receiving waters.
- Sediment dam overflows would occur in accordance with their engineered design standard during wet or very wet climatic conditions, but these overflows would result in a negligible change in salinity of receiving waters.
- The Project's mine pit would continue to operate in all but very wet climatic conditions.
- The Project would be a net importer of water from the rest of IPC.
- Void water storages at IPC would remain well below their capacity, including storage of any excess water from the Project.
- The whole of IPC, inclusive of the Project would not require an external raw water supply in excess of the existing allocations with Sunwater.
- During the period of operations, changes in climate would lower the risk of pit inundation, controlled release volumes and sediment dam overflow volumes.

During operations the water management system will capture water that would otherwise report to the watercourses. The final landform, which includes a residual void, will capture runoff that would otherwise report to the watercourses, but to a lesser extent than during operations. This loss of streamflow is expected to be negligible for the Isaac River and Cherwell Creek. There will be a loss of flows to the downstream reach of Conrock Gully. However, this area will continue to be flooded by backwater flood flows from the Isaac River for flood events greater than 1 in 2 years.

The Project will not result in a net decline in water quality to surface water basins that feed into the Great Barrier Reef (GBR).

In areas with potential contaminants such as hydrocarbons or chemicals (e.g. go-line area), additional controls will be implemented to prevent the release of contaminants, capture any contaminants in management systems and remediate spills if they occur.

An erosion and sediment control plan has been developed to manage sediment releases during construction and operations, through the design and installation of erosion and sediment control structures including strategically located sediment dams.

A surface water monitoring program has been developed to monitor releases from the Project, including the development of release limits based on variable flows and water quality, release contaminant trigger investigation levels, and receiving water contaminant trigger levels for mine-affected water. The proponent proposes to join the Fitzroy Regional Receiving Environment Monitoring Program (FRREMP) (as supported by DETSI), as a regional industry participant, to monitor any changes to the receiving environment. The surface water monitoring program and FRREMP will be implemented to monitor potential environmental impacts and ensure that the site water management system is meeting its objectives.

Potential impacts of the Project on surface water resources were assessed with reference to Commonwealth's Significant impact guidelines 1.3: Coal seam gas and large coal mining developments – impacts on water resources. The assessment demonstrates that residual impacts of the Project on surface water resource values are either low or moderate; and hence are unlikely to result in a significant impact to surface water resources.

23.1.9 Hydrology and Geomorphology

Detailed hydraulic and geomorphic modelling for a range of flood events has been completed for the Project for the operational and closure periods, inclusive of all Project structures and landforms with the potential to alter hydrology and geomorphology. The model results were used to assess the potential impacts of the Project's mining and post-closure landforms on flood levels and velocities, and the geomorphic behaviour of watercourses and floodplains.

The design of infrastructure with the potential to alter hydrology and geomorphology has been undertaken to minimise impacts (e.g. locating the Isaac River levee approximately 100–400 m from the high bank, bridge designs with minimal interference with flows, and a temporary dragline crossing during the dry season). Following operations, infrastructure will be decommissioned and rehabilitated, further reducing hydrological impacts, primarily by allowing for the return of the floodplain into areas previously protected by the Isaac River levee.

In addition, modelling has been completed for five cross sections through the Isaac River and adjoining floodplain upstream, adjacent and downstream of the Project, with the five cross sections representing areas of potential ecological value. Modelling has identified, in the context of the regional, rural landscape:

- The Project will have negligible impact on hydrology and geomorphology (e.g. flood levels, velocity, bed shear stress and stream power) for more frequent flood events (e.g. 10% AEP or 1:10 year flood event)
- The Project will have negligible to minor impact on hydrology and geomorphology for less frequent flood events (e.g. 1% AEP or 1:100 year flood event) during operations.
- Post mining, with the decommissioning and rehabilitation of the crossing infrastructure and the Isaac River levee, and restoration of the associated floodplain, the Project will have negligible impact on hydrology and geomorphology.
- The Project will result in almost no change in the duration for which flood events will occur, with less than 1 hour change in duration for all AEP events, as measured at the nominated cross section locations.
- The proposed design of Conrock Gully diversion will be hydraulically and geomorphically stable, with revegetation to a native ecosystem, and will be similar to the existing Gully. The remnant Conrock Gully channel downstream of the Project will continue to be flooded by the Isaac River backwaters, with lower velocities than pre-mining.
- There are no material flood change impacts to upstream and downstream property infrastructure, flood management infrastructure at other mines, or at the Peak Downs Highway bridge or the Goonyella Railway bridge, for all of the modelled events.

A functional design report was developed for the Conrock Gully diversion to address the objectives, design criteria and required outcomes of the relevant State guidelines. A hydraulic assessment of the Conrock

Gully diversion demonstrates that the diversion design reasonably matches the existing Conrock Gully geometry and the design hydraulic conditions are similar, and generally improved, to those in the existing Conrock Gully channel, and are consistent with the guidelines for channel-averaged shear stress, stream power and velocity.

A preliminary consequence category assessment determined that the Project's levees would be 'regulated structures' in accordance with the States regulatory framework, and hence be subject to specific design, construction and operational requirements, including protecting the Project's mining operations from a 0.1% AEP flood event. Rock protection is proposed along a 2.5 km section of the Isaac River levee to mitigate potential scour risk.

23.1.10 Groundwater

The groundwater assessment included identifying groundwater environmental values of the Project area and surrounds, undertaking groundwater fieldwork investigations, developing conceptual groundwater and ecohydrological models, assessing impacts on groundwater values through the development of a numerical groundwater model, and determining management measures and mitigation strategies to protect groundwater values.

Groundwater values were determined through a comprehensive fieldwork program, supported by geological and desktop data from other local and regional resource projects. The field program included 60 monitoring bores, landholder bore census, routine groundwater level and quality monitoring, fault drilling and geophysical testing, and electrical resistivity imaging along the Isaac River and Cherwell Creek to determine the extent and thickness of the alluvium.

Based on the understanding of the fieldwork, desktop data and geological setting, the hydrogeological regime of the Project area comprises the following key hydrogeological units, as shown in Figure 24-77:

- Cenozoic sediments:
  - Quaternary alluvium – forms the unconfined alluvial aquifer localised to major ephemeral drainage lines (i.e. Isaac River and Cherwell Creek).
  - Perched groundwater systems are likely to occur within the alluvium. These are discrete groundwater units sitting above the alluvial aquifer / water table, and are separated by an unsaturated zone.
  - Quaternary to Tertiary non-alluvial sediments and weathered units (collectively termed 'regolith') – unconfined unit with variable but limited saturation and generally present at the surface within the Project area.
- Triassic Rewan Group – considered a regional scale aquitard.
- Permian coal measures with:
  - low permeability interburden and overburden units with aquitard properties.
  - coal seam aquifers, identified as the main aquifers for the Project and surrounding area.

Groundwater data allowed for the characterisation of hydraulic properties, recharge, flow, discharge and quality. Water quality in the Cenozoic sediments (including alluvium) ranges from brackish to highly saline and is likely to be unsuitable for aquatic ecosystem protection however is considered suitable for stock watering and irrigation in some areas. Water quality in the Permian units ranges from brackish to highly saline and is generally unsuitable to be used for stock watering, irrigation, and aquatic ecosystem protection. Water quality objectives were defined for the various groundwater units based on State and Commonwealth guidelines.

The potential groundwater receptors in the vicinity of the Project are landholder bores, groundwater dependent ecosystems (GDEs) and stygofauna.

Multiple lines of scientific field data were applied to assess the groundwater dependence of vegetation across assessment areas within and surrounding the Project area. This data was complemented by data on site-specific geology, geomorphology, soil physical properties, and groundwater.

A conceptual hydrogeological model of the groundwater regime was developed based on hydrogeological information obtained for the Project area and surrounds.

Where present, the alluvial aquifer is disconnected from the riverbed elevation. Spatially, the alluvial aquifer is locally variably saturated and is dry and/or comprised only of clay in several locations. Shallow perched groundwater systems occur locally within recent channel sands and bank deposits, typically within 1–2 m of the ground surface. These perched systems are transient, seasonally recharged during flow and flood events, and are hydraulically disconnected from the deeper alluvial aquifer.

In the Permian coal measures, groundwater is encountered mainly in the coal seams. The Permian coal measures at and surrounding the Project have undergone extensive deformation. The main northwest-southeast trending fault is the Isaac Thrust Fault, to the east of the Project area, with testing confirming that the fault does not provide a higher permeability pathway for groundwater flow in the Permian coal measures.

An ecohydrological model was developed based on fieldwork and an understanding of groundwater and surface water environments, which resulted in the identification of GDEs along the Isaac River, lower portions of Cherwell Creek near its confluence with the Isaac River, and a State mapped 'high ecological significance (HES)' wetland (1.5 km east of the Project area). Riparian vegetation fringing the Isaac River and lower reaches of Cherwell Creek utilises a discontinuous and seasonally variable perched groundwater system that is associated with active alluvial deposits, including fluvial sands, riverbanks, and river terraces, extending laterally from the main river channel underneath the riverbanks in some locations to support riparian terrestrial GDEs. Field data indicates that GDEs rely on this perched groundwater system rather than deeper alluvial aquifer. Recharge of the perched groundwater unit occurs through surface flows fed by seasonal rainfall events, which leak into the alluvial aquifer via a weak unsaturated hydraulic connection. The HES wetland is maintained by infiltration of seasonally ponded wetland surface water, with perched groundwater discharge driven by transpiration. The HES wetland is not connected with the deeper alluvial aquifer.

A stygofauna pilot survey was completed across bores in all aquifer units in accordance with relevant State and Commonwealth guidelines. The alluvial aquifer in the vicinity of the Isaac River is considered to be the primary location for stygofauna assemblages within and surrounding the Project area. At a taxonomic level, comparable with historical reporting and studies across the region, the identified stygofauna are the same taxonomic groups that are most commonly recorded across Queensland.

During mining, excavation of open-cut pits and depressurisation of the coal seams will create localised hydraulic sinks, resulting in a change of natural hydraulic gradients in the vicinity of mining area. Groundwater flow will be directed toward the pit from the surrounding coal seams, and regolith. This inward flow regime causes localised drawdown and depressurisation; however, the extent of these changes is constrained by the low permeability interburden. The discontinuous nature of the alluvial aquifer, combined with its weak hydraulic connectivity to deeper units, means that regional flow directions (aligned to drainage) will be largely maintained.

A numerical groundwater model was developed for the Project. An existing regional scale groundwater model informs and underpins the Project's numerical groundwater model, with the core model architecture remaining consistent, with targeted refinements and scenario applications for the Project. Groundwater modelling included model calibration, model predictions, and sensitivity and uncertainty analysis.

An independent technical peer review of the numerical groundwater modelling was undertaken. This review determined that the model is fit for purpose, which is to produce a calibrated groundwater model that predicts groundwater inflows, drawdown, flow changes and impacts from the Project.

Numerical modelling was used to predict Project only (incremental) impacts and cumulative impacts with other resource projects during and post mining.

No incremental drawdown impacts exceeding 1 m are predicted for the alluvium as a result of the Project. The predicted maximum incremental drawdown is less than 2 m within the regolith, and is confined to a small area directly south of the Project area. The coal seams of the Rangal Coal Measures experience drawdowns as a result of mining at the Project, with these occurring along the western margin of the pit area in both coal seams.

Cumulative drawdown increases with depth, with the most pronounced depressurisation occurring within the mined coal seams. Shallower units exhibit broader but lower-magnitude cumulative drawdown patterns. The spatial extent of cumulative drawdown reflects the combined influence of long-term mining activities within the Project area and nearby resource operations.

Post mining drawdown magnitudes are substantially reduced compared to maximum drawdown, typically during mining. For the Project, residual incremental drawdown is largely confined to areas immediately surrounding the pit area, with no widespread drawdown persisting beyond the Project area. This indicates a high degree of groundwater recovery following cessation of mining.

The perched groundwater system is not subject to drawdown from the Project or other resource projects. As GDEs demonstrate a reliance on the perched groundwater system rather than the deeper alluvial aquifer, groundwater drawdown associated with the Project or other resource projects (i.e. cumulative drawdown) is unlikely to impacts GDEs. This conclusion is supported by GDE monitoring results for IDM since 2020 along the Isaac River, where there has been no decline in GDE health.

The Project has a negligible contribution to drawdown in the alluvium and therefore a negligible contribution to any potential impacts on stygofauna in the alluvium. At the taxonomic level available for other studies across the region, the stygofauna assemblages identified in the Project's assessment are not unique. Localised cumulative impacts to the alluvium represent a relatively small portion of the available habitat. Therefore, the Project is considered unlikely to impact the long term survival and persistence of stygofauna communities.

Modelling identified that the Project would result in a negligible loss of water from the alluvial aquifer during and post mining. A natural hydraulic gradient exists between the Isaac River and the associated alluvium that results in seepage from the Isaac River to the alluvium (i.e. a losing system). The change in alluvial aquifer groundwater levels induced by mining does not have the potential to increase the hydraulic gradient between the Isaac River and associated alluvium. Consequently, the model does not predict that the average rate of seepage from the Isaac River to the alluvium will increase over the life of the Project, and therefore the Project does not result in any loss of baseflow to the Isaac River, and there are no other predicted groundwater-related impacts to surface drainage as a result of the Project.

Model results demonstrate that the residual void remains a long-term groundwater sink, limiting the potential for off-site groundwater quality impacts.

Groundwater modelling at each landholder bore demonstrates that drawdown at all bores for the most likely model predictions will not exceed a 2 m drawdown threshold. Monitoring will be undertaken at landholder bores and the proponent will enter a make good agreement if drawdown at landholder bores exceeds the relevant threshold.

Based on the geochemical characteristics and assessed seepage behaviour of in-pit and out-of-pit spoil, seepage from spoil emplacements presents a low risk to groundwater quality during operations and post-closure. Further groundwater quality is unlikely to be impacted by the Project due to the inward hydraulic flow towards the pit area during mining, and the residual void post mining. Controls will be implemented to manage any localised spills of hydrocarbons or chemicals.

The design of the Project's surface water management systems will protect downstream environmental values and hence minimise any impact on GDEs. Changes to hydrology and geomorphology from the

Project are expected to have negligible impact on GDEs. Approximately 6.8 ha of GDEs occur in the Project disturbance area; however the actual extent of clearing in these areas is likely to be less. In addition, all impacts to GDEs in the disturbance area have been assessed as part of the terrestrial ecology assessment, and therefore, will be subject to biodiversity offsets, and will be rehabilitated to a riparian ecosystem.

A groundwater monitoring and management (GMMP) has been developed to detect changes in groundwater levels and quality, and establish groundwater quality limits, groundwater level triggers and investigation procedures should limits or triggers be exceeded. The GMMP comprises a comprehensive bore network within and surrounding the Project area in all aquifer units, with bores for monitoring compliance and bores for interpretation of background conditions.

Despite the findings of low potential for impacts to GDEs, the proponent has developed a comprehensive GDE monitoring and management plan (GDEMMP), which is designed to monitor and detect changes in GDE health that may be attributable to Project activities. Should the Project impact GDE health then corrective actions are proposed, and if there is still a significant impact to GDEs, as measured by changes in habitat quality to listed species that utilise the identified GDEs, then biodiversity offsets will be provided. The GDE assessment determined that the residual (post mitigation) risk of the Project's potential impacts on GDEs was insignificant to low.

Potential impacts of the Project on groundwater resources were assessed with reference to Commonwealth's Significant impact guidelines 1.3: Coal seam gas and large coal mining developments – impacts on water resources. The assessment demonstrates that residual impacts of the Project on groundwater resource values are either low or moderate; and hence are unlikely to result in a significant impact to groundwater resources.

23.1.11 Terrestrial Ecology

A comprehensive evaluation of the terrestrial ecological values within and surrounding the Project area was undertaken. The assessment has been informed by an extensive program of desktop investigations, targeted wet and dry season field surveys, habitat suitability and quality assessments, and detailed ecological mapping by suitably qualified ecologists. Desktop assessments informed the likelihood of occurrence of Commonwealth and State listed threatened ecological communities (TECs) and species in a survey area within and surrounding the Project area. Ecology surveys were conducted in accordance with relevant Commonwealth and State guidelines.

The assessment confirmed that the survey area supports terrestrial ecological values shaped by a long history of pastoral land use, including remnant, regrowth and non-remnant vegetation communities. These communities occur within the Brigalow Belt North bioregion and include ecosystems of State and national conservation significance. Regional ecosystem (RE) mapping and species' habitat definitions were used to inform mapping of vegetation communities and habitat for Commonwealth and State listed threatened species. Field verified vegetation communities are shown in Figure 25-3, showing the high proportion of non-remnant vegetation (cleared areas and exotic grasslands) in the proposed disturbance area.

The following MNES were identified in the survey area:

- Brigalow TEC, Natural Grasslands TEC, Poplar Box TEC and semi-evergreen vine thicket (SEVT) TEC
- habitat for listed threatened species, namely Squatter Pigeon, Koala, Greater Glider (southern and central), Ornamental Snake, Australian Painted Snipe, Sharp-tailed Sandpiper, Common Greenshank, King Bluegrass and Bluegrass
- habitat for two listed migratory species.

These ecological values represent the primary ecological values of conservation significance relevant to the Project, and informed the impact assessment and mitigation measures.

Consistent with the mitigation hierarchy, the Project has been designed to prioritise avoidance of sensitive ecological values where practicable. Where avoidance was not possible, mitigation and management measures have been developed to minimise impacts during construction, operation and rehabilitation.

The Project will result in direct impacts to terrestrial ecology values through vegetation clearing and loss of habitat. However, the disturbance area has been carefully designed to minimise impacts to areas of remnant vegetation that could contain MNES. Remnant vegetation represents 334 ha or 16% of the total disturbance area of 2,083 ha. By comparison the Project area contains 769 ha of remnant vegetation, and therefore 435 ha of remnant vegetation, that could potentially have been impacted, has been avoided. Where high-value habitats occur, particularly along riparian corridors and within ecologically significant wetlands, these areas have been clearly identified to inform impact avoidance and management measures. Some MNES that occur in the survey area and Project area have been avoided entirely, or have very small areas of occurrence (e.g. < 1.5 ha) in the disturbance area, including Natural Grasslands TEC, SEVT TEC and habitat for Australian Painted Snipe, Sharp-tailed Sandpiper, Common Greenshank, King Bluegrass and Bluegrass. In addition, management measures are proposed to mitigate direct impacts including vegetation clearing protocols, pre-clearance surveys and a species management plan.

The Project has potential for indirect impacts on terrestrial ecology values, including from changes to pests and weeds, fragmentation or edge effects, fauna mortality, hydrological changes, changes to air quality, noise or lighting, and bushfire risk. However, management measures are proposed to mitigate indirect impacts including vegetation management in non-disturbance areas, a weed and pest management plan, buffer zones in sensitive ecological areas, worker training, rehabilitation of riparian ecosystems, water infrastructure designed to minimise hydrological impacts, erosion and sediment control plan, dust, noise and light management, and a bushfire management plan. With these management measures in place, indirect impacts are unlikely to result in significant residual impacts to MNES.

The potential for the Project to contribute to cumulative impacts to terrestrial ecology at the bioregional, sub-regional and local scales was found to be negligible to minor.

The significance of impacts, after implementation of the proposed management measures, was assessed in accordance with the Commonwealth significant impact guidelines 1.1 - MNES. The assessment determined that the Project was likely to result in the following significant impacts to MNES:

- Brigalow TEC – 53 ha
- Poplar Box TEC – 15.5 ha
- Squatter Pigeon habitat – 334 ha
- Koala habitat – 318 ha
- Greater Glider habitat – 318 ha
- Ornamental Snake habitat – 76 ha

The Project is unlikely to result in significant impacts to migratory species.

Biodiversity offsets are proposed to compensate for significant residual impacts to MNES (see Section 23.1.13).

23.1.12 Aquatic Ecology

The aquatic ecology assessment identified aquatic environments within and adjacent to the Project area that are predominantly ephemeral and strongly influenced by seasonal rainfall, surface flow conditions and water permanency. Aquatic habitats within the study area include the Isaac River, Cherwell Creek, Conrock Gully, JB Gully, unnamed tributaries, palustrine wetlands, gilgais and shallow depressions. The majority of sites were assessed as having low aquatic ecosystem values, with moderate values recorded along the Isaac River and at selected wetlands and gilgais, and high aquatic values recorded at a State mapped HES wetland located 1.5 km east of the Project area.

No Commonwealth and State listed threatened aquatic species were recorded during field surveys, and the identified MNES turtle species were considered unlikely to occur within the study area due to the absence of suitable habitat and the distance from known records. No threatened aquatic flora, threatened macroinvertebrates or aquatic weeds of national significance were recorded. The aquatic communities recorded, including macrophytes, macroinvertebrates, macrocrustaceans, fish, frogs and turtles, were generally characteristic of ephemeral systems in central Queensland.

Potential impacts to aquatic ecology were assessed in relation to aquatic habitat modification, changes to surface water hydrology, wetlands, fish passage, water management, aquatic pests, leaks and spills and biological diversity.

The Project layout and design have sought to avoid waterways where possible and minimise impacts where avoidance is not possible. The proposed Conrock Gully diversion has been designed to provide similar habitat characteristics to the existing channel and to remain as a revegetated, rehabilitated and stable landform post-mining. Hydrological and geomorphological modelling indicates that impacts to major waterways, floodplain vegetation and the mapped HES wetland are expected to be negligible to minor, with corresponding negligible impacts to aquatic ecology values.

Waterway crossings associated with the Project, including the Isaac River and Cherwell Creek bridges, the temporary dragline walk route, the JB Gully low-level crossing and the Conrock Gully diversion culvert crossing, have been designed to not create permanent barriers to fish passage. The water management system will separate mine affected water, sediment affected water and clean water, with no uncontrolled releases of mine affected water, and controlled releases to occur in accordance with receiving environment flow and quality limits. The water management system is therefore designed to protect downstream aquatic ecology values. The proponent proposes to participate in the FRREMP, with additional monitoring locations recommended to support assessment of potential Project-related impacts during Project activities.

With implementation of the proposed avoidance, mitigation, management, rehabilitation, and monitoring measures, the Project is unlikely to result in significant residual impacts to aquatic ecology values that are MNES. No aquatic ecology offsets are required under the applicable Commonwealth or State offset frameworks.

23.1.13 Biodiversity Offsets

In response to identified significant impacts to MNES a comprehensive offset area management plan (OAMP) has been developed. The OAMP has been developed in accordance with relevant Commonwealth legislation, policies and guidelines for the provision of biodiversity offsets.

Suitable adjoining, Stanmore owned properties, within the same bioregion as the Project, have been identified for direct, land based offsets.

Comprehensive ecological surveys of the offset properties have been completed, within and surrounding the proposed offset areas, with survey and habitat quality assessment methodologies in accordance with Commonwealth and State requirements. Habitat quality scoring methodologies were consistent across the proposed impact and offset areas.

A comprehensive set of management measures has been developed to improve the habitat quality within the offset areas for each of the protected matters. These management measures comprise restricting unauthorised access, preventing alternative land uses, preventing unauthorised vegetation clearing, controlling invasive weed species, minimising habitat degradation caused by feral animals, strategic fire management, and strategic management of grazing to achieve ecological outcomes.

Risk assessments have been completed demonstrating that residual risks associated with failing to achieve the offset area management objectives are low or medium (i.e. acceptable) for all identified risks. Legal security mechanisms are proposed to provide legal security for the offset area.

The Commonwealth's offset calculator has been completed for all MNES, with justification provided for all inputs into the calculators. The resultant offset areas for each MNES, some of which are co-located, and which fully acquit the offset requirements are:

- Brigalow TEC – 198 ha
- Poplar Box TEC – 48 ha
- Squatter Pigeon – 947 ha
- Greater Glider – 995 ha
- Koala – 1194 ha
- Ornamental Snake – 215 ha

A comprehensive monitoring and reporting program is proposed to inform ongoing and adaptive management of the offset area, so that the proposed completion criteria are achieved. The proposed OAMP for the Project demonstrates that offsets for all significant impacts to MNES can be acquitted.

23.1.14 Social

The Project's social impact assessment (SIA) and social impact management plan (SIMP) were prepared in accordance with the State Coordinator-General's SIA Guideline.

The SIA is underpinned by extensive and ongoing stakeholder engagement undertaken throughout the preparation of the EIS. Potential social impacts and benefits were systematically identified and assessed. No high or major residual social impacts were identified. Positive impacts were largely associated with employment stability, economic contribution, workforce participation and local procurement opportunities. The majority of residual social impacts were assessed as low, reflective of the Project being a transition from existing mining activities at IPC to the Project. Moderate residual impacts were assessed for the workforce decline and transition at Project closure, and psychosocial risks associated with non-resident work arrangements.

Project-specific management and benefit enhancement measures have been developed for each key social matter and are documented in the SIMP. The SIMP incorporates dedicated management plans covering community and stakeholder engagement, workforce management, housing and accommodation, local business and industry procurement, and health and community wellbeing.

The SIA and SIMP demonstrate that social impacts and benefits associated with the Project have been comprehensively assessed, appropriately mitigated and constructively enhanced. Through robust assessment, targeted management measures and ongoing engagement and monitoring, the SIA and SIMP are expected to achieve their intended outcomes and support positive social outcomes for local and regional communities over the life of the Project.

23.1.15 Economics

The Project's economic assessment was undertaken in accordance with the State Coordinator-General's economic impact assessment guideline including a regional impact assessment and a cost benefit analysis (CBA).

The regional impact assessment identifies the Project's beneficial and adverse economic impacts on the regional catchment (Isaac and Mackay regional council areas) and Queensland economies (where the majority of economic activity will occur) during construction and operations. The regional impact assessment identified that the Project would contribute to the regional catchment and Queensland economies by supporting business and industry output, gross product, employment, and employee incomes, both directly and indirectly.

The construction phase is estimated to contribute $17.7 M in gross regional product (GRP) for the regional catchment and $32.9 M in gross State product (GSP) for Queensland. The mining phase is estimated to support an average annual contribution of $106.6 M in GRP for the regional catchment and $198.5 M in GSP for Queensland.

Incomes supported by the Project are estimated to be around $180 - 220 M more per annum in Queensland relative to the base case (i.e. without the Project), with a peak year with $233 M more income, of which 49.7% ($115.7 M) would be captured in the regional catchment. The Project is anticipated to contribute an approximate 0.6% increase to real wages in the regional catchment at its peak year.

The Project will result in various taxation and royalty payments to the Commonwealth and the State. The Project is estimated to provide additional revenues of approximately $965 M over the life of Project operations to the Australian Government. The Project is estimated to provide additional revenues of approximately $698 M over the life of Project operations to the Queensland Government.

To maximise local benefits derived from the Project in a manner consistent with existing policies, Stanmore and its contractors will source labour locally where possible and practical, and provide training opportunities where practical. Stanmore possesses long-standing relationships with local business and an established supply chain for its existing mining activities in the regional catchment. To maximise local benefits derived from the Project, Stanmore and its contractors will continue to support local business by utilising established supply networks and providing sufficient opportunities and information for local business to secure new supply contracts.

While the Project is anticipated to have minimal impacts in terms of additional demand for accommodation and housing in the local area, Stanmore will monitor local accommodation and housing demands placed on the market by its workforce.

The CBA assessed the impacts of the Project compared to a scenario without the Project, to understand the net benefit of the Project. The CBA generates a net present value (NPV), with a positive NPV demonstrating that the Project is desirable. The CBA identified, across all discount rates examined, that the Project would be deemed economically desirable, with the benefits outweighing the costs. At a 7% discount rate, the Project's modelling delivers a NPV of $653.5 M over the assessment period.

The Project's economic assessment demonstrates that the Project will provide a significant range of positive economic benefits to the regional catchment and Queensland, and is economically desirable, with economic benefits outweighing economic costs.

23.1.16 Conclusion

The EIS provides a comprehensive assessment of environmental and socio-economic impacts and benefits from the Project. Management measures have been proposed to mitigate potential impacts, with the inclusion of management plans with the EIS. Where there are residual significant impacts (i.e. after mitigations measures), biodiversity offsets have been proposed.

The Projects socio-economic benefits have been demonstrated in the social and economic impact assessments. The Project will employ approximately 100 - 150 people during the construction phase and approximately 300 – 400 people during operations. In addition, there will be opportunities for local employment in construction, transport and the supply of goods and services. The Project will require approximately $190 million in capital investment to bring it to full production, but will utilise existing infrastructure and activities located at IPC to reduce the Project's environmental impact.

The EIS demonstrates that the Project's socio-economic benefits outweigh the mitigated socio-economic and environmental impacts.

23.2 Introduction

23.2.1 Project Background

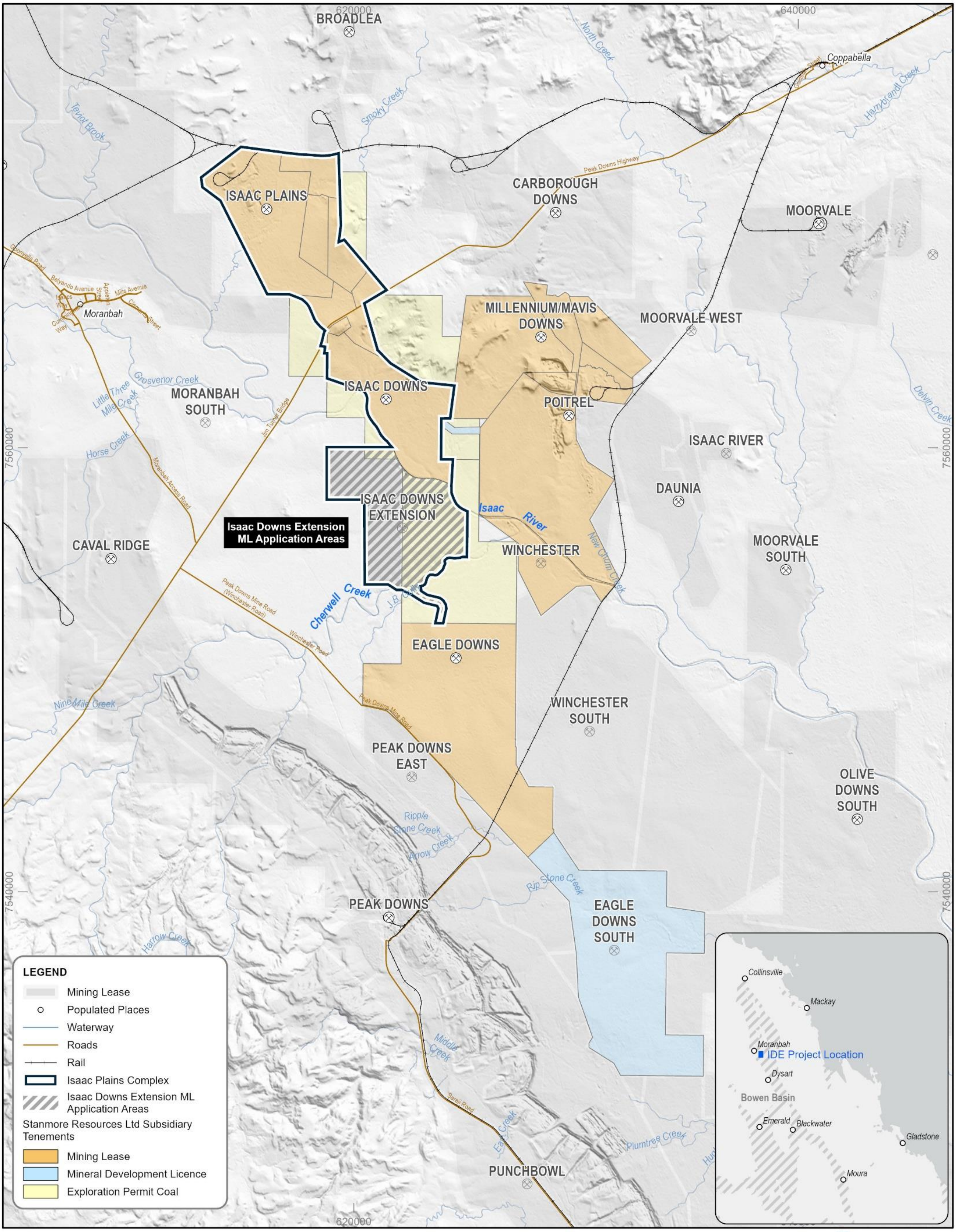
Stanmore ID Extension Pty Ltd (ID Extension), a wholly owned subsidiary of Stanmore Resources Ltd (Stanmore), proposes to develop the Isaac Downs Extension (IDE) Project (the Project). The Project will extend the life of mining operations at Isaac Plains Complex (IPC) through the development of an open cut coal mine pit and associated infrastructure, primarily mining metallurgical (steel making) coal. Approximately 46 million tonnes (Mt) of run of mine (ROM) coal will be mined over 15 years, with approximately 2 – 4.5 million tonnes per annum (Mtpa).

IPC comprises Isaac Downs Mine (IDM) and Isaac Plains Mine (IPM), operated by wholly owned subsidiaries of Stanmore, Stanmore IP South Pty Ltd (IP South) and Stanmore IP Coal Pty Ltd (IP Coal), respectively (refer to Figure 23-1).

The Project adjoins IDM and will be integrated into IPC (refer to Figure 23-1) with ROM coal washed at the IPM coal handling and preparation plant (CHPP), shared mine infrastructure area (MIA) at IDM, and connecting infrastructure such as water management infrastructure and power supply.

The Project is located in the Bowen Basin of central Queensland approximately 15 km southeast of Moranbah and 150 km southwest of Mackay, with the Project's mining lease (ML) application areas shown in Figure 23-1.

Mining of ROM coal at IDM is expected to ramp down between 2026 and 2028, with Project construction commencing late 2027 / early 2028 and ROM coal extraction in 2029. The IPC workforce will transition to IDE as mining ramps down at IDM and IPM, and ramps up at IDE. The Project, being an extension of mining activities at IPC, is therefore important to ensure a near steady state workforce across IPC beyond 2027 and 2028.



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DISCLAIMER: Third party data sources are used in this map compilation. Minserve makes no warranty regarding this data's accuracy or currency.

stanmore

ISAAC DOWNS EXTENSION

Project Location

Figure | 23-1

23.2.2 Legislative Framework

On 17/06/2025 the Department of the Environment, Tourism, Science and Innovation (DETSI) approved an application by the proponent under the *Environmental Protection Act 1994* (EP Act) to prepare a voluntary environmental impact statement (EIS) for the Project. ID Extension will apply for an environmental authority (EA) and progressive rehabilitation and closure plan (PRCP) (including PRCP schedule) for the Project.

The proponent applied to Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development (DNRMMRRD), under the *Mineral Resources Act 1989* (MR Act), for four MLs for the Project on 24/06/2025; mining lease application (MLA) 700081, MLA 700082, MLA 700083 and MLA 700084.

The Project was referred under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 28/04/2025 to the Australian Government (EPBC 2025/10183). On 06/06/2025 the Department of Climate Change, Energy, the Environment and Water (DCCEEW) determined that the Project was a controlled action under the EPBC Act subject to the following controlling provisions for matters of national environmental significance (MNES):

- listed threatened species and ecological communities
- water resources that relate to large coal mining development.

The voluntary EIS for the Project will support the EA and PRCP applications. On 23/06/2025 DCCEEW decided that the Project would be assessed by an accredited assessment process under the bilateral agreements between the State and Commonwealth, being the voluntary EIS required under the under EP Act.

ID Extension applied for the draft terms of reference (ToR) for the EIS on 06/08/2025, supported by an initial advice statement (IAS) for the Project. Following ID Extension's responses to the comments received on the draft ToR (under Section 45 of the EP Act), the final ToR was issued on 11/12/2025.

23.2.3 Structure of the Matters of National Environmental Significance Chapters

The ToR for the EIS requires standalone information on MNES. The three MNES chapters have been structured to meet the requirements of the ToR as follows:

- This chapter provides:
    - an executive summary
    - the proponent details
    - approvals required for the Project
    - a Project description
    - a description of the environment, other than for aspects described in other MNES chapters
    - feasible alternatives for the Project
    - a description of rehabilitation proposed for the Project
    - information on stakeholder consultation, including with Indigenous parties
    - economic and social matters
    - information on ecologically sustainable development for the Project, based on this chapter and the other MNES chapters
    - a conclusion, based on this chapter and the other MNES chapters.
- **Chapter 24** provides and assessment of the environmental values, potential impacts, management and mitigations measures, risks and significance of impacts for:
    - surface waters, including hydrology and geomorphology
    - groundwater, including groundwater dependent ecosystems

- **Chapter 25** provides and assessment of the environmental values, potential impacts, management and mitigations measures, significance of impacts and biodiversity offsets for:
    - listed threatened ecological communities
    - listed threatened species
    - migratory species.

These chapters rely on information in specialists technical reports provided as appendices to the EIS, with those appendices and relevant information referenced throughout the chapters.

A glossary for the Project's EIS, including terms used in the MNES chapters is provided as **Appendix B**.

A ToR cross reference table, identifying where all aspects of the ToR have been addressed in this EIS, including Appendix 3 – ToR for MNES, is provided as **Appendix C**.

In order to reduce duplication across the EIS, this chapter summarises information contained in other parts of the EIS, with appropriate references for the reader to source additional information.

23.2.4 Contributors to the EIS

The persons and organisations involved in preparing the EIS, their experience and capabilities, and the work done by these persons and organisations is provided in Table 23-1. All contributors to this EIS are highly experienced in their respective fields, with relevant experience for a mining project in the Bowen Basin. Table 23-1 describes those persons and organisations with input into the key studies undertaken to inform the MNES chapters. Information on persons and organisations contributing to other parts of the EIS is provided in **Chapter 1**.

Table 23-1 EIS Contributors

Organisation	Company and Personnel Experience	Persons	Contribution
Reach Environmental Pty Ltd	Reach Environmental has managed and prepared environmental impacts assessments for multiple resource projects. Reach Environmental's director, Richard Oldham, has over 18 years' experience in managing approvals' processes for resource projects in the coal, coal seam gas and minerals industries, including coal mining projects in the Bowen Basin	Richard Oldham	EIS report management, authorship and regulatory liaison
	David worked for New Hope Group for a period of approximately 24 years, during which time he was responsible for the delivery of a majority of New Hope Group's primary and secondary environmental approvals for mining at New Acland Coal Mine.	David Genn	EIS report management and authorship
The Minserve Group (Minserve)	Russell Aspland is a Director of Minserve and possesses over 30 years of experience in the provision of cartographic services, geographic information system (GIS) spatial data, and mapping solutions to the mining industry. Throughout this period, Minserve has made significant contributions to numerous major Bowen Basin environmental approval applications, supporting mining studies through the delivery of mapping products and the provision of expert advice in relation to mine closure options and rehabilitation scheduling.	Russell Aspland	Spatial data management and cartographic services

Organisation	Company and Personnel Experience	Persons	Contribution
Hydrobalance (B&H Water Engineering Pty Ltd)	HydroBalance is a specialist water engineering consultancy that focuses on delivering surface water and water balance assessments for the resources sector, with particular expertise in coal mining projects across Queensland and other Australian jurisdictions. Matthew Briody holds bachelor's degree in civil engineering (Hons). He has over 22 years' experience delivering water engineering services across Queensland and other jurisdictions. His experience spans all stages of mine development, including conceptual planning, environmental impact assessment, feasibility studies, detailed design, operational support and PRCP development. Matthew has co-authored three technical papers on leading practice approaches to modelling residual mine voids for rehabilitation planning, for the Queensland Mine Rehabilitation Commissioner.	Matthew Briody	Surface water and water management assessment, including analysis of water quality and flows, water management system design, operational water balance modelling, and void water balance modelling Hydraulic, hydrology and geomorphological assessments and modelling.
	Ashleigh Hackett holds bachelor's degree in civil engineering (Hons). She has over nine years' experience in the development of water balance models, hydrologic and hydraulic modelling, and environmental impact assessment for mining projects across Queensland and other jurisdictions. She has contributed to the preparation of surface water assessments for several EISs for mines in the Bowen Basin.	Ashleigh Hackett	
SLR Australia (SLR)	SLR is a leading provider of groundwater impact assessment services for mining, industrial, and infrastructure projects. SLR's capabilities include advanced numerical modelling to predict groundwater flow, contaminant transport, and drawdown effects; baseline hydrogeological investigations, aquifer testing, and conceptual model development; and surface water–groundwater interaction studies for sensitive ecological and water-dependent assets. SLR has over 20 years delivering groundwater impact assessments across Australia's major mining regions, including the Bowen Basin, with technical innovation in predictive modelling, uncertainty analysis, and integration of climate and land use change scenarios Brian Rask is Technical Director Hydrology & Hydrogeology (Asia-Pacific) at SLR. Brian has over 30 years' experience specializing in mining-related impact assessments, regulatory submissions, and innovative groundwater modelling approaches. He has extensive experience with groundwater assessments for resource projects in the Bowen Basin and other locations.	Brian Rask	Groundwater impact assessment, including groundwater bore installation supervision, bore monitoring, and conceptual and numerical groundwater modelling. Groundwater monitoring and management plan.

Organisation	Company and Personnel Experience	Persons	Contribution
	Derwin Lyons is Technical Director Hydrology & Hydrogeology (Asia-Pacific) at SLR. Derwin has with 20+ years' experience in groundwater resource development, specializing in mining impact assessments and regulatory compliance. He has managed and delivered numerous mining-related groundwater impact assessments, including for those in the Bowen Basin.	Derwin Lyons	
Manewell Groundwater Pty Ltd (Manewell)	Manewell is a specialist hydrogeology consultancy providing groundwater modelling, peer review and technical advisory services for mining, coal seam gas and water supply projects across Australia. Dr Neil Manewell is the Director of Manewell. Neil holds a PhD and has more than 18 years of experience in groundwater modelling for coal mining projects, as well as metals and water supply projects, in Australia and overseas. He has provided groundwater impact assessment and technical support for environmental approvals for major resource projects. His experience includes conceptualisation, model development, impact assessment and peer review. Neil has extensive experience with MODFLOW, predictive uncertainty analysis, data assimilation and contaminant transport modelling for mining impact and water supply risk. He has also undertaken independent third-party peer review for open-cut and underground coal mining projects and has served as a reviewer for the journal Groundwater.	Neil Manewell	Groundwater assessment peer review
RGS Environmental Pty Ltd (RGS)	RGS is a specialised geoscience consulting company that has completed over 400 mine waste and water management projects for proposed and operating mines. Matt Landers, PhD, is Principal Geochemist and Director at RGS. Matt has over 15 years' experience in project management, development, implementation and delivery of hydro-geochemical programs for the mining and energy industries. Matt specialises in the hydro-geochemical and mineralogical characterisation of mine waste and has extensive experience in constructing hydro-geochemical models, surface and groundwater quality assessments, waste storage facility investigations and pit lake water quality.	Matt Landers	Void water geochemistry modelling and assessment
	David Faulkner, PhD, is an Environmental Geochemist with over ten years of experience in environmental consulting. He specializes in Acid Rock Drainage prediction, materials characterisation, hydro-geochemistry, and geochemical modelling.	David Faulkner	
Watermark Ecohydrology Pty Ltd (Watermark)	Watermarks' director is David Stanton. David Stanton holds a BSc (Hons) in geology. His professional career spans over 30 years acquiring	David Stanton	Groundwater dependent ecosystem (GDE) assessment

Organisation	Company and Personnel Experience	Persons	Contribution
(previously 3D Environmental Pty Ltd)	experience in the assessment of geology, geomorphology and terrestrial ecosystems, with extensive experience in the assessment of groundwater dependent ecosystems. His expertise has been utilised by sectors that include mining, infrastructure, government and indigenous organisations and his work has been undertaken in Queensland, the Northern Territory, north-Western Australia and Papua New Guinea. David has co-authored several technical papers on issues relating to landscape scale hydrology, ecology and fire management.		GDE monitoring and management plan
Trend Environmental Pty Ltd (Trend)	Trend has extensive experience undertaking terrestrial, aquatic and marine ecological assessments, protected plant surveys, threatened species surveys, impact assessments, environmental management planning and compliance monitoring. Trend's team regularly supports projects requiring flora and fauna surveys, biodiversity offset management plans and biodiversity assessments. Emily Krunes is the director and principal of Trend. Emily is an ecologist and environmental scientist with over 16 years of experience. She holds Bachelor's degrees in Marine Biology and Marine Biology Advanced, a Class I Honours degree, and a Masters of Environmental Management. Emily has extensive experience delivering ecological studies and environmental approvals including ecological surveys and assessments, and the preparation of offset management plans. She also as recognised as a suitably qualified person under the Queensland protected plant flora survey guidelines and holds a range of relevant field and industry certifications and accreditations.	Emily Krunes	Terrestrial ecology assessment Biodiversity offset area management plan Biodiversity offset delivery plan. Ecological management plans
	Max Gunther is a senior ecologist and environmental scientist with eight years of experience in ecological and environmental consulting. He holds a Bachelor of Environmental Management (Class 2 Honours) and a Graduate Certificate in Geographical Information Science. Max has strong experience in ecology surveys, regional ecosystem verification, spatial analysis and GIS mapping, and preparation of environmental reports and management plans.	Max Gunther	
Freshwater Ecology Pty Ltd (Freshwater)	Freshwater's Director and Principal is Dr Timothy Howell, who holds a degree with honours in Aquatic Science and a PhD (research) in fish ecology and river rehabilitation. Tim is a career aquatic ecologist with over 20 years' experience in assessing aquatic ecosystems across eastern Australia. He has worked on a broad range of projects for industry, government agencies, universities, and in collaboration with multiple	Timothy Howell	Aquatic ecology assessment. Stygofauna assessment

Organisation	Company and Personnel Experience	Persons	Contribution
	organisations. Tim is knowledgeable in designing, leading and completing scientific investigations for various purposes, such as environmental impact assessment, receiving environment monitoring programs (REMP), targeted species monitoring programs, baseline surveys, stygofauna assessment and management plans. He has co-authored several scientific papers on fish ecology and river rehabilitation.		

23.2.5 Information Sources

Within this EIS the source of information used to inform the assessment of impacts is described, including in the specialist assessment reports informing the MNES chapters.

The primary sources of information has been through field surveys, field measurements, monitoring and community engagement within and surrounding the Project's MLAs, specifically to inform the Project's EIS, including:

- field surveys and monitoring for terrestrial ecology, aquatic ecology, biodiversity offsets, groundwater dependent ecosystems, stygofauna, soils, land use, pre-existing land contamination and Indigenous and non-Indigenous cultural heritage
- field measurements of groundwater levels and quality through the installation of groundwater bores (supplementing bores that already existed in the Project area and surrounds) for this purpose, with certified laboratory analysis of water quality
- hydrogeological field investigations to determine the extent of aquifers and faults
- field measurements of surface water quality and water levels, with certified laboratory analysis of water quality
- field data collection and certified laboratory analysis of geochemical and geophysical data pertaining to the coal resource and overburden
- laboratory analysis of material characteristics (e.g. soils, overburden) to be used in rehabilitation
- stakeholder engagement and consultation.

This information was collected over approximately 2 years and is reliable, having been collected by experienced professionals in the relevant disciplines. Field surveys and measurements provide information at a point in time, and are therefore supplemented by surveys or measurements at other times (e.g. multi-season ecology surveys, regular bore monitoring) to reduce uncertainty. Information from field surveys and measurements is therefore highly certain and reliable.

Information collected specifically for the Project has been supplemented by historical publicly available information across the Project area and surrounds, where available, as described in specialist assessment reports. This data is considered to be reliable and certain.

The assessment of impacts to environmental values relies on modelling informed by field data and publicly available data. This includes modelling of:

- groundwater / hydrogeology
- hydrology, hydraulics and geomorphology
- water balance and management
- void water balance and geochemistry
- geotechnical stability of the final landform
- landform erosion
- economic benefits and impacts.

These complex models have been developed by experienced professionals in the relevant disciplines, and the technical reports describe the reliability and certainty provided by these models. All models have been calibrated to available data collected from field measurements and / or publicly available data, including reliable government data sources (e.g. Bureau of Meteorology or State Department surface and groundwater records). All models have inherent uncertainty; however the relevant technical assessments conclude that the levels of uncertainty in the models are acceptable. The numerical groundwater model was subject to an independent peer review which found the model to be fit for purpose.

23.2.6 EIS Information Guideline – MNES

The EIS assessment has been undertaken in accordance with the EIS information guideline – MNES[1]. The relevant EIS sections where the requirements of this guideline have been addressed are provided in Table 23-2.

Table 23-2 EIS Information Guideline – MNES

Guideline Requirement	Section of the EIS
Types of MNES, controlled action and controlling provisions	23.2.2, 23.4, 23.4.3
Appropriately qualified persons for MNES surveys and assessments	23.2.4
Potential impacts to MNES	**Chapter 24** and **Chapter 25**
Avoidance and mitigation measures	**Chapter 24** and **Chapter 25**
Residual impacts and offsets	**Chapter 24** and **Chapter 25**
Consultation	23.10
Other approvals and conditions	23.4
Proponent's environment record	23.3
Information sources	23.2.5

23.3 Proponent Details and Environmental Record

ID Extension, a wholly owned subsidiary of Stanmore, is the proponent for the Project. ID Extension is located at Stanmore's office - Level 32, 12 Creek Street, Brisbane, QLD, 4000; with postal address - GPO Box 2602, Brisbane, QLD, 4001. ID Extension's Australian Business Number (ABN) is 44685301231.

Stanmore is an Australian Stock Exchange (ASX) listed Australian company which, through various subsidiary entities, owns metallurgical (steel making) coal mines and coal mining projects in Queensland's Bowen Basin.

The proponent has adopted the sustainability, environment and health and safety policies of Stanmore, which are provided at https://stanmore.au/wp-content/uploads/2025/11/Stanmore-Sustainability-Policy.pdf, https://stanmore.au/wp-content/uploads/2025/11/Stanmore-Environment-Policy.pdf, and https://stanmore.au/wp-content/uploads/2025/12/Stanmore_Health-and-Safety-Policy.pdf, respectively.

1 https://www.detsi.qld.gov.au/_global/policy-register/policy-register-pdf?getdoc=5304&name=eis-tm-mnes-information-guide.pdf

ID Extension, the proponent ('person') for the Project ('proposed action'), and the directors of ID Extension, have a satisfactory record of responsible environment management. The directors of ID Extension are also directors of Stanmore. Stanmore, together with its related bodies corporate, hold a number of State and Commonwealth approvals for various mines. Stanmore, together with its related bodies corporate, has a good environmental compliance history for its mines, most relevantly for approvals under the *Environmental Protection Act 1994* (Qld) (EP Act) and *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act). Stanmore has submitted all annual returns required under the EP Act and complied with EPBC Act annual reporting requirements. Across all of Stanmore's operations there have been nine penalty infringement notices (PINs) and one environmental protection order (EPO) issued under the EP Act during its ownership. Stanmore has taken the required environmental management actions to respond to these PINs and comply with the EPO. Any non-compliances with conditions of the EPBC Act approval are reported in publicly available documents on Stanmore's website. There are no past or present proceedings against ID Extension, its directors, or its related bodies corporate under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources.

23.4 Approvals and Conditions

23.4.1 Overview

The legislative framework for the Project is described in Section 23.2.2. This section describes the primary and secondary approvals that are required to commence the Project, how these approvals provide for the prevention, minimisation, management and monitoring of any relevant impacts, the potential conditions of approval for the Project, and the relevant agencies responsible for enforcement and review procedures.

23.4.2 Primary Project Approvals

The primary approvals required to commence the Project are:

- State:
    - The MLs under the MR Act
    - An EA under the EP Act
    - A PRCP schedule under the EP Act
    - Estimated rehabilitation cost (ERC) decision under the EP Act.
- Commonwealth:
    - Approval under the EPBC Act for Referral EPBC 2025/10183.

The key regulatory agencies, responsible for administering primary approvals, including grant of approvals and enforcement of approval conditions, are:

- DETSI – EP Act
- DNRMMRRD – MR Act
- DCCEEW – EPBC Act.

23.4.3 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act defines nine MNES, which are the controlling provisions for an action under the EPBC Act. The controlling provisions relevant to the Project are:

- listed threatened species and ecological communities
- water resources that relate to large coal mining development.

The Project will not impact on the following controlling provisions, as set out in the Referral for the Project:

- World Heritage properties
- National Heritage places
- wetlands of international importance (often called 'Ramsar wetlands' after the international treaty under which such wetlands are listed)
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mining).

Whilst 'listed migratory species protected under international agreements' is not a controlling provision for the Project, the ecological assessments for the Project have assessed whether the Project will have a significant impact on this controlling provision.

23.4.4 Mineral Resources Act 1989

The proponent applied to DNRMMRRD for four MLs for the Project on 24/06/2025. MLAs can be granted following:

- a native title agreement where native title has not been extinguished on land within the MLAs or access to the MLAs
- landholder compensation agreements for all land parcels within the MLAs or access to the MLAs
- overlapping tenement agreements if there are overlaps with gas production tenements
- a public notification process.

Other matters, such as the Project's initial development plan, will also be evaluated by DNRMMRRD in considering whether to grant MLs, with conditions potentially attached to the grant.

23.4.5 Environmental Protection Act 1994

23.4.5.1 EA and PRCP

The proponent will apply for a site specific EA and PRCP (including PRCP schedule) for the Project's MLAs. The grant of the Project's EA and PRCP schedule is a pre-requisite to the grant of the MLs.

The EIS will support the EA and PRCP applications, by:

- providing the information required under EP Act Chapter 5, Part 2, Sections 125, 126A, 126B, 126C and 126D
- comprising the 'information stage' (Chapter 5, Part 3 of the EP Act) and 'notification stage' (Chapter 5, Part 4 of the EP Act) once the EIS process is complete.

The EA application will be for environmentally relevant activities (ERAs) on the MLs. ERAs are prescribed activities for which approval is required under the Project's EA. The *Environmental Protection Regulation 2019* (EP Regulation) lists prescribed ERAs in schedule 2 and resource ERAs in schedule 3. The following resource ERA under schedule 3 of the EP Regulation will be triggered by the Project:

- ERA 13 (particular resource activities) – mining black coal

The Project is not expected to require approvals for any other ERAs.

23.4.5.2 EA and PRCP Schedule Decision Stage

Following issue of the EIS Assessment Report, the EA enters the 'decision stage' (Chapter 5, Part 5 of the EP Act). The notice of decision to approve the EA and PRCP schedule, subject to conditions provided in a draft EA and PRCP schedule, will be provided to submitters to the EIS, who then have 20 business days to provide any objections. The EA and PRCP schedule are granted once all objections have been resolved. The proponent has proposed a draft EA conditions and a PRCP and draft PRCP schedule as a part of this EIS (see **Appendix AA**, **Appendix AB** and **Appendix AC**, respectively). The draft EA set out a comprehensive basis for preventing, managing and monitoring the environmental impacts of the Project. The PRCP schedule provides a comprehensive basis for setting rehabilitation milestones and criteria for successful progressive rehabilitation and closure.

23.4.5.3 Estimated Rehabilitation Cost and Financial Surety

Prior to Project activities commencing, financial surety for rehabilitation liabilities will be provided to the State.

The proponent will apply to DETSI for an ERC decision following grant of the EA. The ERC calculation provides the estimated costs for rehabilitation and decommissioning of all Project activities predicted to occur in a 1 – 5 year period.

In addition, the EA holder is subject to a 'risk allocation decision' by Queensland Treasury which assigns a level of financial and resource risk to the EA holder and its holding entities (i.e. Stanmore). Based on the assessed risk level, the EA holder will either pay a contribution into a pooled fund or provide financial surety in full (for high risk entities) through, for example, a bank guarantee or cash. If contributing to the pooled fund, the rate paid as a percentage of the ERC calculation is dependent on the risk level of the EA holder, with the greater the risk the greater the rate.

23.4.6 Secondary Approvals

Secondary approvals and regulatory requirements that are required for the Project are described in **Chapter 2**. This section provides a summary of the secondary approvals required to commence the Project:

- The *Aboriginal Cultural Heritage Act 2003* (ACH Act) provides for the recognition, protection and conservation of Aboriginal cultural heritage. The Barada Barna People hold determined native title rights and interests in part of the proposed Project area. The native title rights and interests of the Barada Barna People are held on trust by Barada Barna Aboriginal Corporation (BBAC). Where a project requires an EIS, the ACH Act requires either the development and approval of cultural heritage management plan (CHMP) under Part 7 of the ACH Act, or a suitable native title agreement or agreements to be in place that addresses cultural heritage. The terms of the CHMP have been negotiated and agreed by Stanmore and BBAC.
- Under the *Nature Conservation Act 1992* (NC Act), permits for the movement of protected animals and the clearing of protected plants are required, and a Species Management Program must be approved when interfering with native fauna habitat and breeding places. These permits under the NC Act are administered by DETSI. The proponent will apply for a SMP for tampering with a native animal breeding place, including listed threatened species under the EPBC Act, as identified in **Chapter 25**. Protected plants have not been identified in the Project disturbance area (refer to **Chapter 11**), and hence permits for the clearing of protected plants are not required.
- The *Stock Route Management Act 2002* (SRM Act) provides for the management of the stock route network. The State Reserve (Lot 9 GV33) within the MLAs is a nominated stock route. Potential stock route impacts and management will be determined in conjunction with DNRMMRRD.
- The Project will be a large resource project under the *Strong and Sustainable Resource Communities Act 2017* (SSRC Act) as it requires an EIS, or it will hold a site-specific EA and have 100 or more workers, and therefore requires a social impact assessment (SIA). An SIA has been prepared in accordance with the Coordinator-General's (CG's) social impact assessment guideline as part of this EIS (see **Chapter 21**). The CG must decide if an EIS can proceed based on the adequacy of the SIA, and may provide conditions to manage social impacts of large resource projects.
- The *Water Act 2000* (Water Act) regulates the taking and use of surface water and groundwater. The proponent does not propose to take surface water or groundwater, other than associated

water (groundwater inflows into the pit area). ML holders are able to take or interfere with underground water in the area of the licence or lease where the taking or interference happens during the course of, or results from, the holder's authorised activities (associated water). The environmental impacts of the take of associated water will be assessed as part of the EA application. It is proposed to divert Conrock Gully which is a defined watercourse downstream of the diversion. However, as the diversion is located on the proposed MLs, it will be authorised under the EA and not a licence under the Water Act. Placing fill or excavating in a watercourse, such as may be required for works associated with construction of crossings of the Isaac River and Cherwell Creek, or with the temporary Isaac River crossing required for the dragline walk, will require a Riverine Protection Permit (RPP) if they do not comply with guidelines for Riverine protection permit exemption requirements. RPPs are administered by the Department of Local Government, Water and Volunteers (DLGWV), and the proponent will obtain a RPP if the exemption requirements cannot be met.

As the Project's state approvals are under the MR Act and EP Act for activities on MLs, the Project does not require state approvals under the:

- *Planning Act 2016*
- *Building Act 1975*
- *Fisheries Act 1994*
- *Vegetation Management Act 1999.*

The proponent does not propose activities that would require state approval under the:

- *Forestry Act 1959*
- *Queensland Heritage Act 1992*
- *Regional Planning Interests Act 2014*
- *Transport Infrastructure Act 1994.*

23.4.7 Relationship with Other Existing Approvals

As described in Section 23.2, the Project will be integrated in IPC as an extension of IDM's operations. IP South operates IDM on granted ML 700046, ML 700047 and ML 700048, subject to an existing EA and PRCP schedule, and approval under the EPBC Act (EPBC 2019/8413).

The Project related activities that would result in disturbance at IDM are approved under existing State and Commonwealth approvals, except for two small areas (approximately 2.5 ha in extent) on the north side of the Isaac River at the crossing locations. These are labelled as 'additional disturbance on ML700046' on Figure 23-2. Approvals for activities in these two areas will be sought as:

- an EA and PRCP schedule amendment to the IDM EA and PRCP schedule
- part of the 'action' defined for the Project for Commonwealth approvals under the EPBC Act (EPBC 2025/10183).

23.5 Project Description

A detailed description of the Project is provided in **Chapter 4**. This section provides a summary of the Project description.

23.5.1 Overview

The proponent has applied for four MLs for the Project, ML application (MLA) 700081, MLA 700082, MLA 700083 and MLA 700084, as shown in Figure 23-2, which comprises the Project area.

The proposed Project layout, mining lease application (MLA) areas and proposed disturbance area are shown in Figure 23-2. The proposed disturbance allows for working and construction areas within and around proposed Project activities and infrastructure. The area of the four MLAs is 2,707 ha and the proposed disturbance area is 2,080 ha. The disturbance area has been refined to minimise and / or avoid sensitive ecological features (e.g. habitat for listed threatened species and riparian areas). There are an additional 2.5 ha of disturbance on IDM ML 700046 (see Figure 23-2) for Project linear infrastructure in areas not already authorised for mining activities.

The open cut mining methods for the Project will be similar to those at IDM, including:

- clearing of vegetation, stripping and stockpiling of topsoil
- drilling and blasting of pre-strip overburden
- removing the pre-strip overburden using mining equipment at IDM being a dragline and / or truck and shovel fleets and / or dozers
- drilling and blasting of overburden
- drilling and blasting of pit floor for geotechnical stability to allow for in-pit dumping
- overburden removal using the existing dragline at IDM and / or truck and shovel fleets
- coal mining using excavators
- formation of out of pit and in-pit overburden dumps as mining progresses
- progressive rehabilitation of overburden dump areas.

ROM coal will be transported from the Project's ROM coal pad to the CHPP at IPM for washing, utilising existing haul roads at IPC and new haul roads, including a bridge across the Isaac River, constructed in the Project area. The dragline will be walked from IDM to the Project via a temporary crossing of the Isaac River.

Product coal from the IPM CHPP will be railed along the Goonyella rail line to Dalrymple Bay Coal Terminal (DBCT) for export, with a small percentage railed via the Newlands rail system to the Port of Abbot Point. No changes are required at the CHPP to allow washing of the Project's ROM coal.

A satellite go line and crib area will be constructed at the Project, with the existing MIA at IDM continuing to service Project activities.

The primary access to the Project for workers and deliveries will be via IDM's existing access road and new access roads connecting with the Project, utilising the bridge to be constructed across the Isaac River. There is potential for a secondary access route to the Project between the Project and Stanmore's Eagle Downs project, utilising new and existing roads to connect with the Peak Downs Mine Road.

During operations, levees will be constructed to protect the open cut pit area from flooding of the Isaac River, Cherwell Creek and Conrock Gully up to a 0.1% annual exceedance probability (AEP) (1:1,000 year) flood event. Conrock Gully will be diverted around the active mining areas into the Isaac River, with the diversion remaining post mining. Any residual void remaining post mine life will not be located within the extent of the 0.1% AEP flood event.

A mine affected water dam will store water from the pit, ROM pad, go line and crib area, with the ability to transfer mine affected water to and from IDM and IPM within IPC's integrated water management system, thereby enabling the balancing of water supply and demand. Sediment water drains and dams will be constructed to capture runoff from overburden dumps. Clean water drains and dams will be constructed to separate clean water from mine affected water and sediment water.

IPC has access to external raw water supplied from SunWater and has excess storage capacity for water within existing mined voids and dams. As the Project's water management systems will be integrated into the rest of IPC, it is anticipated that water supply will be available during dry periods, and storage capacity will be able to receive any excess water during wet periods. Therefore no new sources of water supply will be required.

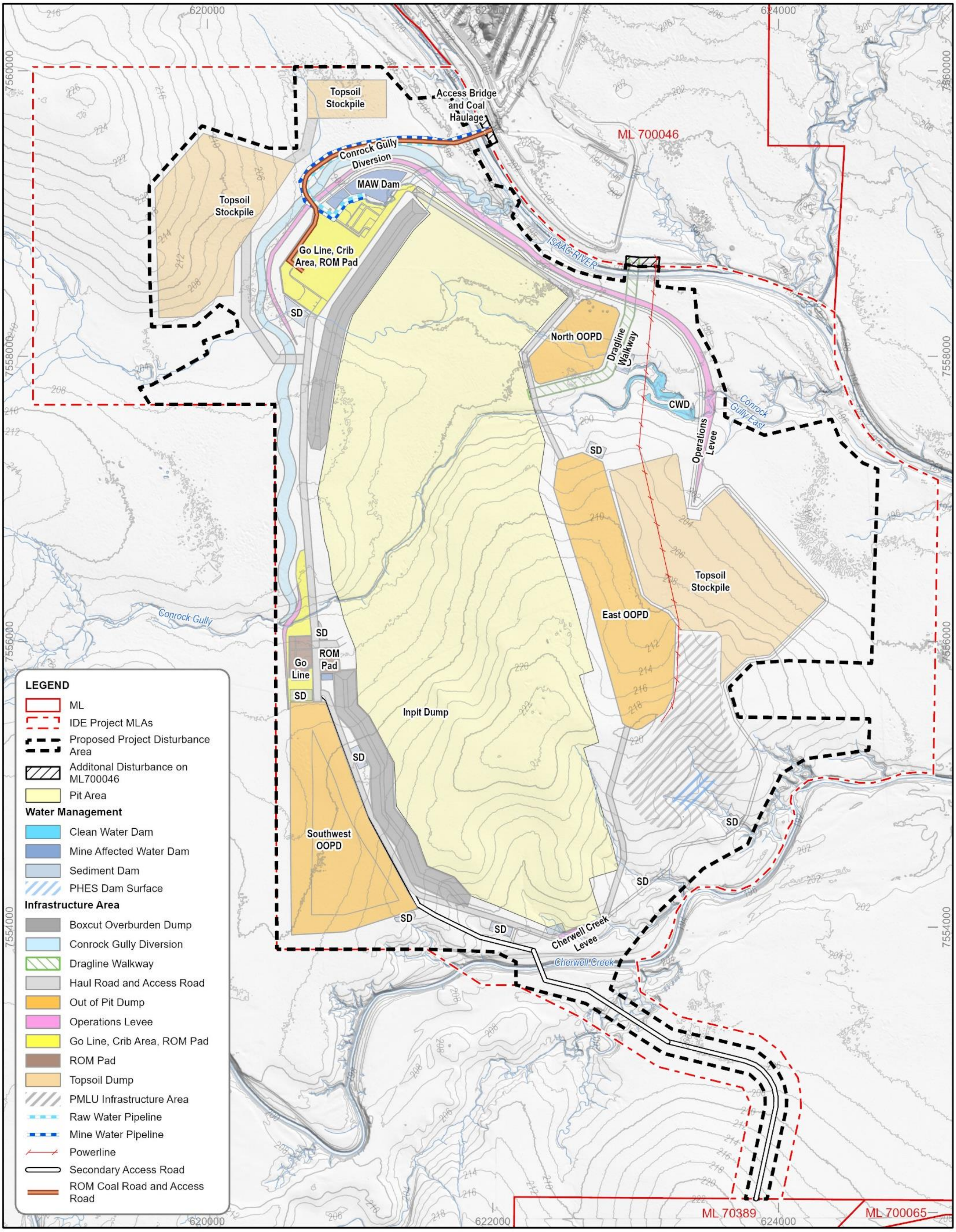
Topsoil stockpile areas will be used for storage of topsoil that has been stripped from mining and infrastructure areas, for future use in rehabilitation.

Power for the dragline will be supplied to the Project via powerline connections with existing power supply at IDM. The Project may require additional linear infrastructure at IDM to facilitate the extension of IDM mining activities to the Project, however this will be within areas authorised for disturbance.

The Project operational workforce will be similar to, but lower than that for current operations at IPC, with around 300 - 400 workers, compared to around 400 - 450 workers. Approximately 100 – 150 workers will be engaged at the Project for infrastructure construction. The Project, being an extension of mining activities at IPC, is therefore important to ensure a near steady state workforce across IPC beyond 2027 and 2028.

Workforce accommodation arrangements will continue in a similar manner to those for the current IPC workforce, being a mix of residences in Moranbah and other local or regional towns, and mine accommodation villages in the region. Through the Project, Stanmore will continue to support local and regional suppliers and contractors, providing additional economic benefits and employment in the region.

The Project is not proposing any novel or unproven resource extraction process, technology or activity.



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Metres

Datum:	GDA2020 Zone 55
Scale:	See Scale Bar
Date:	30/05/2026 8:04 AM
Drawn:	Minserve
Source:	Minserve/Stanmore
File:	20260223 Project Layout.aprx

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ISAAC DOWNS EXTENSION

Draft Project Layout and Disturbance Area

Figure | 23-2

23.5.2 Integration with IDM and IPM

The Project, once approved, will result in an extension of mining operations of IPC. The key aspects of Project integration with IPC are:

- Continued employment of the workforce at IDM and the IPM CHPP.
- Transport of ROM coal from the Project to the IPM CHPP via new and existing haul roads, primarily utilising existing haul roads.
- Washing of ROM coal at the IPM CHPP, with no changes required at the CHPP to allow washing of Project ROM coal.
- Railing of product coal from the IPM CHPP utilising the Goonyella rail line to transport the majority of product coal to DBCT, with a small percentage railed via the Newlands rail system to the Port of Abbot Point.
- Disposal of rejects and tailings within existing dumps and mined voids at IPM, in accordance with the approvals for IPM. IPM has sufficient available dump and void capacity for the storage of all rejects and tailings from the Project and other mining at IPC. Utilising existing overburden and void areas at IPM for storage of rejects and tailings removes the requirement for above ground storage tailings storage facilities at the Project.
- Access to the Project for light and heavy vehicles from the Peak Downs Highway utilising new and existing roads on IDM to the point of connection with the Project's proposed bridge crossing of the Isaac River.
- Supply of water to the Project from either the Sunwater raw water pipeline to IPC, or from existing water storages (e.g. voids, dams, etc), for which new and existing pipelines will be required.
- Ability to transfer excess mine affected water from the Project to existing voids and storages at IPC, via new and existing pipelines.
- Connecting to a suitable power supply source at IDM with new power lines required for supply of power to the Project.
- Utilisation of the dragline currently operating at IDM, with the dragline walked to the Project via a temporary dragline route, including a crossing of the Isaac River.
- Utilisation of mining equipment (e.g. excavators, haul trucks) currently operating at IDM.
- Utilisation of the explosives magazine reload facility at IDM with transport of explosives along existing and proposed haul roads

23.5.3 Mine Schedule

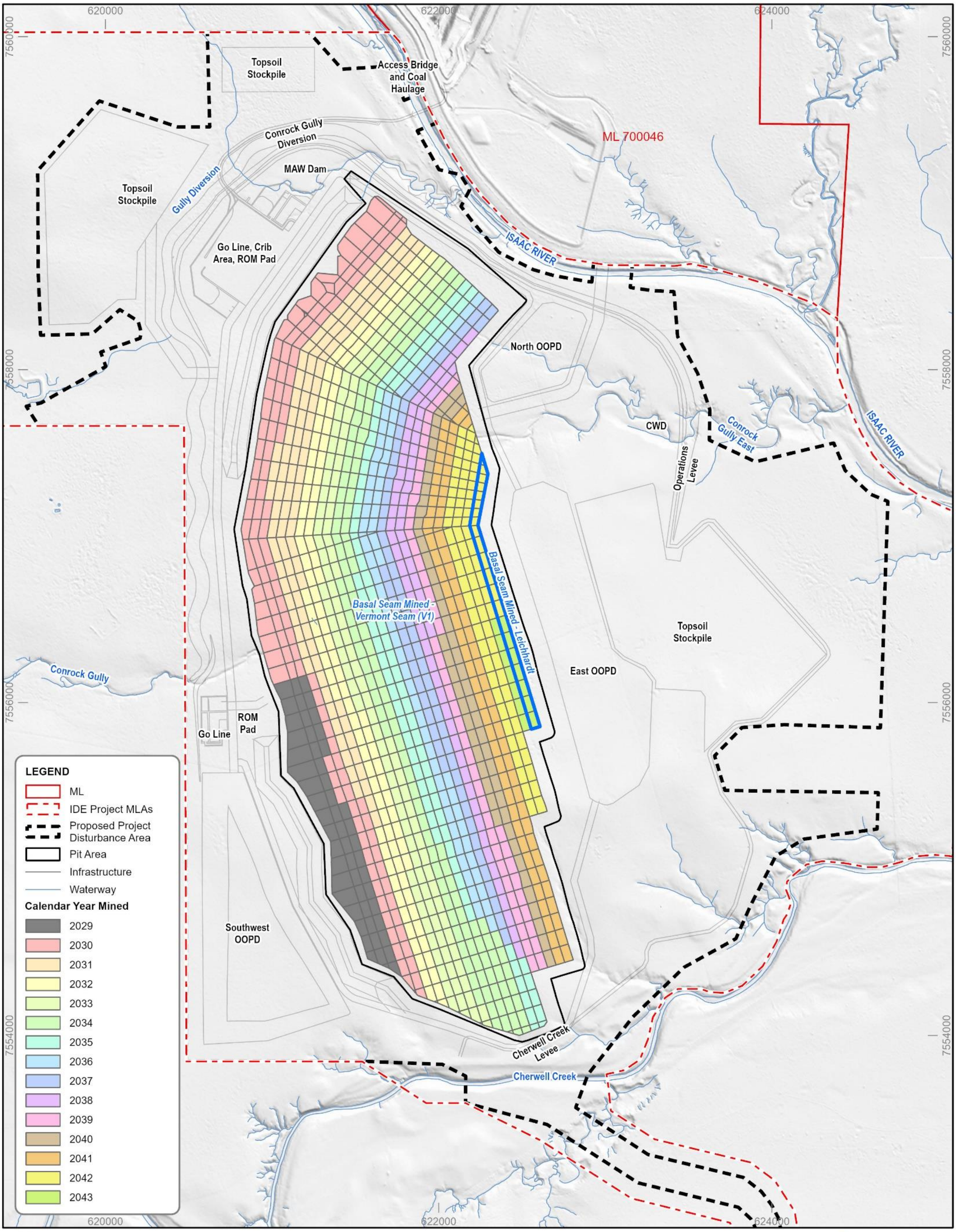
Project construction is scheduled to commence in late 2027 / early 2028 with ROM coal extraction commencing in in 2029. For the purposes of the describing the Project in various impact assessments in this EIS, Year 1 refers to the initial construction year and Year 2 is the first year of ROM coal extraction. Year 16 is the final year of ROM coal extraction.

Whilst the Project comprises a single open cut pit, the pit development will commence in the south and expand to the north. Mining will generally be in an easterly direction following the dip of the coal seams. A period progress plot, based on the anticipated commencement of operations in 2029 (Year 2), is provided in Figure 23-3.

It is proposed to construct the Isaac River levee and Conrock Gully diversion at the commencement of the Project (Year 1). Mining activities (e.g. topsoil stripping, overburden removal) may commence in the southern areas where a levee and diversion is not required to protect the pit from flooding. Once the levee and diversion are constructed mining can occur in the central and northern areas. The proponent may stage the construction of the levee and diversion as and when required for protection of mining activities.

A series of mine stage plans has been developed for the Project, showing the progression of mining activities at each stage. These stage plans have underpinned the assessment and management of Project impacts during and post operations. The following stage plans have been developed (with figures shown in **Chapter 4**):

- Year 1 showing the period of infrastructure construction
- Year 2 showing the initial year of mining operations, including the initial box cut, with infrastructure constructed to support operations.
- Year 4 showing mining progression, with out of pit dumping in progress.
- Year 6 showing mining progression, with the south west out of pit dump substantially land formed, high wall out of pit dumps in progress, in-pit dumping ongoing, and progressive rehabilitation occurring.
- Year 11 showing mining well advanced, the south west out of pit dump substantially rehabilitated, in-pit dumping ongoing, and progressive rehabilitation occurring.
- Year 16 showing the final year of mining operations, with in-pit dumping complete, backfill of the northern pit area with the waste from the northern out of pit dump, and progressive rehabilitation occurring.



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Scale:	See Scale Bar
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File:	20260223 Period Plot by Strip.aprx

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ISAAC DOWNS EXTENSION

Period Progress Plot - Basal Seam Mined

Figure | 23-3

23.5.4 Coal Mining

23.5.4.1 Overview

The open cut mining methods for the Project will be similar to those at IDM. Project mining will involve the following activities:

- clearing of vegetation
- stripping and stockpiling of topsoil
- drilling and blasting of pre-strip overburden
- removing the pre-strip overburden using dragline and / or truck and shovel fleets and/or dozers
- drilling and blasting of overburden
- drilling and blasting of pit floor for geotechnical stability, allowing for in-pit dumping
- overburden removal using dragline and / or truck and shovel fleets
- coal mining using excavators
- progressive rehabilitation of overburden dump areas.

23.5.4.2 Permits to Disturb

All ground disturbance will be subject to a disturbance permitting system which considers a number of factors, including:

- State and Commonwealth approvals
- need for the disturbance
- method of disturbance
- spotter catcher requirements to protect fauna
- drainage and sediment control requirements
- vegetation status
- cultural heritage matters
- vegetation and topsoil recovery
- rehabilitation.

23.5.4.3 Vegetation Clearing

Progressive clearing of pasture grasses, tree and shrub regrowth, and remnant vegetation will be required ahead of topsoil stripping for the proposed activities. Clearing will be undertaken progressively, as areas are required for mining, and to minimise exposed areas. Fauna spotter catchers will be engaged to conduct pre-clearance surveys prior to vegetation clearing.

23.5.4.4 Topsoil Stripping

Following vegetation clearing, topsoil will be recovered using dozers, and relocated using front end loaders, trucks and/or scraper fleet. Topsoil will either be used directly on areas of progressive rehabilitation or stockpiled for later use if no areas for rehabilitation are available at the time of stripping. Topsoil stockpiles will be appropriately located and sized to minimise loss of biological and physiochemical integrity. An inventory of topsoil will be maintained on site which records details such as stripping and stockpiling date, quantity, amelioration, analysis results and usage location.

23.5.4.5 Overburden Removal

Mining will utilise an open cut mining technique where strips and blocks are mined in succession, thus allowing overburden from one strip or block to be dumped into a previously mined out area. Overburden from an initial strip or box cut will be taken to an out of pit dump. Overburden will also be taken to an out of pit high wall dump. Overburden may be utilised in the construction of associated infrastructure such as roads and water management structures.

After topsoil has been removed from a strip, the overburden waste material will be drilled and blasted and subsequently removed by a combination of dragline, truck/shovel, truck/excavator or dozer push methods in order to expose the top coal seam.

23.5.4.6 Overburden Characterisation and Management

Section 23.8.5 and **Chapter 7** describes the characterisation of overburden (spoil) materials. This information has been used to inform the dump design. Overburden material is non-acid forming, with very low total metal and metalloid concentrations, and is erosive and dispersive to varying degrees. Runoff from overburden dumps will be managed through a sediment water management system (see Section 23.5.6).

23.5.4.7 Coal Recovery

Mining the coal seam will continue along the length of a strip or terrace until the end of the strip or terrace is reached. Once the coal seam has been mined out the strip will become available as a dumping destination.

The coal will be mined using front end loaders or excavators and placed into rear dump trucks for haulage. The haul trucks will transport the coal along the strip or terrace, up a ramp out of the pit, then along internal haul roads to the ROM coal pads in the north alongside the go line and crib area, and one in the central area (see Figure 23-2). ROM coal will be transported to the IPM CHPP for washing; likely utilising off-road road trains (e.g. C triples), or similar.

23.5.4.8 Mining Equipment

The Project will utilise a similar mining fleet to that utilised at IDM. The existing fleet operating at IDM will most likely be deployed to the Project area in stages, and will comprise the following approximate equipment:

- 1 dragline
- 2 large excavators (400 – 450t) for overburden removal
- 2 smaller (approximately 120 - 350 t) excavators for overburden, coal and general site works
- 10 large dump trucks (190 – 220 t) for overburden
- 5 smaller dump trucks (85 – 190 t) for coal, rejects and topsoil
- 14 dozers (D10 and D11 sizes)
- 4 graders
- 4 water trucks
- 2 loaders
- 3 overburden drills.

In general, the dragline or large excavators mine the overburden and thick partings, which are then dumped directly in dragline overburden piles or hauled by rear dump trucks to their planned dump site. The thinner partings and coal are likely to be mined by smaller excavators or loaders. A range of auxiliary fleet is utilised to maintain roads and dumps, and complete rehabilitation, which includes graders and dozers. Water carts are employed on-site to minimise dust levels. A drill is also used for drilling out blast patterns on the overburden and thick partings.

23.5.5 Construction Activities

Construction will occur over approximately 12 months. The majority of construction activities involve civil works, including for the levees, diversion, haul roads, access road, water management infrastructure and sites for the go line, crib area and ROM pads. Bridge construction will require civil and structural construction works. The Project will utilise infrastructure at IPM and IDM such as the CHPP, rail loop and MIA, and hence the Project does not involve construction of these significant infrastructure features.

Construction activities will generally occur 7 days per week during the day, with some potential for night works. The sections below describe the design, construction and operation of all proposed infrastructure.

The Project does not require the construction, upgrade or relocation of infrastructure that is not a part of IPC (i.e. no upgrades are required to public or third party roads, rail lines, level crossings, dams, power lines, telecommunications or pipelines).

23.5.6 Water Management

A water management plan has been developed for the Project. The mine site water management system will be integrated with the rest of IPC and is described in detail in **Chapter 24**. The water management strategy is for separation of mine affected water, sediment affected water and clean water, with appropriate management of each of these water types.

Mine affected water will be collected in the pit before transfer to the primary turkey's nest mine water dam (see Figure 23-2). Two smaller mine water dams will collect runoff from the ROM pads which will then pump mine water to the primary mine water dam. Mine water can then be used for dust suppression, piped to IDM or IPM if there is excess water or, alternatively, be released in a controlled manner to the Isaac River (i.e. dependent on flows and water quality in the receiving environment) to protect downstream water quality. If mine water is required at the Project (e.g. for dust suppression) then water can be transferred from existing storages at IDM and IPM. A detailed mine water balance, that integrates the Project, IDM and IPM is provided in **Chapter 24**.

Design and sizing of the mine water dams has been undertaken as part of the detailed water balance for the Project (see **Chapter 24**). The mine water dams are not regulated structures under State policies.

The mine water transfer pipeline will be installed in a linear infrastructure corridor adjacent to the haul road, and will be fitted with systems to detect leaks and control or cease flows. Where the water pipeline crosses the Isaac River the pipe will either be located with the bridge or will be trenched and buried below predicted scour depth with the pipe encased through a larger diameter pipe (enveloper) to protect it from damage.

The mine water pipeline will be approximately 350 – 500 mm diameter polyethylene pipe. Pumps will used to transfer water along the pipelines. Mine water transfer pipelines will include engineered controls such as isolation valves, pressure release valves and flow meters which can be remotely monitored, to prevent or minimise any accidental releases of water during transfer between IPM / IDM and the Project.

Sediment affected water, primarily from runoff from overburden dumps prior to and during rehabilitation stages, will be captured in sediment dams (as shown in Figure 23-2), designed in accordance with relevant engineering standards, to allow settlement of sediments before release of water. **Chapter 24** describes the design of sediment dams. Sediment dams will be constructed in stages in accordance with mine progression. An erosion and sediment control plan has been developed for the Project (**Appendix AD**). Water from sediment water storages will be preferentially used for dust suppression. The sediment dams are not regulated structures under State policies.

Clean water from upgradient of the mining activities will be diverted around the mining activities into the Isaac River or Cherwell Creek, including the diversion of Conrock Gully (see Section 23.5.8.3). During operations, some small clean water catchments will be within the Isaac River levee and report to a clean water dam, from where clean water will be pumped to the Isaac River.

23.5.7 Water Supply

Water demand for the Project will primarily be for dust suppression, with demand ranging between 500 and 1550 mega litres per annum (ML/a) depending on the stage of mining. Water for dust suppression will be obtained from mine affected and sediment affected water stored at the Project, in accordance with the water management plan. If water required for dust suppression is not available in Project water storages it will be pumped from existing water storages at IDM or IPM. Water storages at IPM and IDM, which supply water for various purposes at IPC, have contained between 700 and 3,200 ML at various times during the past 3 years, demonstrating that there is sufficient water within the system to meet forecast demands. Water balance modelling (see **Chapter 24**) indicates that during periods with median to lower than average rainfall, the Project will be a net importer of water from IDM and IPM; but during periods with higher than average rainfall the Project will be a net exporter of water to IDM and IPM.

Raw water is currently supplied to IPC via the Eungella Burdekin water supply pipeline under contracts with Sunwater, with approximately 1,300 ML/a available. Raw water allocation is primarily used the IPM CHPP, with raw water supply during the Project life for washing of Project coal at the IPM CHPP. Water demand at the CHPP during Project operations is estimated to be between 150 and 340 ML/a. Raw water used in the CHPP enters the mine water management system and is included in the whole of IPC integrated mine water system assessed for the Project (see **Chapter 24**). The requirement for raw water at the Project (other than raw water associated with the CHPP) will be limited to vehicle washdowns and fire fighting water storage (estimated at less than 50 ML/a). Raw water requirements for IPC, including the Project are predicted to be less than the existing capacity available under contract with Sunwater, and therefore additional raw water supply is not expected to be required. Raw water could also be made available to meet demands for dust suppression if required. A raw water pipeline will be constructed between IDM and the Project, likely in a similar corridor to the mine water transfer pipeline. The raw water pipeline will be approximately 300 mm diameter polyethylene pipe.

Potable water for the crib area will be trucked to site, in accordance with similar arrangements currently place for the rest of IPC.

There is no requirement to source additional water for the Project from surface water or groundwater sources.

23.5.8 Levees and Gully Diversion

23.5.8.1 Isaac River Levee

A levee, approximately 5.9 km in length, will be constructed adjacent to the Isaac River to protect mine pits from the 0.1% AEP (1:1,000 year) flood event (see Figure 23-2). The Isaac River levee will be located outside the high bank of the Isaac River to minimise impacts on the zone of riparian vegetation. A buffer distance is proposed between the levee and high bank of the Isaac River, which will reduce impacts to the riparian zone. The high bank was determined using Lidar surfaces as the level at which bank slope changes from steep (i.e. 21-32%) to shallow (i.e. 1-4%). Along the length of the levee the buffer zone is:

- > 50 m in all locations
- 50 – 100 m wide for 15% (870 m) of its length
- 100 – 200 m wide for 6% (340 m) of its length
- > 200 m wide for 79% (4,680 m) of its length.

An allowance has been made for a 15 m construction width area adjacent the levee toe, which is contained within the proposed disturbance area shown in Figure 23-2.

Levee construction will occur prior to mining in the 1:1,000 year flood zone.

The levee will be designed in accordance with The Manual for assessing consequence categories and hydraulic performance of structures (Queensland Government, 2016) (the Manual) with a flood immunity level for the 1:1,000 year flood event. Levees will be regulated structures and will be designed and certified by a suitably qualified person (i.e. registered professional engineer Queensland (RPEQ)).

The northern and southern sections of the levee are unlikely to require rock protection due to lower velocities of flood water. However, rock protection is proposed on approximately 2.5 km of the central section of the levee between chainages 1700 m and 4200 m to prevent scour during the 0.1% AEP flood conditions. This is by definition, highly infrequent and scour is not expected to occur for a vegetated levee for flood events more frequent than the 0.1% AEP.

Detailed levee design will be undertaken and could include cut-off trenches beneath the levee, erosion protection such as rock armouring, clay cut-off and capping of the levee crest.

The levee will be decommissioned and rehabilitated following operations.

23.5.8.2 Cherwell Creek Levee Plug

A levee plug, approximately 500 m in length (see Figure 23-2), will be constructed adjacent to Cherwell Creek to protect the southern pit area during a short duration (i.e. 1 – 2 years) window of operations when backwaters along a landform gully, during a 0.1% AEP (1:1,000 year) flood event, approach the pit end wall. This levee plug will be rehabilitated and vegetated following construction. Modelled velocities are consistently low for all flood events up to the 0.1% AEP, and hence are unlikely to cause scour along the vegetated levee plug.

This levee plug will not be required once in-pit backfill with overburden occurs following coal extraction in this pit area. The levee plug may be integrated into the haul road around the south of the pit area. The levee plug will be a regulated structure and requires design in accordance with the Manual.

23.5.8.3 Conrock Gully Diversion and Levee Plug

Conrock Gully enters the Isaac River approximately 3 km upstream of the confluence with Cherwell Creek. The proposed diversion is located within the portion of Conrock Gully defined as a drainage feature under the Water Act. Conrock Gully's catchment area is approximately 2% of the catchment size of the Isaac River upstream of the Project.

Conrock Gully flows will be diverted to the Isaac River, approximately 3 km upstream of the existing confluence with the Isaac River. The diversion is approximately 5.2 km long (compared to 5.8 km diverted section of Gully) with a typical diversion cross section comprising:

- 1.7 m deep main channel, which will convey 50% AEP local creek flows
- 0.5 m deep overbank channel, which will convey 2% AEP local creek flows
- variable batter back to natural topography, which may contain local creek events rarer than the 50% AEP local creek flows.

A levee plug, as shown in Figure 23-2, will be required at the upstream end of the diversion to prevent flows continuing to traverse the old Conrock Gully channel. This will be designed with a flood immunity level for the 1:1,000 year flood event. This levee plug will be rehabilitated and vegetated following construction. Modelled velocities are low, with the exception of a small section (around 20m) at chainage 590 m for the 0.1% AEP event, where velocities may reach up to 2.1 m/s. Rock protection will be applied in this section. Velocities along the remainder of the levee are unlikely to cause scour along the vegetated levee plug. The levee plug will be a regulated structure and requires design in accordance with the Manual.

The ROM coal haul road will cross the diversion, with the design comprising culvert structures to allow low flows, and with sufficient capacity to convey the 1:10 year flood event, providing flood immunity similar to the proposed Isaac River bridge.

The diversion, particularly in its lower reaches, would not contain regional Isaac River flood flows for the majority of design events, which is typical of local creeks joining the Isaac River in the area. The Isaac River levee will provide flood immunity for the 1:1,000 year flood event along the downstream sections of the diversion. Between the levee plug and the Isaac River levee, the diversion and the natural topography provide flood immunity for mine workings for the 1:1,000 year flood event.

Chapter 24 provides an assessment of the design and hydraulic performance of the diversion, which demonstrates that the diversion has been designed to meet the accepted standards to be geomorphically stable. The channel slope of the diversion is 0.147%, which is almost identical to the channel slope of the diverted section of Gully (0.140%).

The diversion design typically provides an improvement in hydraulic conditions compared to the diverted section of Conrock Gully. Design has been undertaken in accordance with the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development (DNRMMRRD) (formerly Department of Natural Resources and Mines [DNRM]) Guideline: Works that interfere with water in a watercourse: watercourse diversions (DNRM, 2014).

Following construction, the diversion will be revegetated to maintain bank stability and reduce erosion. The diversion will remain in the post mining landform as a revegetated, rehabilitated, stable landform. The levee plug will be integrated into the final, long term, stable landform.

23.5.9 Go Line and Crib Area

The Project will utilise the MIA at IDM, resulting in a requirement for minimal support infrastructure at the Project, comprising a go line and crib area.

The go line will have parking for heavy and light vehicles, self bunded storage tanks for fuel (around 250 kL), oil and lubricants, and laydown / storage yards with sufficient area available for temporary maintenance of mining equipment.

The crib area will comprise demountable or mobile huts to accommodate around 20 people during breaks and site offices for supervisors, with associated potable water storage and supply, sewage storage facilities and communications tower, all powered by a generator with a solar power solution also being considered. A sewage treatment plant is not required, with all sewage trucked off site. Potable water will be trucked to site.

There are limited construction requirements for the go line and crib area with civil works (e.g. landform shaping and installation of a gravel layer) for area establishment and pre-fabricated infrastructure transported to the site.

Runoff from localised areas of potential contamination will be directed through a contaminated water management system (e.g. oily water separator or sediment trap) prior to reporting to the mine water management system.

The MIA at IDM will continue to provide a workshop servicing mining equipment, washdown pad and consumables storage.

23.5.10 Haul Road, Access Road, Bridges and Dragline Walk Route

23.5.10.1 Overview

The Project will have a network of internal haul roads for haulage of ROM coal from the pit to the ROM coal pad and for haulage of overburden.

A haul road will be constructed between the ROM coal pad and existing haul roads at IDM, including a bridge crossing of the Isaac River. The haul road will be used for transport of ROM coal by off-road trains (e.g. C triples), or similar. ROM coal haul roads on IDM and IPM MLs will utilise existing haul roads, including the Peak Downs Highway underpass.

Access to the Project will be via IDM, utilising the existing access road intersection with the Peak Downs Highway. The extension of the access route to reach the Project is likely to follow the haul road to the Project, including Isaac River bridge crossing.

A secondary access route is proposed via the Eagle Downs project MLs and will be utilised intermittently, for example when access via IDM is constrained. The secondary access route will be approximately 20 m wide with a bridge crossing of Cherwell Creek. The secondary access route crosses JB Gully, a small creek (stream order 2) south of Cherwell Creek, with a bed level crossing proposed.

A temporary crossing of the Isaac River will be constructed to walk the dragline at IDM to the Project.

A culvert crossing is proposed for the haul crossing of Conrock Gully diversion.

23.5.10.2 Haul Roads

New sections of the haul roads will be constructed as a cut and fill, with any additional road base sourced from overburden material, and a capping material sourced from a local quarry, if quarry materials are unavailable onsite. The road material will be sourced, crushed and screened, conditioned with water prior to placement and compaction. New sections of access road, if different to new haul road sections, will also be constructed using the cut and fill method; however the specifications of this road would be lower than that of the haul road due to the differences in axle loads and will require less material. Mine equipment will primarily be used for road construction, including dozers and excavators.

23.5.10.3 Bridges

The Isaac River and Cherwell Creek bridges will be approximately 110 m and 70 m long, respectively. The conceptual design of the bridges includes:

- approximate 15 m bridge width
- dual lanes
- between 2 and 4 concrete and / or steel spans supported by concrete piers, piled into the banks and beds, nominally to a depth a 10m
- less than 1:10 year flood event immunity
- rip rap rock scour protection for bank abutments to minimise risk of scour, which will be inspected following major flood events and, if required, reinstated to reduce the risk of future scour
- waterway crossings perpendicular to the waterway direction.

Bridge designs are subject to detailed design which may result in changes to the conceptual design. This bridge is expected to be similar to the existing Peak Downs Highway Isaac River bridge (as shown in Figure 23-4) approximately 8 km upstream of the proposed Project Isaac River bridge. The Cherwell Creek bridge will have a similar design to the Isaac River bridge, but approximately half the length.

Construction of bridges will involve methodologies similar to the following:

- preferentially constructed in the dry season
- geotechnical investigations to determine the stable depth
- temporary (i.e. less than 180 days) sheet piles around each pier location to create a dry work area
- installation of pier piles driven done to a suitable depth
- installation of a reinforced concrete pile cap to tie piles together construction of piers
- construction of abutments adjacent the river banks, with riprap rock protection placed adjacent abutments
- lifting of the of the girders (bridge superstructure) span by span between the abutments and piers
- casting of the bridge deck slab.
- bed scour protection, if required, with any bed scour protection to be at, or below the natural bed level of the waterway, such that it does not alter the profile of the low-flow channel, and no more than 20m upstream or downstream.

A nominal 200 m width has been allowed for the construction of the Isaac River bridge and Cherwell Creek bridge to allow some flexibility in precise location during detailed design. However it is expected that the construction width will be less than this, allowing for buffers of vegetation within the nominated disturbance area. The construction and operation of the bridge will not create a barrier for fish passage.

At the end of the closure period, when the bridges are no longer required, the bridges will be decommissioned, with affected lands rehabilitated in accordance with the PRCP schedule requirements to restore riparian habitat. Bridges would be retained if there is an agreement with a third party for their retention.

23.5.10.4 Dragline Walk Route

The dragline currently operating at IDM will be walked to the Project. The proposed walk route (see Figure 23-2) is different to the haul road and access road, but will be short duration (e.g. a few weeks to a few months), with a temporary crossing of the Isaac River. The walk route may also be utilised by other heavy vehicles to cross the Isaac River prior to bridge construction, in which case the walk route construction, use and removal of material on the bed of the river would occur for less than 180 days (6 months). The dragline walk route will be preferentially constructed and utilised in the dry season when flows in the Isaac River are unlikely.

At the conclusion of mining operations, and once the dragline is no longer required for use in rehabilitation (i.e. approximately 20 years after operations commenced), the temporary crossing will be reestablished for a short duration (e.g. a few weeks). The temporary crossing will not be required for the movement of other equipment at closure as the Isaac River bridge will be available. All walk route crossing construction, use and removal of material on the bed of the river would occur within weeks to a few months (i.e. less than 180 days).

The proposed location for the dragline walk route crossing of the Isaac River has been selected based on relatively shallow and low river banks and minimising areas of remnant vegetation clearing. The dragline crossing construction will involve:

- gravel, road base or similar overlain on the bed of the river to a height of around 100 – 250 mm above the bed (noting that there will be flexibility in the height of the base as part of detailed design)
- bank cuttings on either side of the river to create a suitable gradient to facilitate the dragline's movements
- stabilisation of the banks of the river with rock protection.

Following utilisation of the crossing, and within 180 days of construction commencement, the temporary gravel base will be removed, and any sand that has been removed will be replaced to restore the natural bed of the Isaac River. Bank cuttings and the walk route itself will be stabilised and rehabilitated through topsoiling, seeding and vegetation establishment. Rock protection installed during construction will remain in place. This will create a stable landform during the operational period and prior to the dragline being walked from the Project back to IDM at closure.

At closure those parts of the walk route required for the movement of the dragline will be re-opened during the dry season, with gravel, road base or similar overlain on the bed of the river. Once the dragline has returned to IDM, the crossing will be fully rehabilitated with the gravel base removed, sandy bed reestablished, bank cuttings filled to resemble pre-mining topography and landforms rehabilitated through topsoiling, seeding and revegetation in accordance with the PRCP schedule requirements to restore riparian habitat.

As the dragline crossing will be temporary for the pre and post operational crossings, it will not result in a permanent waterway barrier that will impede fish passage.

High voltage power lines will be installed prior to the walk, to allow for the connection of the dragline substation and dragline trailing cable to support the walk, with a required separation distance between the power line and the walk route for safety purposes. The powerline would be strung across the river from poles on either side of the bank. A nominal 250 m width has been allowed for the dragline walk route and power line crossing activities. However it is expected that the construction width will be less than this, allowing for buffers of vegetation within the nominated disturbance area.

23.5.10.5 Other Crossings

The secondary access route crossing of JB Gully will be constructed as a bed level crossing based on the principles described in the Department of Primary Industry's (DPI's) 'Accepted development requirements for operational work that is constructing or raising waterway barrier works: September 2025 (DPI, 2025)' (the Waterway Barrier Works Guideline). At the end of the closure period, when the crossing is no longer required, the crossing will be decommissioned, with affected lands rehabilitated in accordance with the PRCP schedule requirements to restore the pre-mining land use (i.e. grazing).

The crossing of Conrock Gully diversion will be constructed as a culvert crossing based on the principles described in the Waterway Barrier Works Guideline. Following operations this crossing will be decommissioned and rehabilitated, with the diversion continuing to function as a geomorphically stable waterway.

As the crossings of JB Gully and Conrock Gully diversion will be constructed based on the principles in the Waterway Barrier Works Guideline, they will allow for lows flows and will not act as waterway barriers to fish passage.

Figure 23-4 Existing Peaks Downs Highway Bridge over the Isaac River

23.5.11 Power Supply and Communications

IPC is connected to the electricity supply grid through substations at IPM and IDM. These substations have available capacity to supply power to the Project for the dragline. Overhead 66kV powerlines will follow a linear infrastructure route with a crossing of the Isaac River, likely spanning the Isaac River between high banks. Any new powerlines on the IDM MLs will be within areas authorised for disturbance other than small sections on the north side of the Isaac River.

The go line and crib area will be powered by generators and / or solar arrays and battery banks. Power demand for the go-line and crib area is estimated at less than 0.5 MW, with allocation between generators and solar power to be determined.

Communications services at IPC will be extended to the Project using a linear infrastructure corridor for fibre optic cable and / or additional repeater stations or communications tower.

23.5.12 Exploration

The Project resource has been defined through exploration drilling. However, additional exploration drilling within the resource area will be undertaken to refine the geological information, as needed for detailed mine planning as mining progresses. This may involve between 10 and 20 drill holes per annum in advance of mining, and in areas to be mined.

23.5.13 Non-Mining Waste Management

Non-mining waste generation and management is described in **Chapter 17**. Non-mining waste will include general waste from the crib area. Waste from sewage facilities at the crib area will be removed by a licensed contractor to a suitable waste disposal facility.

Non-mining waste will be managed in accordance with existing methodologies at IPC, including use of licensed waste contractors and disposal of tyres in the dumps. Non-mining waste will be collected onsite and transferred to an appropriately licensed waste disposal facility locally or regionally. Waste will be stored in a dedicated waste storage area, designed to separate waste types and prevent waste from being released to the environment.

23.5.14 Workforce and Accommodation

The mining, coal haulage and support staff workforce at IDM will transition to the Project. The CHPP workforce at IPM will continue to support the washing of coal from the Project.

Excluding the construction workforce, there is expected to be a small decrease in the operational workforce in the transition from mining at IDM to mining at the Project, from around 450 workers to around 400 during the initial years of peak production at the Project. The operational workforce later declines to around 300 - 350 workers as less ROM coal is mined. In the absence of the Project, these workers would need to secure employment elsewhere.

The accommodation strategy for the operational workforce will be similar to the current strategy used by IPC, with the majority of the workforce residing in existing, local mining village accommodation and some workers residing in local towns, such as Moranbah. The majority of workers staying at the mining village accommodation are likely to drive in drive out (DIDO) from regional centres such as Mackay. The Project is not proposing a fly in fly out (FIFO) workforce, although some workers may fly to regional airports (e.g. Moranbah or Mackay) from their place of residence. Shift rosters will generally be 7 days on, 7 days off, working 12 hours per day during shifts. Some staff may work 5 days on, 2 days off. It is expected that the approximately 10 – 15 % of the operational workforce will live locally, 70 – 75% will be DIDO and 15% will be FIFO. Operations will occur 24 hours per day, 7 days per week.

There will be around 100 – 150 construction workers required for the Project as different infrastructure is constructed during the initial 12 – 18 months. The construction workforce will be short duration and is expected to be accommodated in an existing local mining accommodation village, other than those construction workers who live locally.

23.5.15 Traffic and Transport

Chapter 18 provides an assessment of traffic generated by the Project, and other transport requirements for the Project. This includes the movement of people, materials, supplies and equipment. A key aspect of Project related traffic and transport is that it will replace existing traffic and transport associated with IPC, as mining operations at IDM ramp down.

As access to the Project is via the existing intersection with the Peak Downs Highway, the movement of people, materials, supplies and equipment to and from the Project will be along the Peak Downs Highway. With a proportion of the workforce residing in Moranbah or accommodation camps in Moranbah, roads connecting Moranbah with the Peak Downs Highway will also be used for the Project. The majority of the workforce residing in accommodation camps will be transported to site daily by bus.

FIFO workers will either fly into Moranbah or Mackay airports. DIDO and FIFO workers will have the option of bus transport between regional locations (e.g. Mackay) and accommodation camps.

23.5.16 Activities Not Proposed for the Project

The Project does not involve underground mining, and therefore no subsidence impacts will occur. There are no borrow pits proposed for the Project outside of the proposed disturbance area.

The Project does not propose level crossings, conveyors, jetties or ferries.

The Project does not include any of the following activities:

- dredging and bed levelling
- barging and barge loading
- any activity in a marine environment
- coal seam gas extraction, including drilling and hydraulic stimulation.

23.6 Project Need and Justification

The Project will primarily produce metallurgical coal, which will be supplied to the world market, where the demand for coal in steel making is expected to remain strong. There is general alignment between long term forecasters and peak industry bodies that global steel demand will continue to grow from around 1.8 billion tonnes to around the two billion tonnes level by 2050, this group includes the International Energy Agency (IEA) (2020), CRU (2023) and the World Steel Association (2025). Over time an increasing proportion of steel is predicted to be produced from electric arc furnaces rather than from blast furnaces (requiring metallurgical coal). However, blast furnaces are forecast to remain the predominant source of crude steel over the production life of the Project, with demand for metallurgical coal for blast furnaces expected to remain strong at around 1 billion tonnes per annum through 2040. A smaller proportion of the Project's product coal will be thermal coal, with the Project supplying thermal coal to the international market for cement production and power generation. Global trade in thermal coal grew again in 2024 to an estimated total of 1,180 Mt (IEA, 2024), with China and India representing approximately 50 percent of this total. Global trade in thermal coal in 2025 has moderated somewhat (estimated at minus 6% compared to 2024) mainly due to increased domestic supply in China and India, rather than an overall reduction in use. China and India continue to build coal fired power stations (China approved 25 GW of new power plants in 1st half of 2025 (S&P Global, 2025)) with a number of plants located close to port cities with coal import capabilities. Growth in renewable power remains strong (IEA, 2024), but reliance on coal and gas remains over the life of the Project to satisfy the growing demand for energy.

The Project will provide the following social and economic benefits:

- Contribute significantly to the State's economy and provide ongoing employment opportunities through the transition the IPC workforce to the Project.
- Contribute, during the construction phase, an estimated to $17.7 million in gross regional product (GRP) for the regional catchment and $32.9 million in gross state product (GSP) for Queensland. The mining phase is estimated to support an average annual contribution of $106.6 million in GRP for the regional catchment and $198.5 million in GSP for Queensland.
- Employ approximately 100 - 150 people during the construction phase and approximately 300 – 400 people during operations. In addition, there will be opportunities for local employment in construction, transport and the supply of goods and services.
- Support for incomes is estimated to be around $180 - 220 million more per annum in Queensland relative to the base case (i.e. without the Project).
- Require approximately $190 million in capital investment to bring it to full production.
- Result in various taxation and royalty payments to the commonwealth and the state. The Project is estimated to provide additional revenues of approximately $965 million over the life of Project operations to the Australian Government, equating to $60.3 million per annum. The Project is estimated to provide additional revenues of approximately $698 million over the life of Project operations to the Queensland Government, equating to $43.6 million per annum.
- Provide a continuous and steady level of economic activity in Moranbah and the region, as the Project's mining activities replace existing mining activities at IPC, with ongoing opportunities for engagement of local and regional suppliers.
- Capitalise on existing infrastructure and activities located at IPC, and reduce the Project's environmental footprint, by utilising existing:
    - coal processing and railing infrastructure
    - open-cut voids for disposal of rejects and storage of mine affected water
    - raw water supply and power supply.
- The social impact assessment (see Section 23.11 and **Chapter 21**) identified that social benefits, as enhanced though associated social impact management measures, will result from:
    - enhanced and ongoing Project workforce and contributions in community
    - enhanced long-term employment security
    - generation of new, ongoing and replacement employment opportunities
    - opportunities for training and skills development
    - enhanced access to affordable accommodation options for visiting trades and services
    - ongoing economic benefits for worker accommodation village providers
    - increase in supply and procurement opportunities
    - ongoing economic benefits for local and regional businesses
    - population retention influencing community vitality and, cohesion in local communities
    - post-mining land use and land rehabilitation opportunities.

The cost benefit analysis for the Project (see Section 23.11 and **Chapter 22**) identified, across all discount rates examined, that the Project would be deemed economically desirable, with the benefits outweighing the costs. At a 7% discount rate, the Project's modelling delivers a net present value of $653.5 million over the assessment period.

23.7 Feasible Alternatives

Project alternatives are considered in terms of location of activities, design of infrastructure and types of activities proposed.

23.7.1 Mining Location

The location of mining is dictated by the location, depth and geology of the coal resource. However, where the coal resource encroaches on sensitive areas (e.g. the Isaac River) buffer areas have been proposed that will limit encroachment. The proposed pit shell has been defined by economic and geological constraints to the west and east; and by environmental constraints (the Isaac River and Cherwell Creek) in the north and south. Whilst the coal resource is located beneath the Isaac River the proponent has not sought to divert the Isaac River to access this coal. This has avoided impacts to water resources, which is a controlling provision (MNES) for the Project.

23.7.2 Project Disturbance Area

The Project disturbance area was designed to reduce impacts to areas of remnant vegetation. This is evident in the shape of the disturbance area in Figure 23-2, which does not include parts of the ML application areas where remnant vegetation could be avoided through the selection of locations for infrastructure, topsoil stockpiles and out of pit overburden dumps. The avoided vegetation clearance is described in detail in **Chapter 25**, with 435 ha, or 56%, of remnant vegetation avoided. This has benefits for the avoidance of listed threatened species and ecological communities (a controlling provision (MNES) for the Project), as described in **Chapter 25**.

23.7.3 Mining Methods

The coal resource is suited to open cut mining methods, being shallow depth (approximately 20 m) in the location of the initial box cut. Underground mining at such shallow depths is not practicable for operational and economic reasons. Hence open cut mining is the preferred mining method.

The proponent proposes to use the dragline currently in operation at IDM, supplemented by excavators and dozers, for overburden removal. Use of a dragline is the most efficient and economical, and hence least greenhouse gas intensive method for removing overburden. As a dragline is available for use for the extraction of overburden, and it is the most efficient method for overburden extraction, the dragline is preferred for the majority of overburden extraction.

Mine scheduling was informed by the use of a dragline, the relatively short strike length and proposed down dip mining methodology, which achieves a low strip ratio in early years. Mine scheduling was designed to optimise overburden handling for the backfill of the northern pit area and partial backfill of the southern pit area.

The mining schedule has been designed to maximise the efficient use of mining equipment and coal recovery, with an overburden dumping schedule designed to align with the preferred rehabilitation options for the final landform. The majority of overburden (around 90%) is placed in-pit rather than out-of-pit, thereby reducing the overall Project footprint. The out of pit overburden dumps have largely been located in cleared areas (i.e. an area without remnant vegetation), within the limits of the tenement areas available for mining activities, thereby minimising environmental impacts, including to MNES. There are few other alternatives for the location of out of pit overburden dumps, with other locations requiring longer haulage and greater emissions and disturbance, or located within floodplain areas.

Coal mining is proposed using conventional open cut methods including dragline (for overburden removal), excavators, dump trucks and dozers. There are no practicable alternatives to the method for coal extraction.

The preferred method for coal haulage between the Project ROM pad and IPM CHPP is via road trains, which are more efficient and economical over the haulage distance than dump trucks. The option for a conveyor to transport ROM was considered but found to be uneconomic due to high capital costs, with limited environmental benefit.

The mine sequence was selected so that any remaining residual void would not be located within the 0.1% AEP (1:1,000 year) floodplain.

Options were considered for mining of two separate pit areas without diverting Conrock Gully. However the economic benefit of resource extraction from this area, even after considering the cost of a permanent, stable diversion, was considered to outweigh the environmental values of a defined drainage feature with a very small catchment, limited remnant vegetation and surrounded by active grazing land.

23.7.4 Resource Sterilisation

The proposed mining method and sequence targets all economic coal within the opencut resource area. As the coal seams become deeper they intersect the regional Isaac Thrust fault, and therefore there is limited potential for additional resource extraction. The overburden box cut dump has been located to the west of the 'limit of oxidisation' of the coal seams and therefore no economic resources are located beneath the western overburden dump.

Based on investigations for IDM, which is in the same geological areas as the Project, there is very limited potential for coal seam gas extraction from the coal seams proposed for mining due to their low gas content. Coal seams at deeper depths in the Project area remain available for coal seam gas extraction, although this resource is not currently targeted by the overlapping coal seam gas tenement holder.

The Project will not result in the sterilisation of coal or coal seam gas resources.

23.7.5 Progressive Rehabilitation and Final Landform

As described in Section 23.9 (also in **Chapter 5**), options have been developed for post mining land uses (PMLUs) at the Project, including for the residual void area. Within PMLU areas, landforms will be designed so that they are geotechnically stable, safe, non-polluting and able to support the preferred PMLU. Landform design options were assessed in selecting the preferred closure landform. Rehabilitation milestone criteria have been developed to achieve rehabilitation objectives.

23.7.6 Infrastructure

The proponent has taken advantage of existing infrastructure at IPC rather than develop infrastructure specifically for the Project. This provides environmental and economic benefits by reducing the Project footprint and reducing capital expenditure. The existing infrastructure at IPC that will be utilised for the Project includes the CHPP, rejects and tailings disposal in existing mining dumps and voids, train loading facility, rail loop, MIA, access road from the Peak Downs Highway, internal haul roads, explosives magazine, and connections to raw water, power and communication supply. By disposing of rejects and tailings from Project coal in existing mining dumps and voids respectively, the requirement for an above ground tailings storage facility at the Project is avoided, thereby by avoiding the environmental impacts that would result from an above ground tailings storage facility.

The location of mining infrastructure has been selected to minimise vegetation clearance, where possible. All potential Isaac River bridge crossing locations were similar in terms of riparian vegetation, and therefore the preferred alignment is based on engineering considerations and linkages with IDM. The options for the secondary access route crossing of Cherwell Creek were similar in terms of vegetation, with the preferred alignment based on engineering considerations and linkages with Eagle Downs Mine.

A buffer distance of approximately 200 m has been maintained between the levee construction area and the high bank of the Isaac River along the majority of the levee. A buffer distance of approximately 100 m has been maintained between the levee plug and the high bank of Cherwell Creek. This allows for protection of riparian vegetation (including habitat for listed threatened species that are a MNES) between the high bank and levee construction areas. Without the Isaac River levee, the area of resource extraction would be significantly reduced.

The water management plan for the Project is for integration with the approved water management system for IDM, rather than being developed as an independent system. This allows for balancing of mine affected water and minimises the potential for uncontrolled releases of mine affected water from the Project. If a standalone mine water management system were proposed for the Project, this would increase the risk of uncontrolled releases of mine water, increase the size and footprint of the mine water dam and increase the risk of stoppages to operations. Therefore the preferred option, being an integrated mine water management system for the Project and IPM, provides environmental and economic benefits. The water management system is important to the management of potential impacts to water resources, a controlling provision (MNES) for the Project.

The location and design of Conrock Gully diversion were selected to achieve a geomorphically stable design with hydraulic characteristics similar to the existing gully, and which flowed into the Isaac River. An alternative was considered to divert Conrock Gully into Cherwell Creek to the south; however this option was not preferred for environmental and economic reasons.

23.7.7 Accommodation

The accommodation strategy is for a combination of accommodation in local centres and use of existing mining accommodation villages. It is not proposed to develop a mining camp at the Project as the workforce is transitioning from IDM (i.e. similar workforce numbers) and there is available accommodation at existing mining accommodation villages in the area. The accommodation strategy has been developed to encourage workers to live locally, without placing increased demand on housing and social services in Moranbah and other local communities. Workers who do not live locally will continue to be accommodated at existing mine village accommodation.

23.8 Description of the Environment

23.8.1 Overview

This section provides information on the environment of the Project area and surrounds, other than information provided in MNES **Chapter 24** and **Chapter 25** (i.e. information on terrestrial and aquatic ecology, and surface water and groundwater).

23.8.2 Land Use

Table 23-3 and Figure 23-5 describe and show property boundaries within and adjoining the MLA boundaries. The Project area is largely located on Winchester Downs station (Lot 8 SP277834), but also has overlaps with a State Reserve (Lot 9 GV33) which has grazing rights for the owners of Winchester Downs, a local road used to access parts of Winchester Downs, the Isaac River and Cherwell Creek. Winchester Downs station is a pastoral operation with the land within the MLA areas primarily used for grazing. The State Reserve is a nominated stock route, although this is disconnected from other stock routes in the region.

The nominated access to the Project's MLAs from the Peak Downs Highway intersects Lot 5 GV132 (Wotonga), a freehold property. Stanmore has existing relationship and agreements in place the owners of Wotonga, as IDM is located on Wotonga.

There is a single sensitive receptor (Winchester Downs homestead) within approximately 5 km of proposed mining activities, as shown on Figure 23-5.

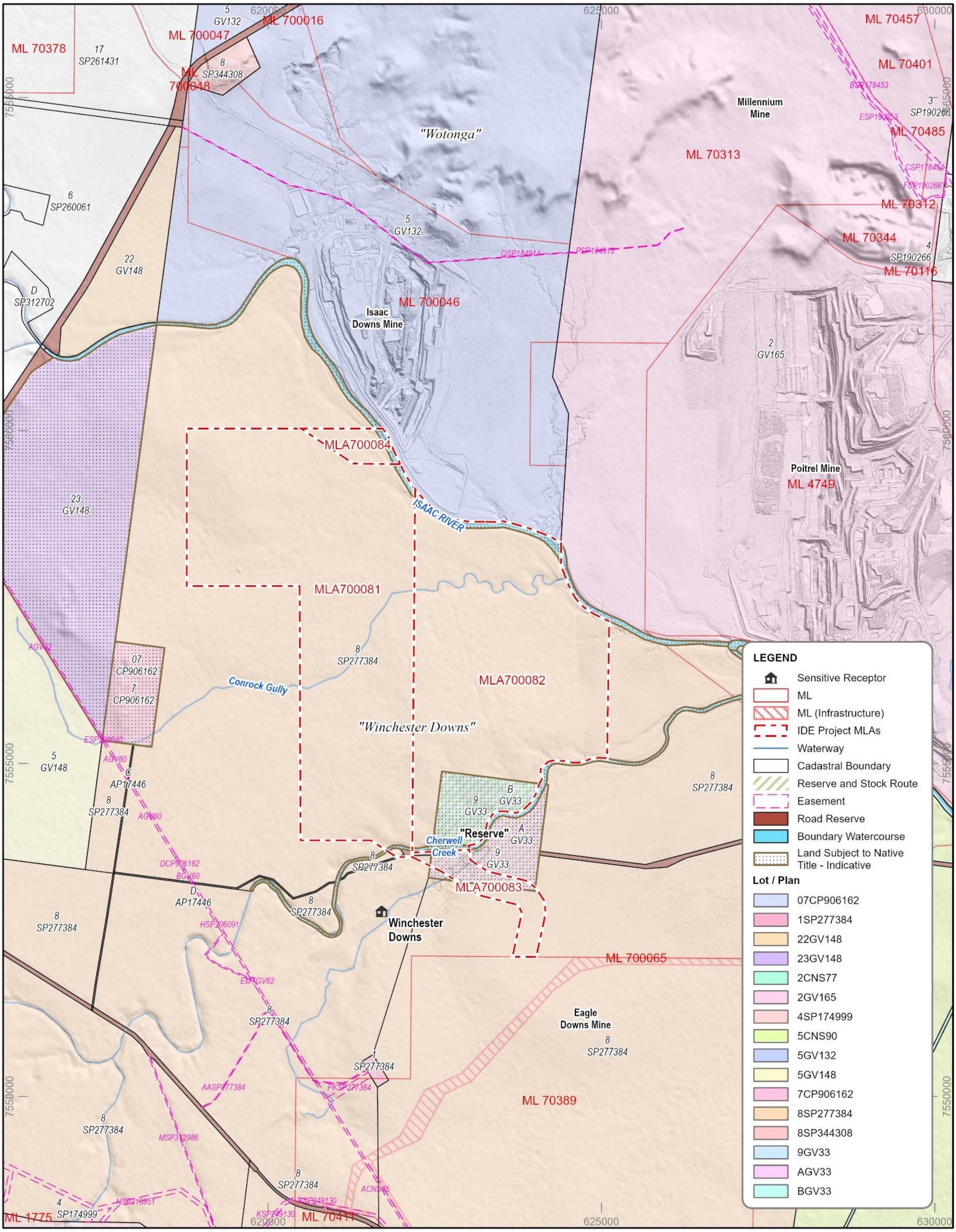
Table 23-3 Properties within the Project Area

Lot and Plan	Tenure	Owner
8 SP277384 (Winchester Downs)	Freehold	Private landowner
9 GV33	Reserve, with purpose of 'camping, water and road' as a stock route	State Owned
B GV33 (on Lot 9 GV33)	Lands Lease	Lease held by owner of Lot 8 SP277384 (Winchester Downs) for grazing purposes
A GV33 (on Lot 9 GV33)	Permit to occupy	Permit to occupy held by trustees for estate of Lot 8 SP277384 (Winchester Downs) for grazing purposes
Isaac River	Boundary watercourse	State Owned
Cherwell Creek	Boundary watercourse	State Owned
Road	Local road (segment 37555066), for access to parts of Winchester Downs	Isaac Regional Council

23.8.3 Topography

Figure 23-6 shows the topography within and surrounding the Project area. Generally, the topography is relatively flat and falls towards the Isaac River and Cherwell Creek from the centre of the Project area. Elevation ranges between approximately 230 m AHD on a rise to the north of Cherwell Creek and 190 m AHD along the Isaac River.

Two dominant rises overlying residual Tertiary deposits are locate within the Project area, which comprise the rise to the north of Cherwell Creek and a rise towards the northwest. Quaternary alluvial deposits form a flat plain along the eastern boundary of the Project area. The Isaac River forms the eastern boundary, and Cherwell Creek forms the majority of the southern boundary. South of Cherwell Creek the topography consists of a flat plain and a gentle rise of basalt colluvium.



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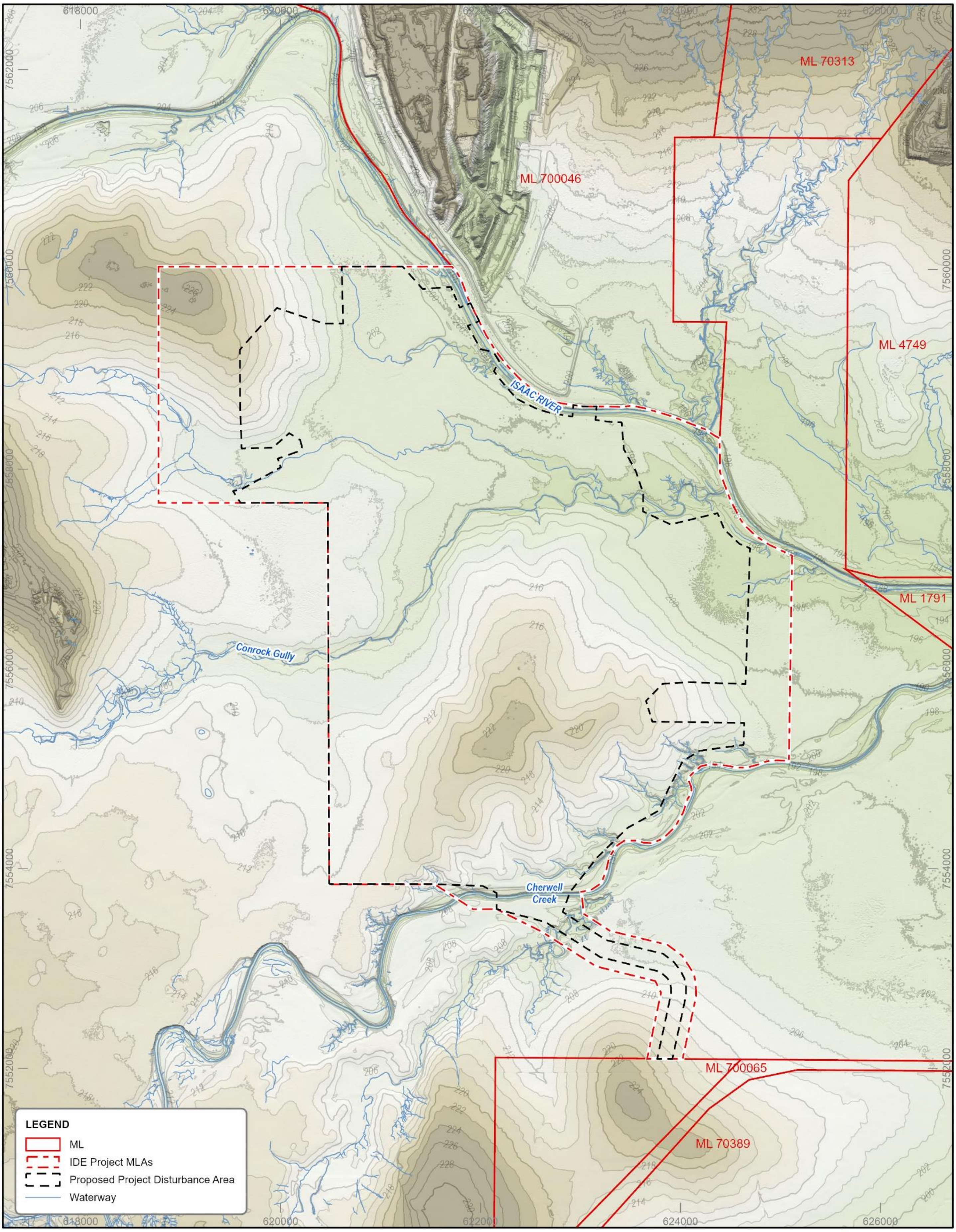
ISAAC DOWNS EXTENSION

Properties and Sensitive Receptors

Figure | 23-5



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ISAAC DOWNS EXTENSION

Topography

Figure | 23-6

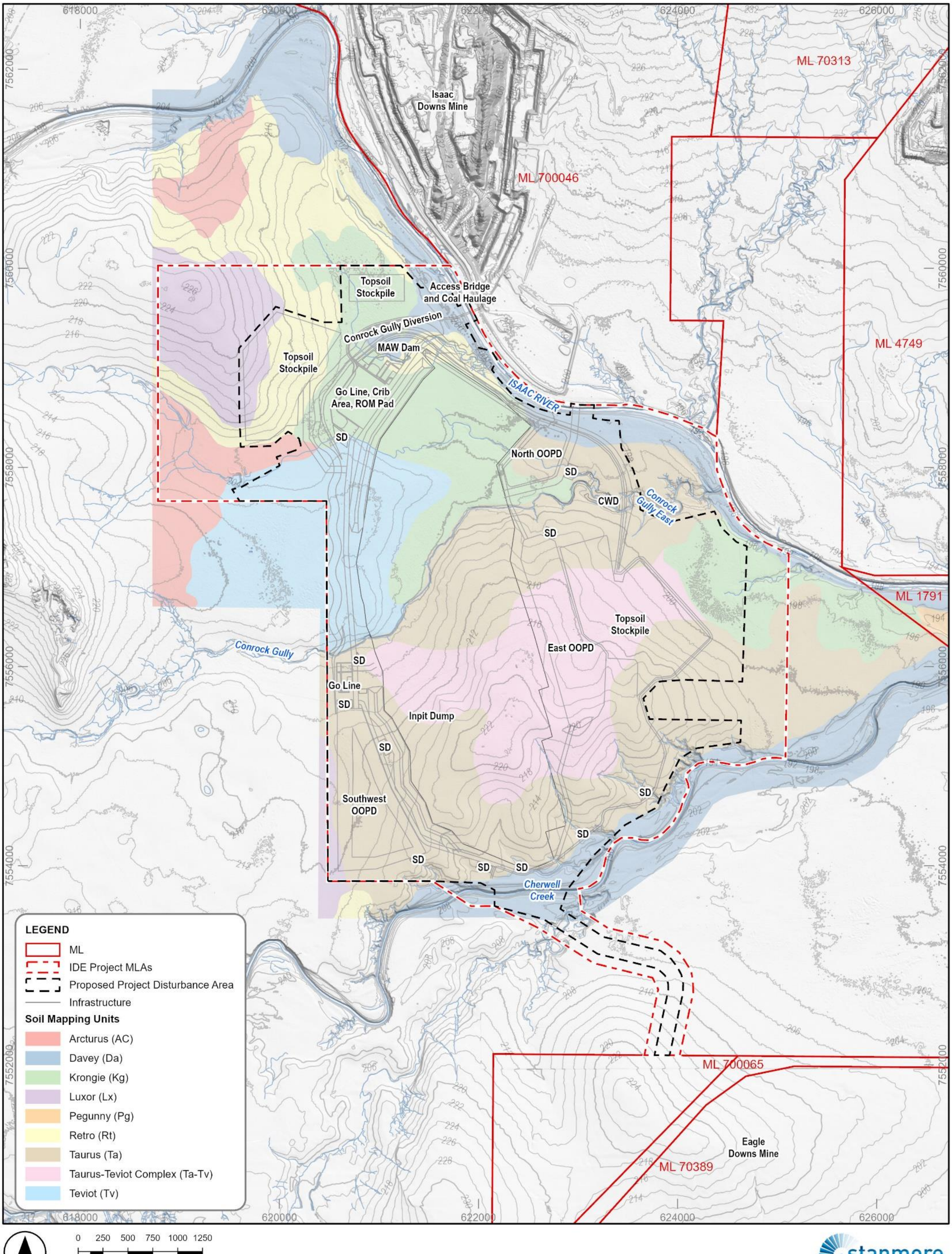
23.8.4 Soils

Nine soil mapping units (SMUs) were identified within the Project's soil study area based on similar geomorphological and chemical properties (Figure 23-7). The nine SMUs comprise:

- Taurus: sodic texture contrast soils with moderately thick sandy surfaces. Neutral to alkaline trend with sodic and saline subsoil. Occurs on gently undulating rises within the southern half of the Project's soil study area.
- Davey: deep alluvial sands occurring on the levees along the Isaac River and Cherwell creek. Neutral to acidic trend, non-sodic and non-saline.
- Krongie: cracking clay soils with normal gilgai microrelief. Alkaline trend with sodic and saline subsoil. Occurs on alluvial floodplains along the Isaac River.
- Taurus-Teviot Complex: complex soil unit consisting of sodic texture contrast soils with cracking clay soils sporadically occurring in gilgai depressions. Occurs on a gently undulating rise within the southern half of the Project's soil study area.
- Retro: sodic texture contrast soils with moderately thick loamy surfaces. Neutral to strong alkalinity with sodic and saline subsoil. Occurs on gently undulating rises on the northern half of the Project's soil study area.
- Teviot: cracking clay soils with normal gilgai microrelief. Alkaline trend with sodic and saline subsoils. Occurs on gently undulating rises, within the central portion of the Project's soil study area.
- Arcturus: cracking clay soils derived from basalt with crabhole gilgai microrelief. Alkaline with sodic and slightly saline subsoil. Occurs on gently undulating rises and colluvial depositions on the western and southern most boundary of the Project's soil study area.
- Luxor: texture contrast soils with thick sandy surfaces and clay subsoils. Neutral to alkaline trend and sodic subsoil. Occurs on a prominent rise on the northern half of the Project's soil study area.

The Project area does not contain acid sulfate soils. **Appendix E** provides a detailed soil resources assessment completed for the Project.

Information on the properties of soils and the management of soils for use in rehabilitation is provided in **Chapter 5**, **Chapter 7** and **Appendix E**.



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ISAAC DOWNS EXTENSION

Soil Mapping Units

Figure | 23-7

23.8.5 Geochemistry – Spoil Characterisation

23.8.5.1 Overview

An assessment of the geochemical nature of spoil[2] likely to be generated by the Project was undertaken to identify relevant environmental issues / opportunities that may be associated with mining, handling and storing mineral waste (spoil) to inform appropriate rehabilitation and management strategies. The Project's geochemical characterisation and assessment report is provided in **Appendix F** and **Chapter 7**.

The Project's geochemical assessment involved sampling and laboratory test-work. Section 3 of **Appendix F** details the Project's geochemical assessment methodology. Drillhole sampling was used to collect potential spoil and coal samples for geochemical assessment[3]. The geochemical data analysed was developed from 266 spoil samples and 38 coal samples collected from four drillholes strategically located within the Project's proposed pit area. Each drillhole was sampled from surface to full drillhole depth (i.e. to below the lowest seam planned to be mined). The drillhole samples analysed were considered representative of the geology and stratigraphy within the Project area.

The samples were subject to environmental geochemical characterisation and assessment with regard to their potential to generate acid and metalliferous drainage (AMD), which comprises acid drainage (AD), neutral and metalliferous drainage (NMD) and/or saline drainage (SD) (i.e. salinity due to sulfate derived from sulfide oxidation). The samples were also assessed for their potential to generate salinity (non-oxidative), and for spoil materials, their sodicity and dispersion potential.

23.8.5.2 General Details - Spoil

Over the life of the Project three main types of mineral waste will be generated, spoil, tailings and coarse rejects. However, only spoil (including minor volumes of waste coal) will be managed at the Project site. Section 4.7 of **Chapter 4** details how the Project's tailings and coarse rejects will be managed at IPM, within the existing capacity of approved tailings and coarse rejects management systems.

Spoil (overburden and interburden) is expected to comprise approximately 97.5% of all mineral waste generated by the Project and will include Tertiary- and Permian-age weathered waste and Permian-age fresh (unweathered) waste. Based on drilling logs, the Project's spoil is expected to comprise approximately 95% non-carbonaceous material and about 5% as carbonaceous spoil, with almost all carbonaceous spoil being fresh (unweathered). About 22% of the Project's spoil is expected to be weathered. The proportions of weathered versus fresh spoil and non-carbonaceous versus carbonaceous spoil are typical for spoil in the vicinity of the Project. Sections 1.2 and 3.3 of **Appendix F** provide further detail on how the spoil was characterised.

Coal was also included in the geochemical assessment. However, coal is generally not considered mineral waste, with the exception of small quantities of sub-economic coal seams that may report to the spoil dumps, and remnant coal exposed within the pit highwall / residual void.

In summary, the Project's spoil dumps are expected to comprise essentially spoil only (overburden and interburden) that is mainly non-carbonaceous. The geochemical assessment conservatively assumed that a minor proportion of waste coal may also be disposed into the Project's spoil dumps. Consequently, the geochemical assessment focused on the geochemical characteristics of spoil and waste coal likely to report to the Project's and spoil dumps. The assessment methodology for the geochemical characteristics of spoil is provided in Section 3 of **Appendix F**. The results of the Project's geochemical assessment are provided in Section 4 and Appendix B of **Appendix F**, and summarised below.

[2] The terms 'overburden', 'spoil' and 'mine waste rock' are used synonymously in this EIS, and include interburden.
[3] It is noted that Appendix F also provides geochemical characterisation of coal, with rejects and tailings from the CHPP to be stored in approved facilities at IPM with sufficient capacity. For additional information refer to **Chapter 7**.

23.8.5.3 AMD Potential - Spoil

The Project's spoil is expected to generate pH-alkaline to highly alkaline contact water (run-off and seepage), which is typical for mine spoil within the Bowen Basin.

The total sulfur (S) concentration of the Project's spoil is very low, with a 95th percentile total S concentration of 0.14%. This characteristic when combined with the spoil's generally moderate to moderate-high acid neutralising capacity (ANC) values (median = 28 kilograms of sulfuric acid per tonne of rock (kg H2SO4/t)) that are significantly higher than the maximum potential acidity (MPA) [median 0.6 kg H2SO4/t], resulted in approximately 98% of the Project's spoil samples tested being classified as non-acid forming (NAF) or UC(NAF) (uncertain, but expected to be NAF).

Less than 2% of spoil samples (5 out of 266 samples) were classified as potentially acid forming (PAF), PAF-LC (PAF, low capacity) or UC(PAF) (uncertain, but expected to be PAF or PAF-LC). No spoil samples were classified as NAF-S (NAF, but with total S greater than one per cent). Notably, of the five spoil samples classified as PAF (of any type), four were closely associated with coal seams and could potentially end up as coal reject if mined with ROM coal.

The assessment undertaken has demonstrated that the ANC for the Project's spoil is generally expected to be about 37-67% available (median 48% available) under field conditions, with iron-dolomite being the main carbonate mineral likely to be contributing to the acid buffering potential of the spoil. Overall, the Project's spoil possesses excess acid neutralising capacity and is expected to be bulk acid consuming.

Section 4.1 of **Appendix F** outlines how the Project's acid-base accounting (potential for acid generation) results were developed based on the classification of the acid forming nature of the tested samples, using the classification criteria outlined in Section 3.4 of **Appendix F**. The acid forming nature of the tested samples is summarised in Table 4-1 of **Appendix F**.

Total metal and metalloid concentrations (assay) from 37 spoil samples tested very low compared to the average element abundance in un-mineralised soil and rock in the earth's crust. Importantly, no samples were significantly enriched with any of the elements of potential environmental interest.

Soluble multi-element results from 37 spoil samples indicate that leachate from spoil is expected to contain low concentrations of soluble metals and metalloids. For many spoil samples, particularly the weathered samples, the concentrations of most of the 17 environmentally important elements were below or marginally above to the laboratory limit of reporting (LOR). Sections 4.2 and 4.3 of **Appendix F** provide further detail on the metal and metalloid assessment results for spoil.

The assessment demonstrated that the Project's spoil possesses AMD characteristics that are comparable to spoil from nearby IDM. For the key geochemical characteristic assessed, including total S, sulfide, ANC, total metals / metalloids and soluble metals / metalloids, the Project's spoil samples had concentrations / values within the same range as spoil samples from IDM.

In summary, based on the results of 266 samples, the Project's spoil has a very low potential to generate AMD as either AD and/or NMD and/or SD. Further details around methodology and results are provided in Sections 3, 4 and 5.1 of **Appendix F**.

23.8.5.4 Salinity, Sodicity and Dispersion Potential - Spoil

The Project's spoil has low median and low-moderate 95th percentile aged electrical conductivity (aged EC)1:5 values of 406 and 821 microSiemens per centimetre (µS/cm), respectively, and has very low total S concentrations. On this basis, contact water (run-off and seepage) from spoil is expected to be generally non-saline to slightly saline, as a result of dissolution of geogenic salts more so than from sulfide oxidation (sulfate salinity). Weathered spoil generally has higher aged EC1:5 values compared to fresh spoil. Sections 3.4 and 4.4 of **Appendix F** provide information on the assessment methodology used and additional details on the assessment results, respectively. Figure 4-11 of **Appendix F** summarises the distribution of cation exchange capacity and exchangeable sodium percentage for the Project's spoil.

The Project's spoil has generally low cation exchange capacity (CEC) values and generally high exchangeable sodium percentage (ESP) values, and as a result, all spoil samples being classified as 'sodic' to 'strongly sodic', and therefore, possess the potential for dispersion. Based on Emerson aggregate class testing to directly measure dispersion, very few of the Project's spoil samples displayed dispersive characteristics, which was generally inconsistent with the dispersion predictions from the ESP results. Despite the inconsistencies between the ESP and Emerson Class results, the data suggests that a significant proportion of the Project's spoil can be expected to be dispersive to varying degrees. Further information is provided in Sections 3.4, 4.4 and 5.2 of **Appendix F**.

23.8.6 Cultural Heritage

Indigenous and non-Indigenous (historical) cultural values of the Project area have been assessed, as described in **Chapter 20**.

23.8.6.1 Indigenous Cultural Heritage

The management of the potential impacts to Indigenous cultural heritage will be undertaken in accordance with the approved CHMP.

Previous surveys within the Project area have not identified sites of tangible Indigenous cultural heritage, noting that any additional surveys undertaken under the CHMP for the Project may identify sites of tangible Indigenous cultural heritage. Potential impacts of the Project on Indigenous cultural heritage will be managed pursuant to an approved CHMP for the Project. Stanmore recognises that cultural heritage management is an ongoing process and will implement a comprehensive framework to avoid, minimise and manage potential impacts.

All activities will be conducted in accordance with an approved CHMP developed in consultation with the BBAC. An overview of the management measures described in the CHMP includes:

- undertaking monitoring through field surveys
- measures undertaken following the completion of cultural heritage surveys,
- management actions when dealing with cultural heritage finds
- outlining the salvage and storage of cultural heritage ,
- cultural heritage awareness training and
- corrective actions.

Through these measures, Stanmore will ensure that cultural heritage values are safeguarded and that management actions are developed collaboratively with BBAC, reinforcing the commitment to cultural integrity and compliance throughout the life of the Project.

23.8.6.2 Non-Indigenous Cultural Heritage

Although no known sites of non-Indigenous cultural heritage have been identified within the Project area, there is potential to discover historical non-Indigenous cultural heritage features during construction and operations. The mitigation and management measures include:

- Implementing the unexpected finds procedure, and will be incorporated into the Project's environmental management system. This relates to the discovery of non-Indigenous cultural heritage and should comply with the *Queensland Heritage Act 1992*.
- A cultural heritage induction, outlining potential finds (including human remains), will be prepared and delivered to workers as part of the Project inductions. This cultural heritage induction will be carried out for the life of the Project.

Applying these strategies will help reduce negative effects and strengthen positive outcomes for non-Indigenous cultural heritage values.

23.9 Rehabilitation and Closure

23.9.1 Overview

Chapter 5 provides a detailed description of rehabilitation and closure for the Project. Chapter 5 draws on information provided in the PRCP (**Appendix AB**) and PRCP schedule (**Appendix AB**). This section provides a summary of the information in **Chapter 5**, the PRCP and the PRCP schedule.

The draft PRCP schedule provides binding, time-based milestones for actions that achieve progressive rehabilitation and closure and will ultimately support the transition of the Project's mining disturbance to future post mining land uses (PMLUs) that are safe, stable, non-polluting and sustainable.

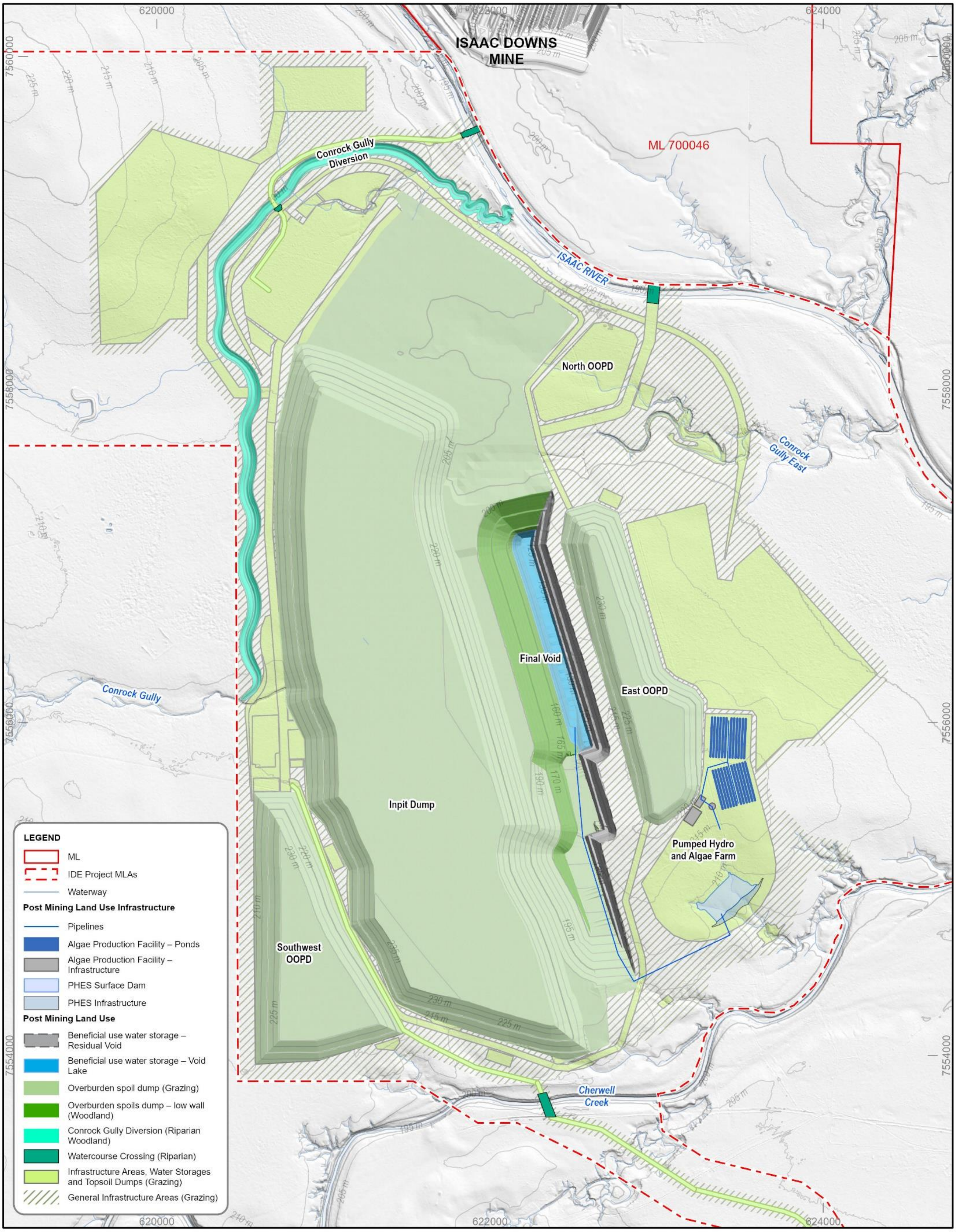
23.9.2 Final Landform Options Assessment

23.9.2.1 Overview

This section describes the rationale and factors that informed Stanmore's decisions on the proposed, final rehabilitated and closure landform design for the Project, including environmental, economic, community and regulatory factors. Final landform design and PMLUs were informed by multiple technical studies undertaken for the EIS, as referenced in sections below. The proposed final landform and post mining land uses (PMLUs) are shown in Figure 23-8.

23.9.2.2 Unconstrained Final Landform Design

An unconstrained final landform design is one that would result in the greatest economic value to the proponent without consideration of environmental, community, landowner and regulatory constraints. This was not considered a feasible option, given the constraints of the Project location, regulatory requirements, and environmental and social considerations.



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Final Landform and Post Mining Land Uses

Figure 23-8

23.9.2.3 Constraints for the Final Landform Design

The key constraints considered in the final landform design were:

- Project economics – delivering a Project with a positive net present value with socio-economic benefits to local and regional communities.
- Isaac River and Cherwell Creek.
- Design of Conrock Gully diversion, to allow access to economic resources, with a long term geomorphically stable diversion design.
- Flooding – locating any residual void[4] outside the 0.1% AEP flood event of the Isaac River and Cherwell Creek, in accordance with regulatory requirements of the EP Act, without long term changes to the hydrology or geomorphology of the Isaac River and Cherwell Creek.
- Dumps designed to minimise interaction with Isaac River and Cherwell Creek flood events, with consideration for other constraints in dump location such as tenement boundaries and ecological values.
- Landform designs that were erosionally and geotechnically stable, non-polluting and self-sustaining, with a nominated PMLU.
- Identifying PMLUs that were compatible with the landholders preferred use of the land, as well as being technically and commercially feasible with the ability to provide long term economic benefits to the landholder, and local and regional communities.

23.9.2.3.1 Project Economics

Open cut mining results in voids within the landscape being mined, unless they can be backfilled during or post mining. A complete backfill of the proposed open cut pit areas was found to be uneconomic for the Project, with a cost of approximately $433.5M. However, Project planning included maximising the volume of overburden (or 'spoil')[5] that was dumped in-pit, thereby reducing the size of a residual void to less than 10% of the pit area. The majority of overburden (around 90%) will be placed in-pit, in previously mined areas.

23.9.2.3.2 Isaac River and Cherwell Creek

The economic resource extends beneath the Isaac River (i.e. the same resource as mined at Isaac Downs Mine (IDM)) and Cherwell Creek. To access this resource would require diversion of the Isaac River and / or Cherwell Creek. The proponent did not consider diversion of the Isaac River and / or Cherwell Creek to be environmentally or socially desirable, and hence the resource in these areas is not proposed to be mined.

23.9.2.3.3 Conrock Gully Diversion

Diversion of Conrock Gully allows for access to economic resources, and was an important consideration for final landform design. Stanmore considered mining around Conrock Gully (i.e. leaving Conrock Gully in place) but this would have resulted in a material reduction in economic coal resources mined. Therefore, a diversion was required. Stanmore considered whether this diversion should be permanent around the mining area, or temporary around the mining area followed by a permanent diversion in a similar location to the pre-mining Conrock Gully; with a single, permanent diversion preferred as:

- A later permanent diversion in a similar location to the pre-mining Conrock Gully would have to be designed through the in-pit overburden dump, with associated risks for long term stability.
- The diversion, whether temporary or permanent, would need to be designed to a similar standard for operations, and hence construction of a temporary and later permanent diversion would significantly increase costs for the same outcome.

[4] The terms 'residual void' and 'final void' are used synonymously in this EIS.
[5] The terms 'overburden', 'spoil' and 'mine waste rock' are used synonymously in this EIS, and include interburden.

- The diversion, whether temporary or permanent, would be subject to rehabilitation from the commencement of operations with achievement of rehabilitation milestones during the operational life of the mine. Therefore, any later permanent diversion would require another series of rehabilitation milestones with little environmental benefit compared to rehabilitation of the single permanent diversion around the mine workings.

The objective for a permanent diversion was to have stable landform that achieves hydraulic and geomorphic criteria. The diversion design, which achieves this objective, is described in detail in Section 24.10 of **Chapter 24** and Appendix D of **Appendix J**. The diversion has been designed to hold the 0.1% AEP flood event, flowing to the west and north of the in-pit dump landform. There is negligible risk of flood waters in the diversion interacting with the final void[6], as the diversion will be separated from the final void by a long term, stable dump structure that is more than 1 km wide (see Figure 23-8).

23.9.2.3.4 Flooding

In accordance with the requirements of Section 126D(3) of the EP Act, 'if land the subject of the proposed PRCP schedule will contain a void situated wholly or partly in a flood plain, the schedule must provide for rehabilitation of the land to a stable condition'. In this context, 'stable' condition refers to the land having a PMLU, which therefore does not preclude a void with a PMLU being situated in a floodplain.

In accordance with Section 41C(3) of the EP Regulation, 'the administering authority must treat the land as a flood plain to the extent the results of the flood plain modelling show that, when all relevant activities carried out on the land have ended, the land is the same height as, or lower than, the level modelled as the peak water level 0.1% AEP for a relevant watercourse under the ARR[7]'. Further definitions are provided for:

- 'flood plain modelling' where modelling excludes artificial features of the land
- 'relevant watercourse' which is a watercourse, or a permanently diverted watercourse, of stream order 4 or higher.
- 'artificial feature', including temporary structures or features requiring a level of maintenance greater than pre-mining.

In combination, these EP Act and EP Regulation requirements place constraints on voids within the 0.1% AEP flood event post mining.

The pre-mining 0.1% AEP flood extent is shown in Figure 23-9, demonstrating:

- The Isaac River (stream order 6) floodplain is approximately 1.5 km wide in Project area, including in the proposed pit area north of Conrock Gully.
- Cherwell Creek (stream order 5) has a narrow floodplain, typically confined to the banks of the creek and some backwater gully flows.
- Conrock Gully (stream order 2) experiences backwater flooding from the Isaac River.

The operational mine includes a levee along the Isaac River. Sections 24.8 and 24.9 of **Chapter 24** provide a detailed assessment of the pre-mining flood extents and the potential hydrological and geomorphic impacts of the levee during operations. Despite these operational hydrology and geomorphology impacts being assessed as negligible to minor in the context of the regional, rural location, Stanmore determined that any long term risks to the hydrology and geomorphology of the Isaac River would be further reduced by reinstating the floodplain of the Isaac River as far as reasonably practical. To achieve that objective, it was decided that the Isaac River levee (potentially an 'artificial feature') would be decommissioned and rehabilitated post mining, and the northern portion of the pit area would be backfilled to a pre-mining topographical level.

[6] The terms 'final void' and 'residual void' are used synonymously in this EIS.
[7] ARR means the guideline called the Australian Rainfall and Runoff published by the Commonwealth, www.arr.ga.gov.au

The diversion of Conrock Gully will be permanent, and therefore, forms part of the final landform design for flood modelling.

Figure 23-10 shows the proposed final landform, including residual void area (see Section 23.9.5 for justification for the void design and configuration), relative to the 0.1% AEP floodplain:

- The Isaac River levee has been decommissioned and rehabilitated.
- The northern pit area is backfilled to pre-mining topographical levels.
- There is a permanent diversion of Conrock Gully.
- A portion of the northern part of the in-pit dump is situated at the edge of the floodplain.
- There is minimal interaction with Cherwell Creek, with any minor gully backwater flows managed by a final, stable dumped landform in the closure landform.

Figure 23-10 demonstrates that the residual void is not situated within the 0.1% AEP flood event after removal of any 'artificial features'.

Despite the EP Act allowing for a void in a floodplain where the void has a PMLU, Stanmore elected to situate any residual void outside the post mining 0.1% AEP flood extent. To achieve this required the backfilling of the northern pit area to a similar topographical level as pre-mining. Backfilling will occur prior to the decommissioning of levee and ensure that a stable, rehabilitated backfilled landform exists prior to reinstating any floodplain flows from the Isaac River.

The hydrological and geomorphological assessments, as presented Sections 24.8 and 24.9 of **Chapter 24**, determined that the final landform would have negligible impacts on the hydrology and geomorphology of watercourses.

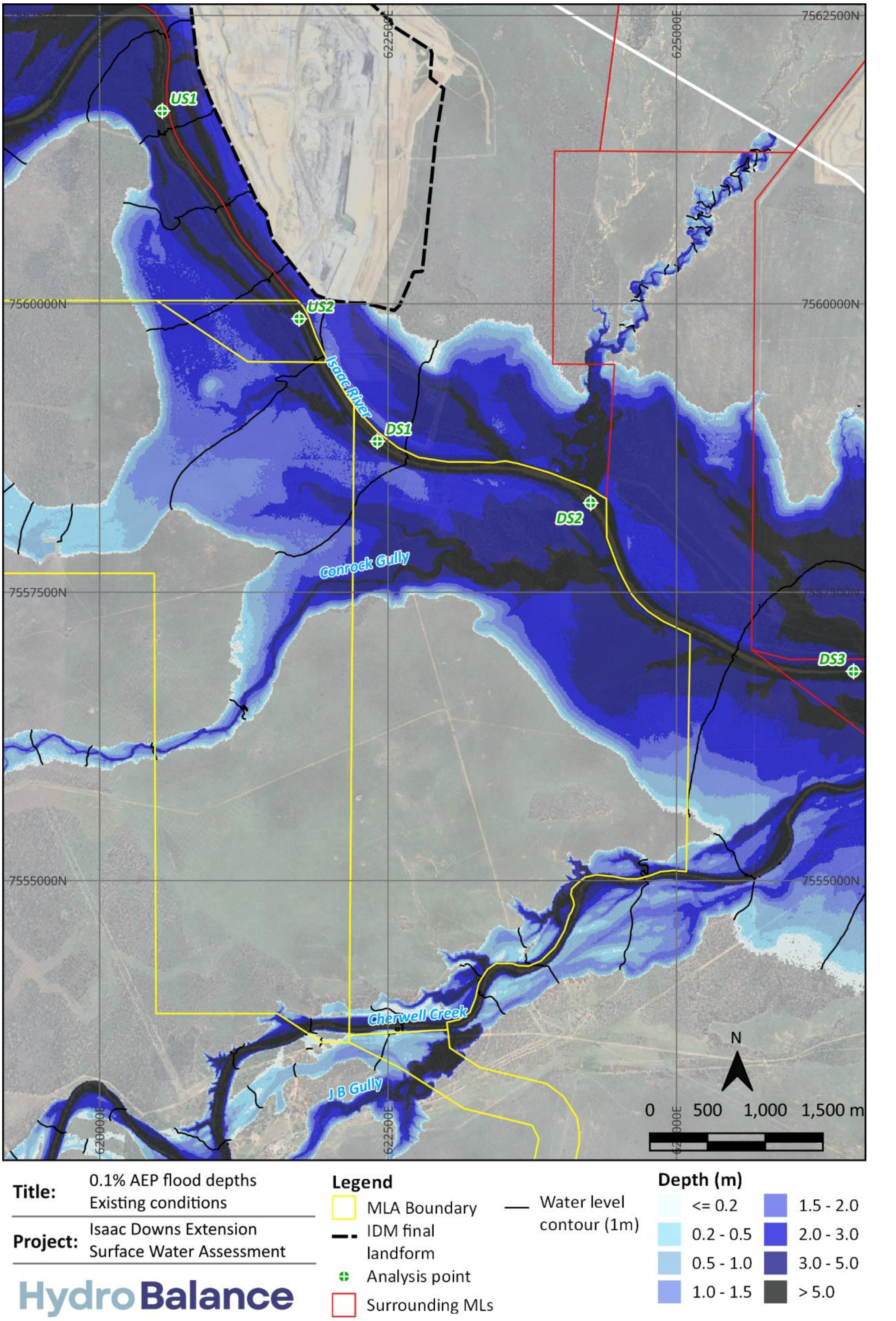


Figure 23-9 Existing Conditions - 0.1% AEP Flood Depths and Heights

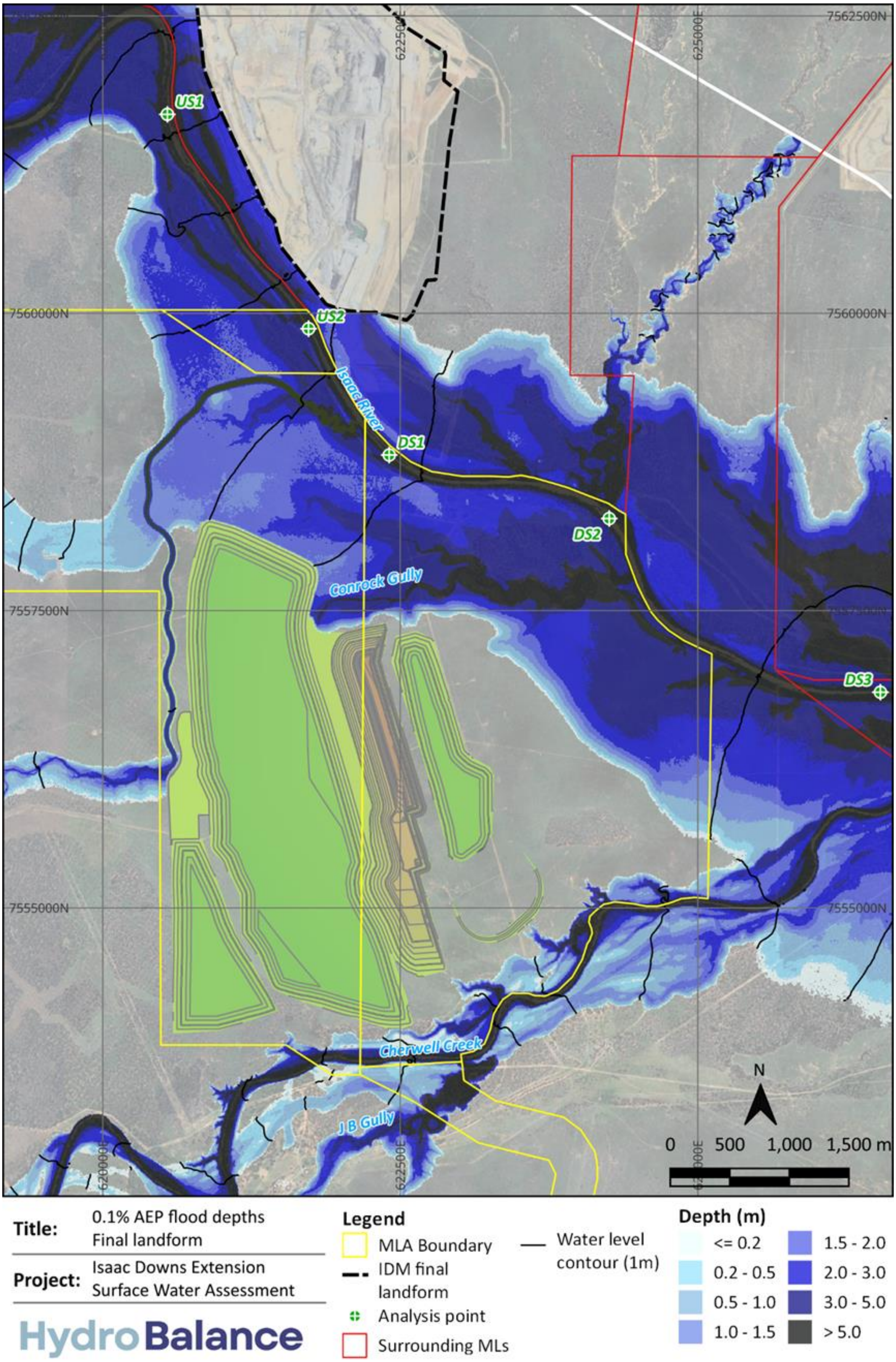


Figure 23-10 Final Landform – 0.1% AEP Flood Depths and Heights

23.9.2.3.5 Landholder and Other Stakeholders

Through consultation with the majority landholder (Winchester Downs) their preference is for ongoing use of the land for pastoral purposes. Therefore post mining land uses that supported grazing were preferred in the assessment of potential PMLU options. However a grazing final land use was not necessarily preferred in all proposed locations, in particular rehabilitation of areas that had pre-mining environmental values such as riparian or woodland areas associated with the Isaac River, Cherwell Creek or Conrock Gully. Further, in some limited locations the low wall dump slope was considered unsuitable for grazing and therefore was selected for a native vegetation PMLU.

Other stakeholders (e.g. Isaac Regional Council) indicated a preference for PMLUs that supported ongoing socio-economic development of the region through commercially feasible land uses, other than pastoral activities or native vegetation.

PRCP consultation is further described in Section 2.2 of the PRCP (**Appendix AB**).

23.9.2.4 Non-use Management Area

Having assessed the environmental, economic, community and regulatory constraints for the final landform design, it was determined that the optimal landform would include a residual void with a pit lake that could support a PMLU. There are no other areas within the final landform with the potential to be a non-use management area (NUMA).

This does not preclude a NUMA being required for the Project on the basis that proposed PMLUs are not accepted by the regulatory authorities or stakeholders. If a NUMA were required for the Project, Stanmore is of the view that a NUMA could be justified under Section 126(D)(2) of the EP Act based on:

- the risk of environmental harm being confined the area of the Project MLs, and
- the Project being in the public interest in accordance with the public interest considerations, which require the Project's benefits to the community to be weighed against impacts to the community and environment, having regard to costs and consequences of options (NUMA and PMLUs), including financial viability of Project, or
- carrying out rehabilitation of the land would cause a greater risk of environmental harm than not carrying out the rehabilitation.

23.9.2.5 Residual Void Design

A lake will form in the residual void post mine life as a result of the balance between sources of inflow (e.g. rainfall, runoff, seepage through in-pit spoil and groundwater inflows) and outflows (primarily evaporation, but also potential uses of void lake water if they can support a PMLU). An iterative process was used in the design of the residual void and associated modelling of lake levels and quality. Residual void design is a function of mine engineering, including scheduling of overburden and coal extraction in an economic manner to the defined limit of the economic resource. Therefore, the amount of variation in size and shape of a residual void is somewhat limited. The general location of potential locations for a residual void is on the east of the mined pit area between the furthest northern extent to remain out the 0.1% floodplain, and the southern extent of the mined area. As the Project comprises a single open cut mine pit, a single residual void results from mining operations. The high wall is an integral component of the residual void design and formation of a lake with potential PMLUs. Residual void design options and potential PMLUs for the residual void are described in Sections 23.9.5, 23.9.6 and 23.9.9.

Maintaining the residual void highwall at a geotechnically stable slope angle (see Section 23.9.6) was preferred over throw blasting the highwall to achieve a shallower slope angle, as this creates a wider pit area with increased disturbance of unmined land, reduces potential grazing areas by creating native vegetation and rock armoured PMLUs on reprofiled slopes, results in a shallower, wider residual void lake which would be likely to have higher salinity that a deeper, narrower lake, and increases closure costs without any material environmental or social benefit.

23.9.3 Overburden Dump Options Assessment

23.9.3.1 Location of Dumps

There are two out of pit dumps proposed for the Project – to the southwest of the mine pit and to the east of the highwall. The pit is progressively backfilled as mining occurs resulting in an in-it dump. Approximately 10% of total overburden material will report to out of pit dumps, hence the area required for these dumps has been minimised, whilst also maximising in-pit dumping and reducing the residual void size.

The location of the out of pits dumps was informed by the following constraints:

- 0.1% AEP floodplain extent
- mining lease application (MLA) boundaries
- ecological values, as represented by regional ecosystems, threatened ecological communities and listed threatened species habitat mapping
- the location of infrastructure required to support Project activities
- economics of overburden haulage.

Based on Figure 23-10, there are potential out of pit dump locations that are not within the 0.1% AEP flood extent, in the northwest of MLA 700081, in the southwest of MLA 700081 and the east of MLA 700082.

The northwest of MLA 700081 contains remnant vegetation with ecological values, and therefore, was largely avoided in defining the Project disturbance area (see **Chapter 4** and **Chapter 25**). Hence this area was avoided as a potential out of pit dump location.

Out of pit dumps are typically formed on the low wall side of mining activities as this is the most economic haulage option. The southwest dump location was therefore preferred as the primary location for an out of pit dump, despite there being some remnant vegetation in this area.

The dump on the eastern side of the highwall has limited interaction with remnant vegetation. However, this location results in additional costs due to the longer haulage distances.

Given the constraints on out of pit dump locations, the proponent has selected the optimal locations for out of pit dumps (see Figure 23-8) that avoid interactions with the floodplain, stay within the ML boundaries and avoid remnant vegetation as far as reasonably practical.

In-pit dumping results in the reduction in size of any residual void. In-pit dump design requires scheduling of waste movements in an economic manner, balancing waste volumes from different parts of the pit area, and maximising in-pit dumping to reduce residual void size. The in-pit dump (see Figure 23-8) comprises:

- areas in the northern part of the pit that are returned to a pre-mining topographical level to allow reinstatement of the Isaac River floodplain
- areas in the centre and south where the topography is above pre-mining topography
- the low wall area where in-pit dumping approaches final void area.

The northern portion of the in-pit dump that is above pre-mining topographical level is located at the edge of the 1% AEP floodplain extent. An assessment of the flood velocities at these locations was undertaken as part of the flood studies (see Section 24.8 of **Chapter 24**) which determined that velocities do not exceed 0.8 m/s for the 1% AEP flood event along this dump face and there is minimal interaction for the 2% AEP flood event and more frequent events. Therefore, potentially erosive flows will be very infrequent and only occur for short durations. For the vast majority of Isaac River flood events, interaction between floodwaters and this landform will be either minimal or non-existent. The dumps will be revegetated, with vegetation cover providing sufficient protection against interaction with infrequent flood events.

23.9.3.2 Dump Designs

The design of overburden dumps was based on achieving erosional and geotechnical stability, with a non-polluting and sustainable post-mining land use, which was informed by:

- slope angles
- soils proposed for use as a growth media
- geochemistry of overburden and interburden (spoil)
- vegetation cover
- landform erosion modelling
- ability to support the proposed PMLU, primarily grazing
- geotechnical modelling.

Dump design also considers economic factors including haulage and land forming / reshaping costs.

The studies that informed dump design are described in the following chapters and the PRCP (**Appendix AB**):

- soils resource for use in rehabilitation – Section 7.3.18 of **Chapter 7**
- geochemistry of spoil – Section 23.9.7 and Sections 7.3.12, 7.4.3 and 7.5.3 of **Chapter 7**
- land suitability assessment – Section 7.3.19 and 7.3.20 of **Chapter 7**
- landform evolution modelling, including vegetation cover requirements – Sections 7.4.7 and 7.5.5 of **Chapter 7**
- geotechnical modelling – Section 23.9.6 and Sections 7.4.4 and 7.5.4 of **Chapter 7**.

Based on these studies and economic factors, the total area of dumps (1,112 ha) was separated into two areas:

- All dump areas (approximately 1,075 ha out of 1,112 ha, or 97%), nominated as RA2 in the draft PRCP schedule (**Appendix AC**).
- A small section of the internally draining low wall dump slope (37 ha out of 1,112 ha, or 3%), nominated as RA3 in the PRCP schedule (**Appendix AC**).

Based on these studies, the majority of dump areas (i.e. corresponding to RA2) demonstrated that they could be successfully rehabilitated (i.e. achieve the proposed rehabilitation milestone criteria in the PRCP schedule (**Appendix AC**)), with the following design criteria:

- slope angles of overall ≤ 15%
- growth media cover of 0.3m
- > 65% vegetation cover
- establishment of vegetation suitable for cattle grazing
- geotechnical factor of safety of ≥ 1.5.

For the small section of the internally draining low wall dump slope (i.e. corresponding to RA3), studies demonstrated that this area could be successfully rehabilitated (i.e. achieve proposed rehabilitation milestone criteria in the PRCP schedule (**Appendix AC**)), with the following design criteria:

- slope angles of overall ≤ 25%
- rock armouring and growth media cover layer
- > 30% vegetation cover
- establishment of a native vegetation woodland
- geotechnical factor of safety of ≥ 1.5.

23.9.4 Infrastructure Decommissioning and Rehabilitation

In the absence of a third party agreement for retention of infrastructure, the PRCP (**Appendix AB**) is based on decommissioning and rehabilitating all mining infrastructure areas as these areas become available for rehabilitation. Infrastructure areas have been separated into the following rehabilitation areas (RAs) for the purposes of the PRCP:

- RA4 – Infrastructure
- RA5 – Water Storages
- RA6 – General Infrastructure Areas
- RA8 – Infrastructure – Bridges and Dragline Crossing

Rehabilitation milestone criteria for all infrastructure areas have been proposed in the PRCP schedule (**Appendix AC**).

The Conrock Gully diversion (RA1) will be a permanent, stable landform and is subject to rehabilitation milestone criteria to achieve that outcome.

Infrastructure required for the proposed PMLUs (RA7) is not subject to decommissioning and rehabilitation.

Infrastructure areas that are protected by the Isaac River levee (e.g. go-line area, mine water dams) will be decommissioned and rehabilitated prior to the levee being decommissioned and rehabilitated.

23.9.5 Residual Void Design Options Assessment

23.9.5.1 Overview

The options assessment for residual voids involved:

- Developing potential final void configurations which were plausible within the overall landform constraints identified in Section 23.9.2.
- Modelling long term lake levels, volumes and salinity as key factors in determining whether a particular void configuration was likely to result in a void lake that would support one or more PMLUs.
- Assessing the long term geotechnical stability of void high wall and low wall slopes (see **Appendix H**).

Subsequent detailed hydrogeochemical modelling of the void lake water quality was undertaken for the preferred void configuration (see Section 23.9.6).

23.9.5.2 Residual Void Lake Modelling Methodology

Void lake modelling was undertaken by Hydrobalance, as described in Section 8 of **Appendix I**. This section summarises the void modelling methodology.

A final void GoldSim model was used to assess the likely long-term water level behaviour of the final void. Water levels in the final void will vary over time, depending on the prevailing climatic conditions, and the balance between evaporation losses, inflows from rainfall, surface runoff and groundwater, and outflows from any use of void water. The GoldSim model was used to simulate the generation, movement, and loss of water on a daily time-step within the final void, over a 500-year period. The volume of water in the voids was calculated at each time step as the sum of direct rainfall to the void surface, catchment runoff, and groundwater flux, less evaporation losses and any PMLU outflows. The model also tracks the quantity of salt captured and stored within the system.

Climate data, including climate change predictions were used in modelling. The Shared Socioeconomic Pathway SSP2-8.5 was selected as the emission pathway for the Intergovernmental Panel on Climate Change (IPCC) assessment report AR5, to inform future climate data used in void modelling. SSP2-8.5 represents very high greenhouse gas emissions with 'middle-of-the-road' socio-economic development. It is considered a high-end climate risk scenario, rather than a central or most likely pathway. In the context of final void modelling, it is useful to understand sensitivity to extreme warming and is valuable for understanding upper-bound risks. Using historical and predictive climate data, a 500-year stochastic rainfall and evaporation dataset was generated.

An iterative approach was adopted for combining the numerical groundwater model and final void model results to ensure consistency and convergence between these models in estimating groundwater inflows to the final void (see Section 2.1 of Appendix H of **Appendix K**). Groundwater inflows into the residual void were obtained from the groundwater model as a time series over a 500-year simulation period. The inflows have been provided as two inflow sources:

- Flow to void from spoil – representing the groundwater inflow that enters the void from the backfilled spoil.
- Flow to void from rock - representing the groundwater inflow that enters the void from the highwall (coal seam).

The salinity concentrations in the final void model have been set to maintain consistency with the salinity source terms set within the void hydrogeochemical model (see Section 23.9.6). This includes salt loads and concentrations associated with the following model inputs:

- surface water inputs: runoff from natural, rehabilitated and spoil catchments
- groundwater inputs: inflows from surrounding non-coal rock, inflows from the backfilled spoil mass, and inflows from the coal seam to the void.

The adopted surface runoff salinity for the final void assessment is applied at a fixed concentration and does not include any allowance for decay in runoff salinity over time, and therefore, is likely to overstate salinity. Salinity provides a key metric to assess the performance of void as a PMLU for various uses.

23.9.5.3 Void Configurations

23.9.5.3.1 Overview of Void Configuration Options

The final void geometry, and catchment reporting to the final void from in-pit spoil dumps, are key inputs into the void model after accounting for the other variables in the modelling methodology.

Key factors influencing final void lake levels and quality are the surface area to volume ratio of the final void lake, and the size of the catchment draining to the lake. It was found that the smaller the surface area to volume ratio, and the larger the catchment, the more likely water quality within the void would remain suitable for PMLUs. The configuration of the in-pit dump, both in terms of the size and shape of the void that would contain a lake, and the proportion of the in-pit dump catchment reporting to the lake, were considered for void options. In addition, in accordance with the landholder's preference for additional water supply to support grazing, all final void modelling allowed for extraction of water from the void where salinity remained below acceptable limits for stock watering (7,800 us/cm) (see section 8.5 of Appendix I for a justification for the livestock drinking water guideline value for salinity). This has the effect of removing salts from the lake provided water quality remains suitable for stock watering.

Different void configurations were assessed. The following options, which represent the 'bookends' of potential void configurations, were modelled (see Figure 23-13 and **Chapter 5** for the layout of these options):

1. Minimise void size, maximise the catchment from in-pit dumps (also referred to as the 'base case' option) – a small deep void in the central pit area, with the southern portion of the pit area partially backfilled, which resulted in a small, deep lake
2. Maximum void size – a large void along the length of the final mined highwall (other than the northern portion of the pit in the 0.1% AEP floodplain which is backfilled), with a maximum catchment from in-pit dumps, which resulted in a broad, shallow lake forming in the base of the pit. This option represents the most cost effective option for the Project as it requires minimal modification of the in-pit dump profile following the completion of mining operations.

3. Partial backfill - a partially backfilled void to around 175 metres above Australian Height Datum (mAHD), with a maximum size void catchment which resulted in a shallow, broad lake forming across the backfilled area. This option represents a high cost for the Project (circa $232 M) which could only be justified if it provides an improved long-term sustainable PMLU compared to other options.

A smaller in-pit dump catchment was considered, relative to Option 1. However, this would have substantially reduced water security with a low lake level and would have required bunding and drainage within the dump area to redirect water away from the void, which was not considered stable in the long term.

23.9.5.3.2 Option 1 - Minimise Void Size, Maximise Catchment (Base Case)

The void and void catchment configuration for Option 1 is shown in Figure 23-13.

The modelled water levels for Option 1 are presented in Figure 23-11, showing the median (50th percentile) and 95th percentile results. The following is of note regarding this result:

- For the median (50th percentile) results, the void lake reaches equilibrium within the first 100 years, with a water level of between 144 and 148 mAHD. The maximum void water level (147.7 mAHD) is around 54 m below the pit crest (202 mAHD). The pit crest does not overtop at any point in the 500-year simulation.
- For the 95th percentile results, the void lake reaches equilibrium within the first 100 years, with a water level of between 149 and 152 mAHD. The maximum void water level (152.1 mAHD) is around 50 m below the pit crest (202 mAHD). The pit crest does not overtop at any point in the 500-year simulation.
- Based on the groundwater modelling (see Section 24.11 of **Chapter 24**) the residual void functions as a long-term groundwater sink.

The final void modelled salinity levels for are presented in Figure 23-12, showing the median (50th percentile) and 95th percentile results from the stochastic climate assessment. The following is of note regarding this result:

- For the median (50th percentile) results, the void lake salinity reaches equilibrium after approximately 250 years, with an EC concentration of between 2,800 and 3,100 µS/cm.
- For the 95th percentile results, the void lake salinity reaches equilibrium after approximately 250 years, with an EC concentration of between 3,400 and 4,000 µS/cm.
- The void water quality is suitable to support the proposed stock watering PMLU over the 500 years simulation.

The long-term predicted void water salinity from the hydrogeochemical modelling of the void lake, which was based on the Option 1 void configuration, is presented in Figure 23-14, showing consistent results with the median GoldSim model results (EC reaching equilibrium around 3,000 µS/cm). This demonstrates that both models are representing the long-term void water quality behaviour consistently.

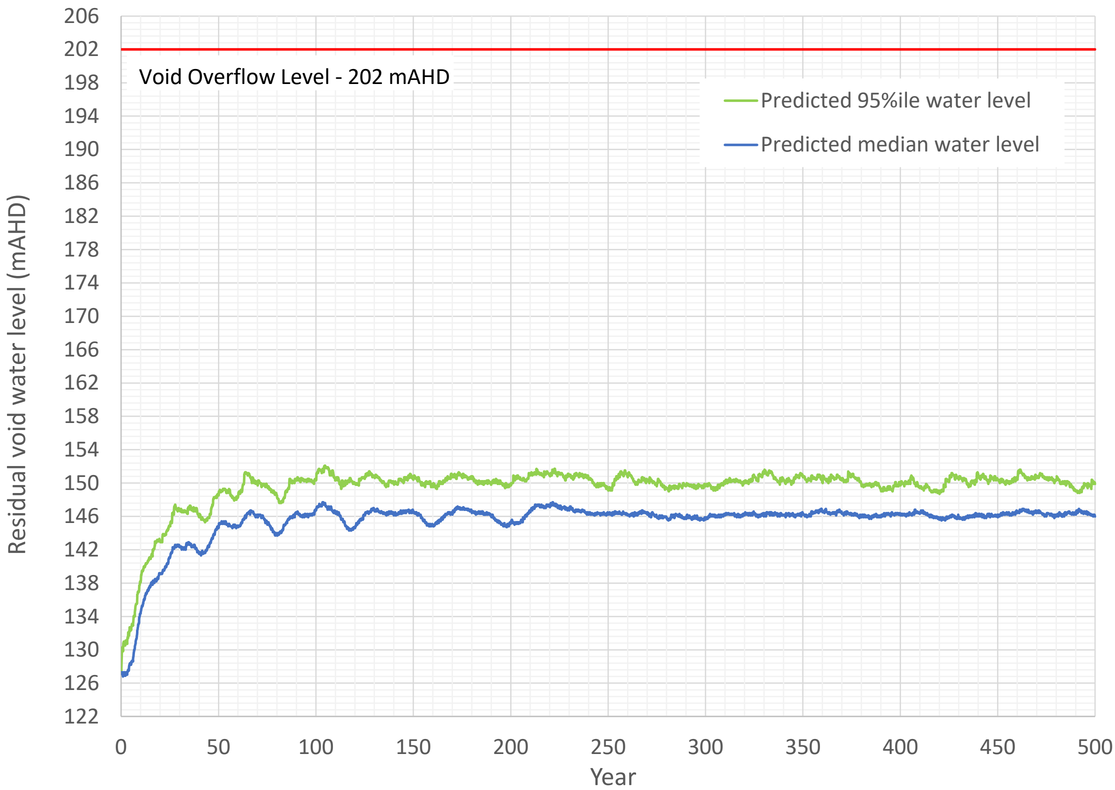


Figure 23-11 Long-term Predicted Void Water Levels (Option 1 – Base Case)

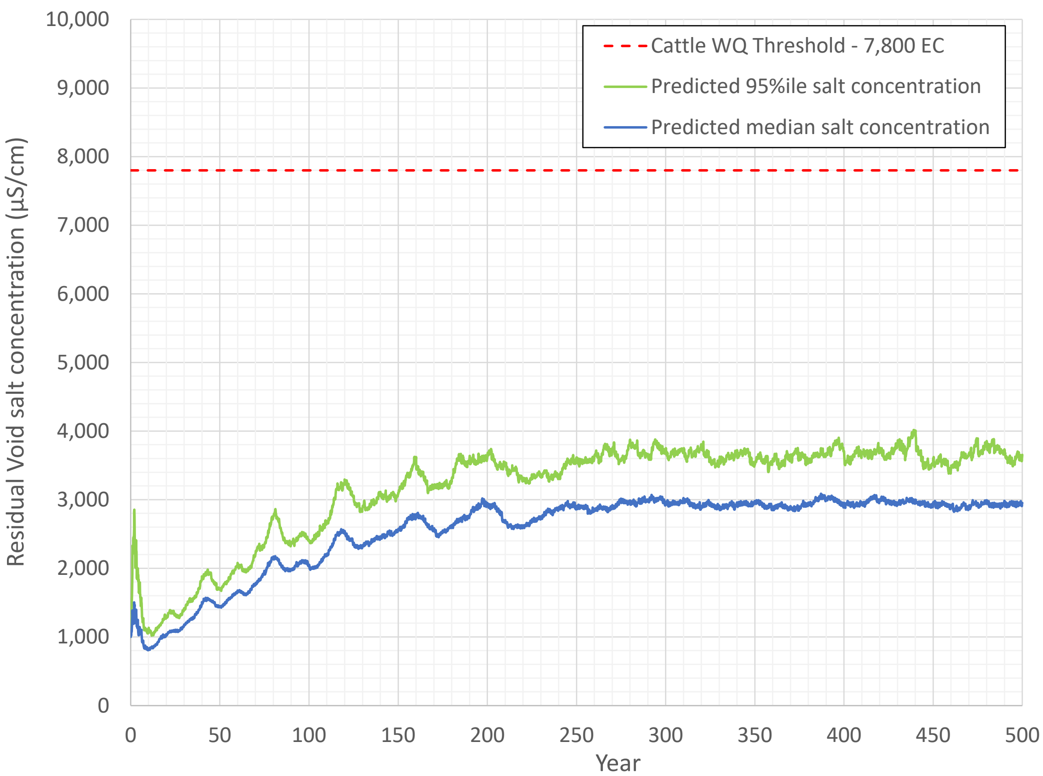
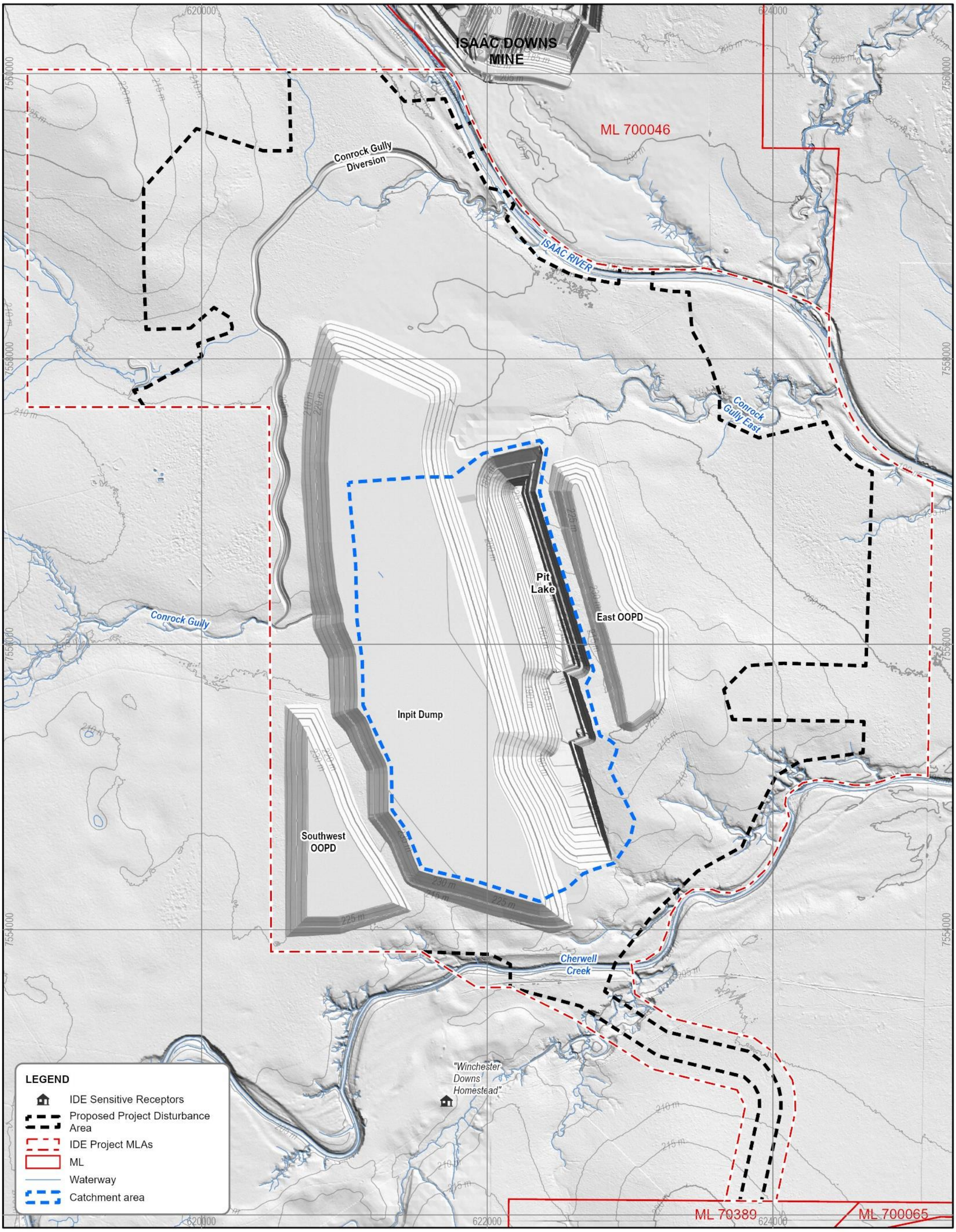


Figure 23-12 Long-term Predicted Void Water Salinity (Option 1 - Base Case)



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Option 1 - Minimise Void Size, Maximise Catchment

Figure | 23-13

23.9.5.4 Findings - Preferred Void Design

Based on the iterative approach to mine design / engineering and final void modelling, the preferred residual void design, with the greatest potential to support one or more PMLUs was Option 1 – minimise the void size and maximise the catchment from in-pit dumps. This option maintains a usable volume of water in void at a salinity level that can reasonably supply various PMLUs.

Results from modelling of the final void lake under void design Option 2 and Option 3 are described in **Chapter 5**, and demonstrate the rationale for why these options were not preferred.

23.9.6 Geotechnical Stability of Residual Void

Geotechnical stability modelling was undertaken by Blackrock Mining Solutions Pty Ltd, as detailed in **Appendix H**, for the preferred void configuration (option 1 - minimise void size, maximise the catchment). A description of the modelling and the results is provided in Sections 7.4.4 and 7.5.4 of **Chapter 7**. The assessment demonstrates that the Project's residual void, including highwall and low wall slopes is predicted to be geotechnically stable in the long term based on achieving a factor of safety of ≥ 1.5.

23.9.7 Geochemistry – Mining Waste Assessment

As detailed in Section 23.8.5.2, only spoil, including minor volumes of waste coal, will be managed at the Project area. Therefore, the assessment focusses on the Project's spoil and minor quantities of waste coal that will report to the Project's spoil emplacements as part of final landform development.

A geochemical source hazard assessment was undertaken using an appropriate combination of weathered and fresh non-carbonaceous spoil, and weathered and fresh carbonaceous spoil. The methodology used for the geochemical source hazard assessment is provided in Section 3.4 of **Appendix F**.

The source hazard assessment methodology outlined in Section 3.4.3 (AMD hazard scoring) of **Appendix F** and Section 3.4.4 (landform AMD likelihood scoring) of **Appendix F** were applied to the spoil within each Project landform. The source materials, and their approximate proportions within each spoil landform were estimated as follows:

- Spoil, non-carbonaceous = 94%, a mix of weathered and fresh material.
- Spoil, carbonaceous = 5%, all fresh.
- Coal = 1%, all fresh.

The AMD hazard scoring table for the proposed spoil landforms at the Project is provided in Appendix C of **Appendix F**.

23.9.7.1 Geochemical Source Hazard Assessment – Spoil and Coal

A geochemical source hazard assessment was applied to the source material types within each of the Project's planned spoil landforms and the source materials expected to be exposed in the walls of the Project's residual or final void (see Section 6.1 of **Appendix F**). Based on the findings provided in Section 23.8.5, the geochemical source hazard assessment focussed on the Project's carbonaceous spoil, non-carbonaceous spoil and coal.

The geochemical source hazard assessment developed a source hazard score, which is a formula that takes into account the propensity to generate AMD, the AMD capacity (severity) and the quantity (volume) of material within a landform or the walls of the residual void that could produce AMD. The Project's AMD source hazard scores are as follows:

- Spoil – non-carbonaceous: AMD source hazard score = 'Low'.
- Spoil – carbonaceous: AMD source hazard score = 'Low-Moderate'.
- Coal: AMD source hazard score = 'Low-Moderate'.

The Project's AMD source hazard scores were then combined with the proportion of material that could generate AMD relative to the total proportion of all materials in the final landform (spoil landforms and residual void), to develop an AMD hazard score for the Project's landforms, void highwall / end-walls and void floor at closure. Section 6.1 of **Appendix F** provides additional details on the geochemical source hazard assessment's methodology.

23.9.7.2 Spoil Landforms Assessment

Three spoil dumps, comprising an in-pit dump / spoil landform, the southwest out-of-pit dump (OOPD) / spoil landform (southwest OOPD) and the east out-of-pit dump / spoil landform (east OOPD), are planned to remain at closure as part of the Project's final landform (Figure 23-8). A fourth spoil dump called the north OOPD, will be rehandled back into the pit during late-stage operations to develop the final void, and therefore, will not exist as a post-closure landform.

The in-pit dump / spoil landform comprises mined overburden and interburden dumped behind the active mining face to form a low-wall spoil dump (effectively backfilling the pit behind the active mining face). The southwest and east OOPDs will comprise mined overburden and interburden dumped outside the pit shell adjacent to the active pit (i.e. as box-cut spoil). The southwest and east OOPDs will be reshaped to form two final spoil landforms located on the southwestern and eastern sides of the pit, respectively. None of the Project's spoil dumps or final spoil landforms will contain coarse rejects.

Therefore, considering the material quantities (proportions) and expected proportion of PAF materials reporting to each individual landform, it was assessed that each of the Project's spoil landforms pose a low AMD hazard, with AMD generation rated as highly unlikely.

In summary, the low AMD hazard of the Project's spoil landforms is largely a result of only 1.2% of non-carbonaceous spoil samples being conservatively classified as PAF of some type, and non-carbonaceous spoil comprising the overwhelming majority (about 94%) of mineral waste within each spoil landform. Additional hazard assessment supporting information is provided in Section 6.1 and Appendix C of **Appendix F**.

23.9.7.3 Residual Void Assessment

A narrow residual void will remain at closure at the centre east side of the Project's former mine pit (Figure 23-8). The void is conservatively assumed to have coal (Vermont seam group) remaining on the void (former pit) floor. Environmental geochemical data and drill-hole geological logs were used to aid in the assessment of AMD risk associated with the residual void highwall and floor.

The highwall hazard assessment concluded that approximately 2.8% of the void highwall is estimated to be PAF, which includes material classified as UC(PAF), PAF-LC and NAF-S. As a result, the assessment has found that the likelihood of AMD generation from the void highwall is highly unlikely, and any expression of AMD from the highwall is likely to be localised.

The floor of the void will be the Vermont seam group. On the highly conservative (if not overly conservative) assumption that the floor of the void is all coal, the void floor AMD hazard assessment has estimated that approximately 23% of the floor of the void is estimated to be PAF, which includes material classified as PAF, UC(PAF), PAF-LC and NAF-S. As such, the highly conservative assessment has found that the likelihood of AMD generation from the floor of the void where coal is exposed is unlikely, until the void floor becomes submerged by groundwater post-closure and changes the likelihood of AMD generation to highly unlikely . In practice, mining takes all coal to the bottom of the seam. Therefore, very little coal would be expected to remain on the floor of the void.

Additional hazard assessment supporting information is provided in Section 6.1 and Appendix C of **Appendix F**.

23.9.7.4 Geochemical Source-Pathway-Receptor Assessment

A post-closure geochemical source-pathway-receptor (SPR) assessment was conducted for the Project's spoil landforms and final void, which involved the likelihood of an event occurring (e.g. the likelihood of AMD impacting a local creek), the severity of the event should it occur and the calculated risk rating (likelihood times severity) (see Section 6.2 of **Appendix F**). A risk rating was calculated for each of the Project's spoil landforms and the residual void with respect to plausible surface water and groundwater receptors.

A post-closure conceptual site model (CSM), which applies generically to the spoil landforms and the residual void at the Project, and the broader relationship these facilities have with surface water and groundwater in the district, has been produced by SLR Consulting Australia (**Appendix K**). The CSM assists with the SPR assessment with regard to potential environmental geochemical impacts from mineral waste facilities. A key element of the CSM based on the hydrogeological assessment, which included groundwater modelling and particle tracking undertaken by SLR, was that the residual void will be a groundwater 'sink' (i.e. groundwater at the Project will flow towards/into the residual void, and the void will be the receptor of seepage from Project activities). Section 6 and Appendix D of **Appendix F** detail the risk assessment process completed for the SPR assessment.

For the rehabilitated spoil landforms, the plausible mechanisms for AMD affected water and/or non-oxidative salinity, if any, to report to post-closure receptors are identified in Table 6 1 of **Appendix F**. For the void highwall, as potential sources of AMD affected water and/or non-oxidative salinity, the only plausible receptor is the void, via surface water run-off from the void highwall.

In summary, the plausible mechanisms for AMD affected water and/or non-oxidative salinity, if any, to report from post-closure spoil landforms to receptors are:

- Surface water run-off from spoil landforms into creeks (and also includes potential seepage out of the toe of a spoil landform and continuing as surface water run-off).
- Seepage from spoil landforms via shallow permeable strata into creeks.
- Seepage from spoil landforms into the residual void (with the void as a receptor).
- Surface water run-off and seepage from the void highwall into the residual void (with the void as a receptor).

It should be noted that during mining operations, surface water runoff and seepage from spoil dumps will be captured by the Project's water management systems (see **Chapter 24**), and if required, will only be released subject to meeting the discharge criteria prescribed in the Project's EA, developed to protect downstream environmental values.

23.9.7.4.1 SPR Risk Rating of Rehabilitated Spoil Landforms

The SPR assessment identified plausible surface water and residual void receptors associated with final Project's spoil landforms, and the run-off and seepage pathways linking the sources (final spoil landforms) to the surface water and residual void receptors. In summary, with respect to AMD, the overall SPR risk rating for the Project's final spoil landforms is low. In addition, with respect to non-oxidative salinity, the overall SPR risk for the Project's final spoil landforms is also rated as low. Further supporting information is provided in Section 6.2 and Appendix D of **Appendix F**.

23.9.7.4.2 SPR Risk Rating of the Residual Void

As outlined in Section 23.9.7.4, groundwater modelling predicts that the Project's final void is likely to be a 'sink' in relation to receiving surface water run-off, seepage from spoil landforms and surface water run-off from the void highwall. The Project's residual void is expected to receive inflow from the Permian groundwater aquifer (Section 23.9.5).

The SPR assessment concluded that it's unlikely that undiluted salinity or AMD from a flooded post-closure residual void floor would impact on the residual void's water quality to any significant degree, as evapo-concentration and other processes are the key drivers of the void lake's water quality. In summary, with respect to AMD, the SPR risk rating on the overall water quality of the Project's residual void is low (Section 6.2 and Appendix D of **Appendix F**).

23.9.8 Residual Void Hydrogeochemical Modelling

23.9.8.1 Overview

Void lake hydrogeochemical modelling was undertaken by RGS Environmental Consultants Pty Ltd (RGS), as detailed in **Appendix M**, for the preferred void configuration (option 1 - minimise void size, maximise the catchment). This section provides a summary of the modelling methodology and model results.

23.9.8.2 Geochemistry

The geochemistry of the spoil and any 'waste coal' remaining in the spoil or the void is described in Section 23.8.5, based on the geochemical characterisation and assessment of mineral waste completed by Terrenus (see **Appendix F**).

In addition, kinetic leach column (KLC) geochemical testing has commenced on composite samples of spoil (see Section 2.3 of **Appendix M**). KLC testing will occur over at least 6 months. At the time of preparation of the EIS approximately 3 months' worth of testing data was compiled, which was considered sufficient to provide information on early stage 'first flush' conditions.

The primary objectives of the KLC test program were to quantify the concentration and rate at which weathering products (acid, soluble salts, and metals and metalloids) are leached from the solid phase materials (carbonaceous and non-carbonaceous spoil) over time, under free leaching unsaturated ('wet-dry') versus saturated conditions.

The key findings from the KLC testing are:

- Saturated sample materials transitioned from oxidising to reducing conditions over time.
- Across all materials, initial high salinity values and major ion concentrations and high loading rates seen in the leachates are likely due to the initial first flush of readily solubilised reaction products resulting in elevated dissolved concentrations.
- Consistent with the static geochemical testing undertaken by Terrenus (**Appendix F**), most materials are expected to generate alkaline drainage.
- The pH of drainage from mine materials is expected to increase as the pit lake fills, materials become saturated, and the oxidation of materials slows or stops. With an increase in pH, leached metals and metalloids typically decrease.
- Drainage from most materials is expected to have low dissolved acidity and relatively high alkalinity.
- Initial drainage from spoil materials may contain concentrations of soluble molybdenum, selenium and fluorine. However, concentrations of these elements in solution are expected to decrease over time.
- Increase in sulfate, calcium, magnesium, sodium, relatively constant pH, and decreasing chloride concentration suggest there is long-term dissolution of sulfate salts.

This information on the geochemistry of spoil and coal was used to inform inputs into the hydrogeochemical modelling.

23.9.8.3 Modelling

A numerical hydrogeochemical model of the void was developed to assess the potential water quality of the pit lake post closure (see Sections 3 and 4 of **Appendix M**). The post closure hydrogeochemical model consisted of an ensemble of the following separate models:

- The void water balance model developed by Hydrobalance, including climate change and groundwater inflows (see Section 23.9.5).
- An Excel spreadsheet to annualise the Hydrobalance model data (from daily time steps) so that it could be use in the RGS water quality model.
- A PHREEQC mixing model (Parkhurst & Appelo, 2013) was used to simulate geochemical processes and estimate the water quality in the void for PMLUs.

The hydrogeochemical water quality model was developed on an annual time-step to run for a period of 500 years. It should be noted that the longer the model simulation period, the greater the bounds of uncertainty in the modelled water balance and water quality results that are likely to be observed.

The model simulates water quality as the void fills and forms a lake. Each contributing input to the void is assigned a water quality source term based on available monitoring or laboratory data. Each input volume is calculated for each yearly timestep from the water-balance. These volumes are then converted to proportions of overall contributions and the resulting mixture modelled for 500-years using PHREEQC.

The void lake and water retained within the backfilled spoil material are considered two connected reservoirs for the purpose of modelling. This means that water quality is modelled for each reservoir for each annual timestep. The water quality evolves in these reservoirs as water moves between them and other interactions occur (e.g. rainfall infiltration). PHREEQC is used to calculate equilibrated solutions including total dissolved constituents, pH, and alkalinity via mixing. Evaporation and charge balance as well as mineralogical controls are incorporated. The model outputs water quality for the pit lake at each time step.

Source terms represent the concentrations of chemical substances in contact water from spoil and dissolved in groundwater and runoff. Source terms were derived from a combination of monitoring data, reference data and laboratory tests.

Groundwater quality source terms were developed from groundwater quality measured in bores in the Rangal Coal Measures coal and non-coal interburden bores, with this data used to inform salinity inputs into the void model (see Section 23.9.5.2).

Spoil runoff and seepage water quality was inferred using results of laboratory KLC testing. The most recent available leach data from the three KLC tests was used to calculate the median spoil leachate quality. This data likely represents the lower limit of the 'first flush' of readily soluble salts as opposed to a 'steady state' which would typically be used to infer long-term leachate quality.

Section 6 of **Appendix M** describes the model assumptions and uncertainties comprising:

- geochemical reactions and processes
- model uncertainties when predicting future conditions, noting that all models estimate future conditions (e.g. physicochemical parameters) by reducing complex systems to a limited number of significant, often simplified, processes.

However, geochemical evaluations over the last few decades have shown that modelling, particularly the equilibrium assumption, is a powerful tool that in many circumstances produces results that accurately describe the general chemistry of natural and mine waters.

23.9.8.4 Assessment Criteria

The primary PMLU for the residual void lake is stock (cattle) drinking water supply. The applicable guidelines for stock drinking water are the revised Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018), which provide essential, risk-based default guideline values for livestock drinking water (See Section 5 of **Appendix M**) to ensure animal health and productivity.

The levels of various parameters estimated using hydrogeochemical modelling were evaluated against the livestock drinking water guidelines (LDWG). Not every parameter modelled has an associated LDWG value.

23.9.8.5 Model Results

23.9.8.5.1 Water Balance

The void water balance model results for the preferred void configuration option are presented in Section 23.9.5.3.2. Section 7 of **Appendix M** provides additional analysis of the water balance results, noting the following:

- Water balance inflows are dominated by spoil to lake seepage with approximately 55-60% contribution to inflows
- Water balance outflows from the lake are dominated by evaporation (thus evapoconcentration) with approximately 85% contribution to outflows.
- There are generally no significant changes to the water balance over the modelling period.

23.9.8.5.2 Water Quality

Figure 23-14 presents the modelled pH, salinity (expressed as EC) in the void over 500 years, as well as showing the LDWG (orange line on figures) where applicable. Void water quality model results for all parameters are provided in Section 7 of **Appendix M**.

Key points from the modelling include:

- All modelled parameters generally show an increasing concentration trend for the first 110 years, after which the values reach a quasi-steady state.
- Modelled pH in the quasi-steady state (after 110 years) ranges between 8.92 and 9.07 (slightly alkaline), with a median value of 9.00 (Figure 23-14). The corresponding total alkalinity indicates there is an excess of acid buffering capacity from the lake water.
- Modelled EC (salinity) in the quasi-steady state varies from ~2,275 µS/cm to ~3,450 µS/cm, with a median of ~2,825 µS/cm (Figure 23-14).
- The major ion (represented by sulfate and chloride) and metal/metalloid concentrations (represented by arsenic (As), manganese (Mn), lead (Pb), and zinc (Zn)) generally follow the same trend as EC.
- The dominant major ions (other than bicarbonate alkalinity) are sodium and chloride with lesser sulfate, magnesium, potassium and calcium.
- The spikes in salinity, major ions and metals/ metalloids, once a quasi-steady state is reached, tend to be associated with lower rainfall years when runoff volumes (and direct rainfall) are lower relative to spoil and groundwater inflow and thus dilution effects (from runoff and direct rainfall) are reduced while evapoconcentration of accumulated water in the void is relatively higher.

23.9.8.5.3 Water Quality Compared to LDWG Values

Comparison of the modelled post-closure pit lake water quality results to LDWG values indicates:

- Salinity (as indicated by EC) is well below the LDWG value of 7,800 µS/cm over the 500-year modelling period.
- Calcium (Ca) and sulfate (SO4) are below the LDWG value.
- The vast majority of modelled dissolved metal/metalloid concentrations in the void lake are within the LDWG values except for fluorine (F), molybdenum (Mo) and selenium (Se) which, at some point in the 500-year modelling period, exceed LDWG value (see Figure 23-15, with orange line showing LDWG value).

The modelled concentrations of F, Se and Mo, which are inferred to be mobilised from backfilled spoil, are considered conservative estimates (i.e. likely to be overestimated concentrations). This conservatism arises from methodological assumptions and testing conditions that likely overstate constituent mobilisation under long-term field conditions.

Firstly, the KLC test results used to estimate spoil porewater quality are representative of early stage 'first flush' conditions rather than long-term equilibrium behaviour. Additionally, KLC tests are conducted on crushed rock, which significantly increases the surface area available for water–rock interaction, thereby enhancing mineral dissolution rates. Sample dehydration during storage may also concentrate salts, influencing initial leachate chemistry. Consequently, extrapolating these first-flush results to predict long-term runoff or seepage quality likely overestimates contaminant concentrations.

Secondly, the long-term infiltration dynamics of the backfilled spoil are expected to reduce constituent mobilisation. Over time, spoil material will undergo consolidation, resulting in decreased permeability and reduced infiltration rates. This shift will favour increased surface runoff relative to percolation. Surface runoff generally exhibits more dilute concentrations compared to groundwater/ surface water that has interacted extensively with spoil material before discharging into the lake. Therefore, long-term water quality impacts are expected to be less pronounced than those predicted by current model assumptions.

Furthermore, the LDWG thresholds themselves are considered conservative in this context. For instance, modelled fluoride concentrations at or near LDWG values remain below the South African guideline limit of 4 mg/L (ANZG, 2018). Similarly, molybdenum concentrations are approximately aligned with the Canadian guideline (ANZG, 2018) value of 0.5 mg/L and may be further mitigated through copper supplementation. Selenium concentrations are also comparable to both Canadian and South African guideline limits of 0.05 mg/L (ANZG, 2018). Collectively, these comparisons suggest that modelled exceedances relative to LDWG may not necessarily indicate an unacceptable risk when evaluated against alternative international standards.

23.9.8.6 Conclusion

Based on the modelling undertaken, with its inherent conservatism (i.e. likely to overestimate void water quality results), the modelled void water quality is unlikely to pose an unacceptable risk as a livestock drinking water supply. Over the life of the Project and prior to a void lake forming post closure, additional information, studies and modelling will be undertaken to support the intended use of void water as a livestock drinking water supply.

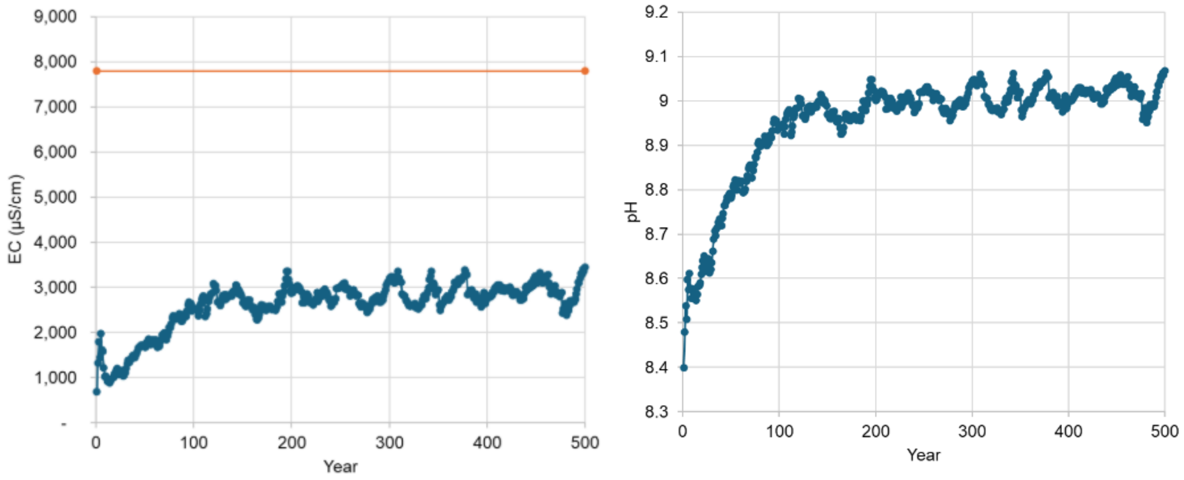


Figure 23-14 Void Salinity (EC) and pH Model Results

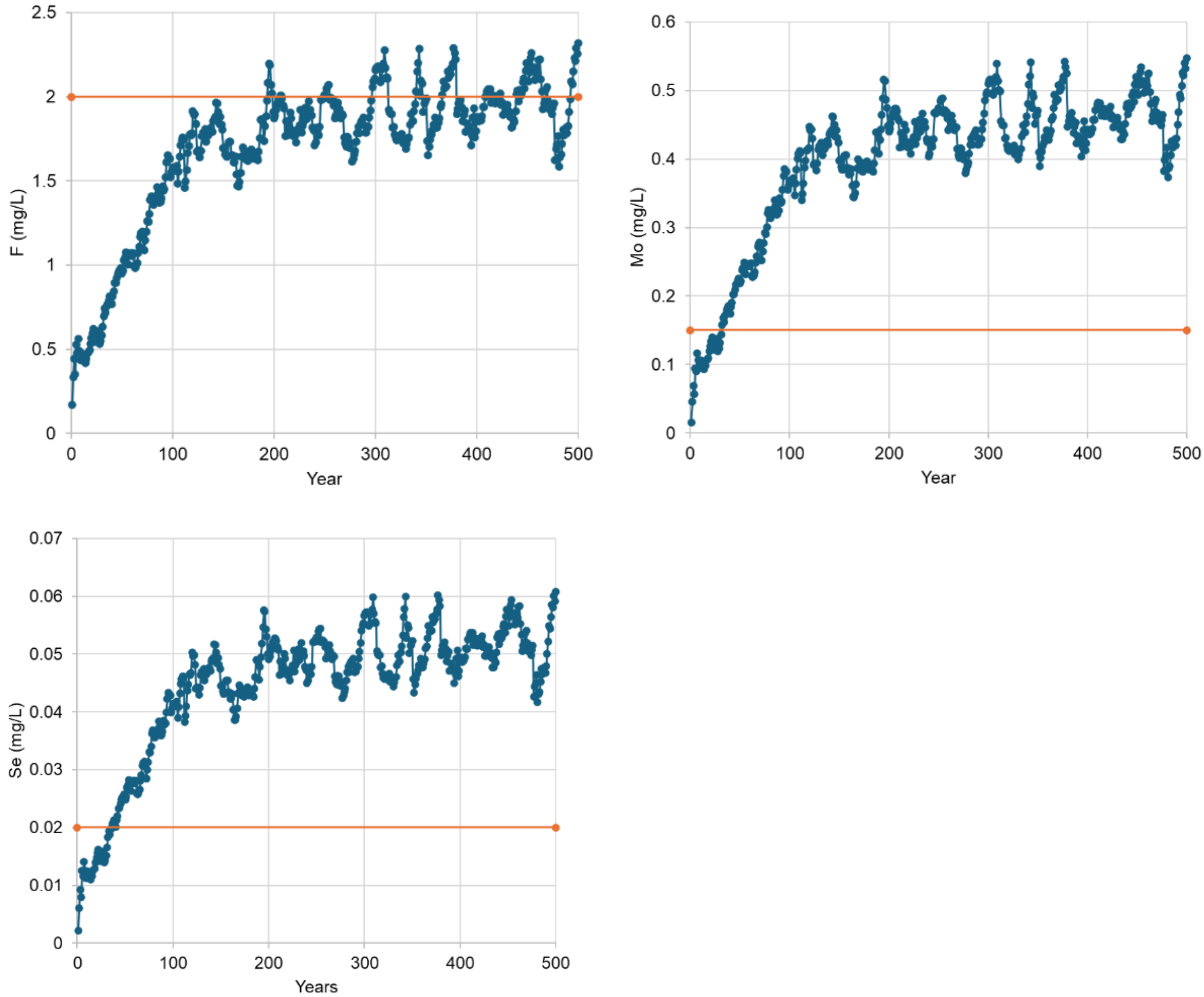


Figure 23-15 Void F, Mo and Se Model Results

23.9.9 PMLU Options for the Residual Void

Based on the results of the residual void design and void lake modelling, the following potential PMLUs were evaluated for the closure landform's residual void:

- stock watering
- algae production
- pumped hydroelectric energy storage (PHES or 'pumped hydro')
- irrigation of agricultural land
- aquatic ecosystem.

Where the potential PMLU was considered feasible, an assessment of the long term final void water balance and salinity was undertaken with the PMLU or combination of PMLUs. Modelling of the void lake with various PMLUs has been completed by Hydrobalance (see Section 8 of **Appendix I**) using the methodology described in Section 23.9.5.2.

The void water quality modelling for the preferred final landform (see Section 23.9.5.3.2 and Section 23.9.6) demonstrates that the void lake can be used for stock watering in the long term. To further assist with stock watering the backfilled southern portion of the pit area has been designed with a gently sloping ramp (≤10%) to allow cattle access to the lake (see Figure 23-8).

Stock watering forms the 'base case' for all modelling of long term final void water balance and salinity. Where other PMLUs are considered feasible, void modelling has been undertaken inclusive of stock watering.

Refer to **Chapter 5** for information supporting the technical and commercial feasibility of algae production and a PHES scheme as PMLUs for the residual void.

23.9.10 Post Mining Land Use Options – Other Areas

The proposed PMLU in the majority of the closure landform, other than the residual void and infrastructure areas to support the associated PMLUs, is grazing. This aligns with the pre mining land use of the Project area and the landholder's preferences.

The following rehabilitation areas have PMLUs that are not associated with the residual void lake or grazing:

- A woodland PMLU is proposed on the internally draining low wall slope immediately above the void lake. This area has been shaped to ≤25%, which is generally considered too steep for grazing, but which can support a woodland PMLU providing erosional stability with a rock armoured slope.
- The crossings of the Isaac River and Cherwell Creek will be rehabilitated to riparian habitat as these areas contained riparian habitat pre mining.
- Conrock Gully diversion will be rehabilitated to a riparian habitat, similar to sections of the existing Gully with woodland, riparian habitat, with rehabilitation commencing during operations once the diversion is constructed.

These rehabilitation outcomes were considered the most suitable PMLUs for these disturbance areas, and therefore, other options were not required to be evaluated. Section 23.9.11.5 provides a summarised assessment of the suitability of the Project's planned PMLUs.

23.9.11 Progressive Rehabilitation and Closure Plan

23.9.11.1 Overview

The Project requires a PRCP and PRCP schedule under the EP Act, with the PRCP schedule requiring approval from the administering authority before the Project can commence (i.e. in combination with the Project's EA and MLs). The PRCP (**Appendix AB**) and draft PRCP schedule (**Appendix AC**) detail the

Project's progressive rehabilitation and closure planning to achieve a final landform that is safe, stable, non-polluting and supports the planned PMLUs in a sustainable manner.

The PRCP is the supporting planning document for the PRCP schedule and provides:

- the baseline information related to the Project
- the justification for the final landform and planned PMLUs
- outlines how the final landform and PMLUs will be achieved by closure.

The PRCP schedule specifies the timing of the progressive rehabilitation and closure, as linked to rehabilitation milestones (RMs) for each rehabilitation area (RA).

The following sections will provide a summary of the key components of the PRCP (**Appendix AB**).

23.9.11.2 Baseline Information and Project Description

Establishing the baseline scientific information and understanding all the key elements of the Project were integral in assisting the development of the Project's PMLUs and guiding mine planning to allow the efficient and progressive development of the Project's final landform to support the planned PMLUs.

The required baseline information for the Project's progressive rehabilitation and closure planning is provided in **Chapters 6**, **7**, **8**, **9**, **10**, **11** and **12**, which represents the climate, land, surface water, hydrology and geomorphology, groundwater, terrestrial ecology, and aquatic ecology, respectively. A description of all key elements of the Project is provided in **Chapter 4**.

Summaries of the Project description and baseline information are components of the Project's PRCP (Sections 2.1.1 and 2.1.2 of **Appendix AB**, respectively).

23.9.11.3 Design for Closure

The Project's progressive rehabilitation and closure planning process proactively considered closure design during the development of the Project's mine site to maximise the progressive rehabilitation of the land to a stable condition and minimise the long-term management requirements and costs.

A summary of the Project's design for closure is provided in the Project's PRCP (Section 2.1.3 of **Appendix AB**), as informed by the landform design process described in Section 23.9.2 to Section 23.9.6.

23.9.11.4 Rehabilitation Planning

23.9.11.4.1 Relevant Activities and Rehabilitation Areas

Under the EP Act, 'relevant activities' in the context of the Project's progressive rehabilitation and closure refer explicitly to the mining activities authorised by the Project's EA, and can be defined as the operational processes that cause environmental disturbance.

RAs are specific, mapped zones within the Project's disturbance area that have been designated for progressive rehabilitation through detailed mine planning. Each Project RA is planned to be progressively rehabilitated to a specific PMLU that is safe, stable, non-polluting and sustainable.

The Project's progressive rehabilitation has been optimised in the PRCP schedule based on the current life of mine plan and is designed to ensure the safe and efficient extraction of the coal resource, the best possible availability of disturbed areas for progressive rehabilitation, and the achievement of the proposed PMLU for each RA. The Project's draft PRCP schedule is provided in **Appendix AC**.

Table 23-4 provides the planned RAs for the Project's relevant activities, and includes the intended PMLU, predicted duration, size/extent and planned progressive rehabilitation availability for each RA. The Project's RAs are shown in Figure 23-16. The Project's conceptual final landform and PMLUs are displayed in Figure 23-8. The RAs are detailed in Project's PRCP (Section 2.1.4.1 of **Appendix AB**).

23.9.11.4.2 Rehabilitation Areas and Milestones

RMs are required for all RAs and identify each significant event or step necessary to progressively rehabilitate the disturbed land to its PMLU.

A high level summary of the Project's RMs is provided in Table 23-5. As required by the PRCP Guideline, only PMLU areas where significant disturbance will occur are mapped as a RA and incorporated into the PRCP schedule. The timing associated with the Project's RMs is explained in Section 2.3.2.1 of **Appendix AB**.

The Project's minor ancillary activities, which may include roads, access tracks and culverts, fences, underground services, low-impact telecommunication facilities, electrical sub-stations and switch yards, transmission grid works and supply network works, storage depots, pipelines and pumps, groundwater bores, gas drainage bores, monitoring and investigation works and exploration activities, were not designated as RAs. Disturbance from minor ancillary activities will be rehabilitated in accordance with the provisions detailed in the Eligibility criteria and standard conditions for exploration and mineral development projects (DEHP, 2016).

23.9.11.4.3 Rehabilitation Milestones Criteria

The milestone criteria for the Project's RMs are provided in Section 2.3.2 and Table 12 of **Appendix AB**. Specific, measurable, achievable, reasonable/relevant and time-specific (SMART) principles were applied in developing the Project's RMs, with consideration given to the following parameters:

- Milestone criteria have been developed using the technical assessments completed for the Project's EIS that underpin progressive rehabilitation and closure.
- Milestone criteria development has considered the principles of industry best practice.

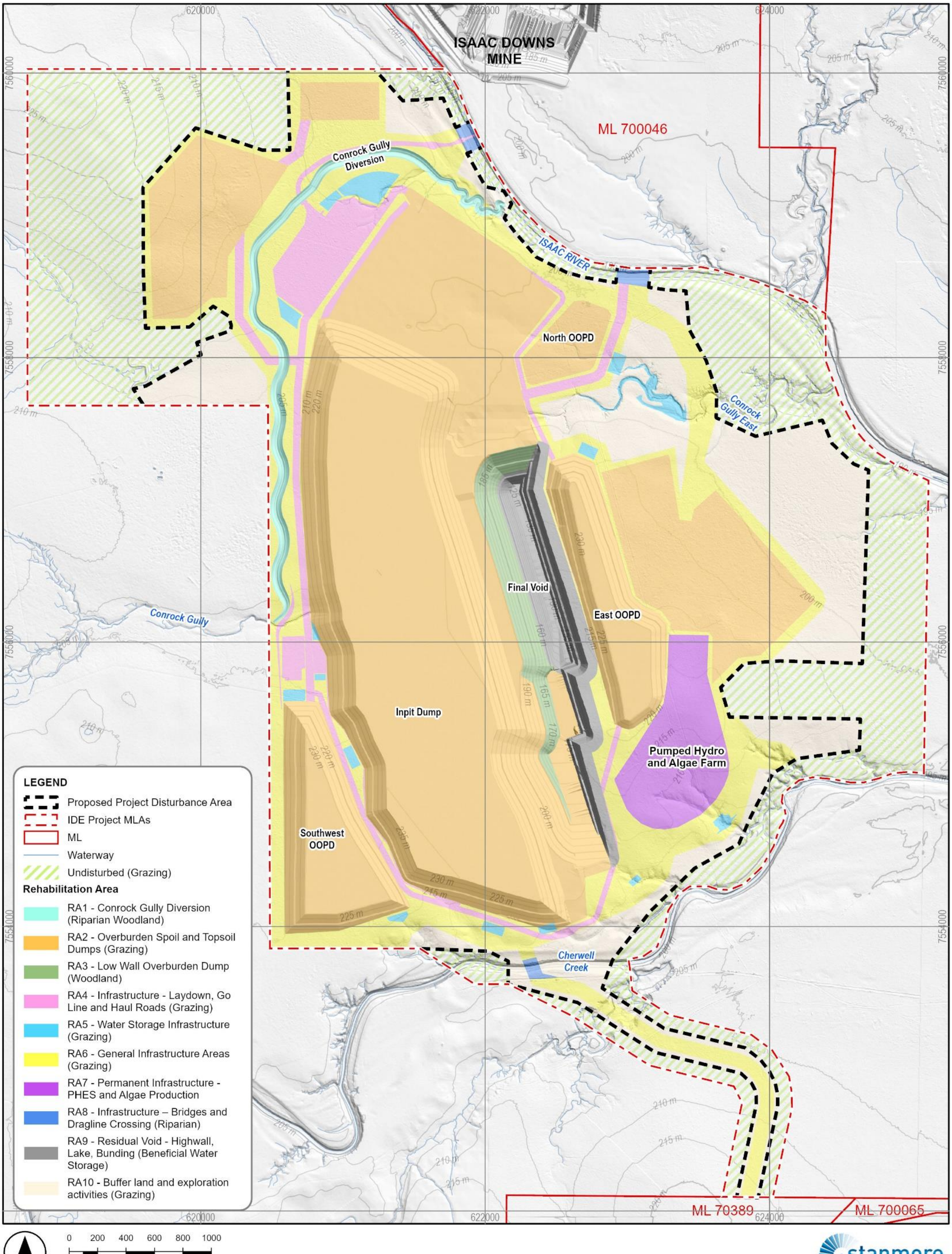
Table 23-4 Project Rehabilitation Areas, Relevant Activities and associated Post-mining Land Uses

Rehabilitation Area (RA)	Post-mining Land Use (PMLU)	Relevant Activity	Predicted Duration (Years)+	Size (ha)	Availability for Progressive Rehabilitation#
RA1	Native vegetation (riparian woodland)	Conrock Gully diversion	16	34.4	10/12/2028
RA2	Grazing	Overburden and topsoil dumps (out-of-pit and in-pit)	32	1074.9	10/12/2031
RA3	Native vegetation (woodland)	Final Low Wall overburden dump (≤25%)	20	36.9	10/12/2043
RA4	Grazing	Infrastructure - laydown, go line and haul roads	15	106.9	10/12/2043
RA5	Grazing	Infrastructure - water storages	15	23.9	10/12/2043
RA6	Grazing	General infrastructure areas - not contaminated	25	368.8	10/12/2038
RA7	PHES and Algae Production	Permanent PMLU infrastructure area	5	65.9	10/12/2043
RA8	Native vegetation (riparian)	Infrastructure – bridges and dragline crossing (Isaac River and Cherwell Creek)	20	6.7	10/12/2048
RA9	Beneficial Water Storage	Residual Void (void highwall, pit lake, safety setbacks, bunding and fencing))	15	71.0	10/12/2043
RA10	Grazing	Buffer land and exploration activities	20*	290.6*	10/12/2043*

* = Buffer land is unlikely to be disturbed. Availability, duration and size only apply if the buffer land is disturbed by the Project's mining activities.

\# = The nominated date of availability for progressive rehabilitation is based on Project commencement and duration in accordance with the timeframes in Table 23-5. If these timeframes change then the date of availability for progressive rehabilitation would change.

\+ = The predicted duration for a RA is the period from commencement to completion of rehabilitation.



stanmore

ISAAC DOWNS EXTENSION

Datum:	GDA2020 Zone 55
Scale:	See Scale Bar
Date:	27/05/2026 10:50 AM
Drawn:	Minserve
Source:	Minserve
File:	20260525 Rehabilitation Areas.aprx

Rehabilitation Areas

Figure | 23-16

Table 23-5 Project Rehabilitation Milestones

Rehabilitation Milestones		Maximum Expected Duration (Years)
RM1	Infrastructure decommissioning and removal	1
RM2	Identification, remediation and removal of contaminated land	1
RM3	Landform establishment	2
RM4	Surface preparation	2
RM5	Revegetation: • Grazing PMLU • Native vegetation (riparian woodland) – Conrock Gully diversion PMLU • Native vegetation (woodland) – Final low wall batter (≤25%) PMLU • Native vegetation (riparian) – River/creek crossings PMLU	2
RM6	Achievement of surface requirements: • Grazing PMLU • Native vegetation (riparian woodland) – Conrock Gully diversion PMLU • Native vegetation (woodland) – Final low wall batter (≤25%) PMLU • Native vegetation (riparian) – River/creek crossings PMLU	5 10 10 10
RM7	Achievement of the post-mining land use to a stable condition: • Grazing PMLU • Native vegetation (riparian woodland) – Conrock Gully diversion PMLU • Native vegetation (woodland) – Final low wall batter (≤25%) PMLU • Native vegetation (riparian) – River/creek crossings PMLU	5**
RM8	Achievement of post-mining land use water quality	5**
RM9	Functioning stable water supply source for RM10 and cattle • Achievement of stable final landform for the final void • Achievement of safety requirements • Achievement of final void water quality	10*
RM10	Achievement of permanent infrastructure – PHES and/or algae production PMLUs	5*

* = From the end of mining operations.

** = RM7 and RM8 are expected to run concurrently after RM6 is achieved

23.9.11.4.4 Community Consultation

Community consultation forms an important part of the Project’s progressive rehabilitation and closure planning and is an integral component of the Project’s PRCP. The proponent has consulted with key stakeholders about the Project’s proposed final landform and PMLUs, and has developed a community consultation plan to facilitate on-going engagement with the community on the Project’s progressive rehabilitation and closure planning. Through this consultation process, the proponent is committed to delivering long-term beneficial and sustainable outcomes for the rehabilitated mined land at the end of the Project’s life.

Sections 2.2.1 and 2.2.2 of **Appendix AB** outline the PRCP related consultation completed to-date and details the PRCP's community consultation plan, respectively. **Chapters 3** and **21** provide further details on the Project's consultation and social impact management for the EIS, respectively.

23.9.11.5 Post Mining Land Uses

The PMLUs planned for the Project are outlined below and are defined with their applicable RAs in Table 23-4, Figure 23-8 and Figure 23-16:

- Native vegetation (riparian woodland) – Conrock Gully
- Grazing
- Native vegetation (woodland) – final low wall batter (≤25%)
- Native vegetation (riparian) – river/creek crossings
- Final void - beneficial use water storage
- Permanent infrastructure – PHES and/or algae production.

In terms of local and State government planning strategies and schemes, the proposed PMLUs are consistent with the Isaac Regional Planning Scheme (2024)[8] and Mackay, Isaac, and Whitsunday Regional Plan (2012). Section 2.3.5 of **Appendix AB** provides further details detail on the consistency between the PMLUs and the local and State government planning strategies and schemes.

23.9.11.5.1 Native Vegetation (Riparian Woodland) – Conrock Gully

The diversion of Conrock Gully is described in Section 23.9.2.3.2.

The Conrock Gully diversion functionally connects with the existing watercourse within the Project area, was aligned to minimise interference with mining infrastructure, and was designed to remain within the Project area. The proposed diversion channel possesses similar dimensions to the Conrock Gully existing channel, and has a similar design capacity. The Conrock Gully diversion includes a number of meanders that have been introduced at the upstream end of the diversion, which results in a length of channel and bed slope similar to the existing Conrock Gully channel. The diversion's meanders have similar amplitude, wavelength, sinuosity, and bend radius to bends found in the existing creek channel.

The Conrock Gully diversion is supported by a Functional Design Report that was developed by an AQP to address the objectives, design criteria and required outcomes of the 'Guideline: Works that interfere with water in a watercourse for a resource activity—watercourse diversions authorised under the Water Act 2000 (DNRME, 2019)'. The Conrock Gully diversion's Functional Design Report is provided in Appendix D of **Appendix J**. The geomorphic assessment within the Functional Design Report demonstrates that the diversion design reasonably matches the existing Conrock Gully geometry. The design hydraulic conditions of the diversion are similar, and generally improved, to those in the existing Conrock Gully channel, and are consistent with the 'ACARP guideline: Bowen Basin River Diversions Design and Rehabilitation Centre (Hardie and Lucas, 2002)' for channel-averaged shear stress, stream power and velocity.

Revegetation of the land adjacent to Conrock Gully diversion channel with a self-sustaining groundcover will facilitate erosional stability and topsoil retention during rainfall and flood events, and the re-established native shrub and tree cover will enhance the riparian zone and support the return and improvement of native fauna habitat. The native flora species selection for rehabilitation will be consistent with the local surrounding environment (Appendix 3.3 of **Appendix AB**).

The permanent diversion of Conrock Gully will be substantially similar to the existing Conrock Gully, and therefore, will function in a similar manner for the purpose of operating the Winchester Down property as a pastoral business.

Therefore, once the native vegetation (riparian woodland) – Conrock Gully PMLU is established in accordance with the PRCP schedule (**Appendix AC**), it will be safe and structurally stable, not cause

[8] https://www.isaac.qld.gov.au/Residents/Planning-and-Development/Planning-Scheme

environmental harm, and will be sustainable under natural conditions. In addition, this PMLU will be integrated into current land uses, and is consistent with how the land was used before the mining activities were carried out.

23.9.11.5.2 Grazing

Grazing is the primary land use within the Project area, and is one of the two predominant land uses in the vicinity of the Project. The grazing PMLU will allow the return of the land to the Winchester Downs landowner in a productive state for reintegration into their pastoral business. The grazing PMLU will also allow the return of a majority of the land associated with the State Reserve (Lot 9 GV33) to a productive state for its reintegration into the reserve and continued use as a stock route. Further details on the properties associated with the Project is provided in Section 23.8.2 and Section 7.3.2.1 of **Chapter 7**.

A majority of the Project's land disturbed by mining will be returned to a grazing PMLU, which from an agricultural perspective will be beneficial to the landowners, the region and Queensland. The grazing PMLU will return the land to its pre-mining land suitability class (majority class 4, see Section 7.3.19 of **Chapter 7**). Final landform geotechnical and erosional stability assessments confirm that long-term the land will remain geotechnically stable and will erode at an acceptable rate, which supports the rehabilitation of the land to a grazing PMLU (**Appendix H** and **Appendix D**, respectively).

The return of the majority of the land to a sustainable grazing condition is likely to be a part of two separate compensation agreements under the MR Act between the proponent and the two landowners.

Revegetation of the mined land to a sustainable state will involve the use of a pasture seed mix that is compatible with surrounding non-mined land. The Project's planned pasture seed mix for the grazing PMLU is provided in Appendix 3.2 of **Appendix AB**. The self-sustaining groundcover will facilitate erosional stability and topsoil retention, and will also provide habitat for local ground-dwelling fauna.

In terms of local and State government planning strategies and schemes, the grazing PMLU is consistent with the Isaac Regional Planning Scheme (2024) and Mackay, Isaac, and Whitsunday Regional Plan (2012). Section 2.3.5 of **Appendix AB** provides further details detail on the consistency between the PMLUs and the local and State government planning strategies and schemes.

Therefore, once the grazing PMLU is established in accordance with the PRCP schedule (**Appendix AC**), it will be safe and structurally stable, not cause environmental harm, and will be sustainable under natural conditions. In addition, this PMLU will be integrated into current land uses, and is consistent with how the land was used before the Project's mining activities were carried out.

23.9.11.5.3 Native Vegetation (Woodland) – Final Low Wall Batter (≤25%)

The development of the Project's final void involved assessed of options using multiple inputs from specific models (e.g. surface water, groundwater, void geochemistry and mine design) to establish the best possible final geometry (e.g. size, surface area, depth, and catchment) to return a suitable water quality to support the use of the final void (pit lake) as a beneficial water storage PMLU for grazing and a suitable water source for the Project's other proposed PMLUs (permanent infrastructure – PHES and/or algae production). The development of the Project's final void design is detailed in Section 23.9.5.

As a result of the Project's final void design and the progression of the final stages of mining to achieve this design, the final low wall batter that drains directly to the void, and is above the predicted void water level, possesses a slope of ≤25%. Consequently, the native vegetation (woodland) – final low wall batter (≤25%) PMLU was developed to ensure long-term erosional and geotechnical stability, and an ecological benefit for this specific rehabilitation area.

Landform stability modelling and a geotechnical assessment were completed by AQPs to demonstrate the long-term stability of final landform, including the final low wall batter (**Appendix D** and **Appendix H**, respectively). **Appendix H** demonstrates that the Project's final landform, including the final low wall batter, meets or exceeds the design acceptance criteria for the Project's final landform of a factor of safety of ≥1.5, and therefore, demonstrate the long-term stability of the Project's final landform. **Appendix D** demonstrates that after 300 years of simulation of the Project's main in-pit landform (which includes the low wall batter), southwest out-of-pit dump and east out-of-pit dump are stable under the current climate change predictions for the region, and are predicted to typically erode at the acceptable erosion rate of ≤5 t/ha/y. The landform stability modelling report also advises on the recommended rehabilitation actions required to achieve long-term stability for the low wall batter PMLU, which includes achieving a groundcover level of ≥30% with rock armouring comprising fresh non-carbonaceous sandstone and fresh carbonaceous sandstone.

Revegetation of the final low wall batter with a self-sustaining groundcover and appropriate rock armouring will facilitate erosional stability and topsoil retention during rainfall and flood events, and the re-established native shrub and tree cover will improve the habitat for local native fauna. The native flora species selection for rehabilitation will be consistent with the local surrounding environment (Appendix 3.3 of **Appendix AB**).

Therefore, once the native vegetation (woodland) – final low wall batter (≤25%) PMLU is established in accordance with the PRCP schedule (**Appendix AC**), it will be safe and structurally stable, not cause environmental harm, and will be sustainable under natural conditions. In addition, this PMLU will be integrated into current land use, and is consistent with how the land was used before the mining activities were carried out.

23.9.11.5.4 Native Vegetation (Riparian) – River/Creek Crossings

The Project will require a primary access including a bridge over the Isaac River, a temporary bed-level crossing of the Isaac River to walk the dragline to and from the Project area at the start and finish of mining operations, and a secondary access including a bridge over Cherwell Creek.

There are no other feasible alternative access options for the Project. The Project's primary access connects with IDM's road network and provides connection with the Peak Downs Highway for off-site travel, and with the existing ROM coal haul roads for hauling ROM coal to the Isaac Plains Mine cola handling and preparation plant.

These access routes intersect ecologically sensitive areas associated with the Isaac River and Cherwell Creek crossings. Therefore, the native vegetation (riparian) – river/creek crossings PLMU was developed for the rehabilitation of the Project's crossing infrastructure within existing riparian areas to ensure long-term erosional and geomorphic stability and an ecological benefit from the re-establishment of the riparian zone.

Revegetation of the land adjacent to each crossing with a self-sustaining groundcover will facilitate erosional stability and topsoil retention, and the re-established native shrub and tree cover will enhance the riparian zone and support the return and improvement of native fauna habitat. The native flora species selection for rehabilitation will be consistent with the local surrounding environment (Appendix 3.3 of **Appendix AB**).

Therefore, once the native vegetation (riparian) – river/creek crossings PLMU is established in accordance with the PRCP schedule (**Appendix AC**), it will be safe and structurally stable, not cause environmental harm, and will be sustainable under natural conditions. In addition, this PMLU will be integrated into the current land use, and is consistent with how the land was used before the mining activities were carried out.

23.9.11.5.5 Final void - Beneficial use water storage

The development of the Project's final void for the long-term use as a suitable water source for livestock (cattle) is provided in Sections 23.9.5, 23.9.6, 23.9.6 and 23.9.9. This confirms the use of the final void's water as a beneficial PMLU for livestock (cattle) watering.

The beneficial water storage PMLU will provide the Winchester Downs landowner with a sustainable additional water source for their pastoral operations.

Therefore, once the beneficial water storage PMLU is established in accordance with the PRCP schedule (**Appendix AC**), it will be safe and structurally stable, not cause environmental harm, and will be sustainable under natural conditions. In addition, this PMLU will be integrated into the current land use, and whose use will deliver, or is aimed at delivering, a beneficial environmental and economic outcome.

23.9.11.5.6 Permanent infrastructure – PHES and/or algae production

The development of the Project's final void for the long-term use as a suitable water source for the Project's proposed PMLUs (permanent infrastructure – PHES and/or algae production) is provided in Sections 23.9.5, 23.9.6, 23.9.6 and 23.9.9.

Therefore, once the permanent infrastructure – PHES and/or algae production PMLU is established in accordance with the PRCP schedule (**Appendix AC**) and has reached a commercial stage of development, it will be safe and structurally stable, not cause environmental harm, and will be sustainable under natural conditions. In addition, this PMLU can be integrated into the current land use or developed by a third party as a future productive land use, and whose establishment will deliver, or is aimed at delivering beneficial environmental and economic outcomes.

23.9.11.6 Rehabilitation Practices and Milestones

23.9.11.6.1 Overview

The following technical studies were completed for the Project to both inform the final landform design and to address and support the planned rehabilitation practices for progressive rehabilitation and closure:

- flood modelling (**Appendix J**)
- void water balance modelling (**Appendix I**)
- void hydrogeochemical water quality modelling (**Appendix M**)
- final landform geotechnical assessment (**Appendix H**)
- baseline soil assessment (**Appendix E**)
- materials characterisation and final landform erosional stability modelling (**Appendix D**)
- groundwater modelling (**Appendix K**)
- mine waste geochemical characterisation and assessment (**Appendix F**)
- terrestrial ecology assessment (**Appendix P**).

The outcomes of these assessments are summarised in **Chapters 7**, **8**, **9**, **10** and **11** for land, surface water, hydrology and geomorphology, groundwater and terrestrial ecology, respectively, and were used to support the Project's PRCP (Section 2.6.1 of the **Appendix AB**) and PRCP schedule (**Appendix AC**).

Sections 23.9.2, 23.9.3, and 23.9.5 detail the evaluation processes undertaken using the Project's various technical assessments to establish the design of the Project's final landform, overburden dumps and final void, respectively.

23.9.11.6.2 PRCP Guideline Requirements

To meet the requirements of the PRCP Guideline, the Project's PRCP addresses the following key rehabilitation criteria:

- Hydrogeology (Sections 2.6.1.1 of **Appendix AB**).
- Flooding (Sections 2.6.1.2 of **Appendix AB**).
- Waste characterisation (Section 2.6.1.3 of **Appendix AB**).
- Soil assessment (Section 2.6.1.4 of **Appendix AB**).
- Landform design (Section 2.6.1.5 of **Appendix AB**).

- Cover design (Section 2.6.1.6 of **Appendix AB**).
- Water management (Section 2.6.1.7 of **Appendix AB**).
- Revegetation (Section 2.6.1.8 of **Appendix AB**).

The information provided in these sections of the PRCP supports the Project's progressive rehabilitation and closure planning and helps demonstrate how a safe, stable and non-polluting final landform will be achieved to support the planned PMLUs in a sustainable manner. This information has also contributed to the development of the criteria for specific Project RMs.

23.9.11.6.3 Landform Establishment (RM3)

Landform establishment is a key step in the rehabilitation of mining disturbance. The Project's final landform is based on the assessment outcomes provided in Sections 23.9.2, 23.9.3 and 23.9.5, and as a result, will form the landform establishment requirements for RM3 and will guide mine planning over the life of the Project. Noting that mine planning is the one of key factors in the facilitation of progressive rehabilitation as prescribed by the PRCP schedule.

For the Project, RM3 applies to all RAs, except RA7, RA9 and RA10 (Table 23-4).

23.9.11.6.4 Surface Preparation (RM4)

Surface preparation is a key step for those rehabilitation areas requiring revegetation, and as a result, it applies to the following Project PMLUs:

- Native vegetation (riparian woodland) – Conrock Gully
- Grazing
- Native vegetation (woodland) – final low wall batter (≤25%)
- Native vegetation (riparian) – river/creek crossings.

Therefore, RM4 applies to all RAs, except RA7, RA9 and RA10 (Table 23-4).

Surface preparation for the Project will comprises the return of a growth media (e.g. topsoil), contour ripping to improve water infiltration, rock armouring to assist slope stabilisation (RA3), and if required, soil amelioration to improve fertility and/or reduce dispersion. Surface preparation is outlined in Section 2.6.1.8.3 of **Appendix AB**.

23.9.11.6.5 Revegetation (RM5)

Revegetation is a critical rehabilitation step for establishing the selected flora for the Project PMLUs listed in Section 23.9.11.6.4. Once established, revegetation also aids slope stability, minimises erosion, protects against flood scour, and contributes to the improvement of surface runoff water quality.

The final void - beneficial use water storage and permanent infrastructure – PHES and/or algae production PMLUs do not possess specific revegetation requirements due to their unique nature. Section 23.9.9 details the requirements for these PMLUs.

Section 2.6.1.8 of **Appendix AB** provides the revegetation requirements for the Project, and are categorised into the following management steps:

- Objectives (Section 2.6.1.8.1 of **Appendix AB**)
- Species of conservation significance (Section 2.6.1.8.2 of **Appendix AB**)
- Surface preparation and topsoil quality to support vegetation establishment and management (Section 2.6.1.8.3 of **Appendix AB**)
- Plant species (see Section 2.6.1.8.4 of **Appendix AB**)
- Vegetation establishment and management methods (Section 2.6.1.8.5 of **Appendix AB**)
- Revegetation monitoring (Section 2.6.1.8.6 of **Appendix AB**)
- Revegetation monitoring – analogue reference sites (Section 2.6.1.8.7 of **Appendix AB**)

- Revegetation milestones and objectives – grazing (Section 2.6.1.8.8 of **Appendix AB**)
- Revegetation milestones and objectives – woodland habitat RE benchmarks – RE11.3.25 and RE11.5.3 (Section 2.6.1.8.9 of **Appendix AB**)
- Revegetation milestones and objectives – revised benchmarks – RE11.3.25 and RE11.5.3 (Section 2.6.1.8.10 of **Appendix AB**).

RM5 applies to all RAs, except RA7 and RA9 (Table 23-4).

23.9.11.6.6 Achievement of Surface Requirements (RM6)

Achievement of the surface requirements requires up to 10 years (Table 23-5) because it must allow for the gradual establishment of the required vegetation to their milestone success criteria, which may also be impacted by external factors, such as climatic conditions (e.g. rainfall, drought and extreme weather events), poor nutrient levels, poor seed quality and timing of the rehabilitation activities. As highlighted in Section 23.9.11.6.5, the positive progression of revegetation also assists in the improvement of surface water quality (runoff).

The surface criteria for the Project will be achieved through the successful monitoring of revegetation (Section 2.6.1.8.6 of **Appendix AB**), groundcover establishment (Table 15 of **Appendix AB**), erosion status (Table 17 of **Appendix AB**), surface water (Section 2.8.6.2 of **Appendix AB**) and groundwater (Section 2.8.6.3 of Appendix AB), against their applicable milestone success criteria. This monitoring will be conducted by an appropriately qualified person.

RM6 is a key monitoring phase of the Project's progressive rehabilitation towards closure.

RM6 applies to all RAs, except RA7 and RA9 (Table 23-4).

The Project's rehabilitation monitoring is further discussed in Section 23.9.11.8.

23.9.11.6.7 Achievement of the PMLU and the PMLU Water Quality (RM7, RM8)

Achievement of a stable PMLU and PMLU water quality are demonstrated by positive long-term-monitoring results that when scientifically analysed confirm that the applicable milestone completion criteria are properly established.

RM7 and RM8 are the certification phases of the Project's progressive rehabilitation and allow the eventual progression to closure by demonstrating that the PMLU is safe, stable, non-polluting, sustainable and the associated water quality is acceptable (i.e. surface water and groundwater). This certification is undertaken by an appropriately qualified person. Closure of the Project will be achieved when the PRCP schedule is fully completed and the EA and MLs are subsequently surrendered.

RM7 applies to all RAs, except RA7 and RA9, and RM8 applies to all RAs, except RA3, RA7, RA9 and RA10 (Table 23-4).

23.9.11.6.8 Other Project Rehabilitation Milestone (RM1, RM2, RM9, RM10)

RM1 involves the decommissioning and removal of the Project's infrastructure and is described in Section 23.9.4. RM1 applies to all RAs, except RA1, RA7, RA9 and RA10 (Table 23-4).

RM2 involves the identification, remediation and validation and/or removal of contaminated land in accordance with the requirements of Chapter 7, Part 8 of the EP Act. RM2 only applies to RA4 and RA5 (Table 23-4).

RM9 involves the establishment of the final void as a beneficial water storage PMLU and is described in Sections 23.9.5, 23.9.6, 23.9.6 and 23.9.9. RM9 only applies to RA9 (Table 23-4) and can only be undertaken after the cessation of mining activities.

RM10 involves the establishment of the final void - beneficial use water storage and permanent infrastructure – PHES and/or algae production PMLUs. RM10 only applies to RA7 (Table 23-4) and can only be undertaken after the cessation of mining activities.

23.9.11.7 Risk Management

In accordance with section 126C(1)(f) of the EP Act and Section 3.7 of the PRCP Guideline, the Project's PRCP risk assessment has identified the risks of the planned PMLUs not achieving a stable condition, and has presented how these risks will be managed and minimised. In summary, the Project's PRCP risk assessment confirmed that with the application of the proposed mitigation measures to the assessed risk events, the residual risks would be low to medium. Section 2.7 of **Appendix AB** provides the Project's risk assessment.

23.9.11.8 Monitoring and Maintenance

As outlined in Sections 23.9.11.6.5, 23.9.11.6.6 and 23.9.11.6.7, monitoring of the milestone success criteria for the RMs associated with each of the Project's PMLUs, as outlined in Table 12 of **Appendix AB**, is critical to demonstrating rehabilitation success and certifying that the PMLU is safe, stable, non-polluting, sustainable and the associated water quality is acceptable (i.e. surface water and groundwater).

Monitoring of the milestone success criteria for the RMs associated with each of the Project's PMLUs also allows areas of sub-standard rehabilitation to be identified and repaired, and if required, further investigations to be conducted to identify new methodologies or measures to re-establish rehabilitation success.

The Project's planned monitoring and maintenance regime for progressive rehabilitation and closure is provided in Section 2.8 of **Appendix AB** and comprises the following components:

- Rehabilitation milestone monitoring (Section 2.8.1 of **Appendix AB**)
- Grazing and native vegetation (woodland) monitoring – general requirements (Section 2.8.2 of **Appendix AB**)
- Grazing rehabilitation monitoring (Section 2.8.3 of **Appendix AB**)
- Native vegetation (woodland) monitoring (Section 2.8.4 of **Appendix AB**)
- Native vegetation (riparian woodland) – Conrock Gully PMLU – diversion monitoring (Section 2.8.5 of **Appendix AB**)
- Water quality monitoring – surface water and groundwater (Section 2.8.6 of **Appendix AB**)
- Groundwater level monitoring (Section 2.8.7 of **Appendix AB**)
- PMLU achievement schedule (Section 2.8.8 of **Appendix AB**)
- Data analysis and reporting (Section 2.8.9 of **Appendix AB**)
- Maintenance (Section 2.8.10 of **Appendix AB**)
- Quality assurance and data management (Section 2.8.11 of **Appendix AB**).

23.9.11.9 PRCP Schedule Audits

As required by sections 285-288 of the EP Act, the proponent, as the PRCP Schedule holder, will commission an independent rehabilitation auditor every three years to conduct an audit of the PRCP schedule and submit an audit report four months after the end of the audit period.

23.10 Consultation

23.10.1 Overview

Chapter 3 provides a comprehensive description of the stakeholder consultation process that was undertaken for the Project. This section summarises the consultation findings.

Consultation was conducted with directly affected landholders, potentially affected landholders, the registered native title holder for the land, government agencies, overlapping and neighbouring tenement holders, infrastructure and service providers, community groups and other relevant stakeholders. Consultation will continue into the Project's construction, operational and closure phases.

The consultation process for the Project includes:

- identification of all relevant stakeholders
- consultation with stakeholders prior to, during and post the EIS process, in accordance with the requirements of the terms of reference (ToR), to inform Project development and management
- consultation with the stakeholders as part of the social impact assessment (SIA) (see **Appendix Y)** and PRCP (see **Appendix AB**) for the Project
- fulfillment of all legal requirements for public notification and stakeholder consultation.

The consultation activities typically took place through face to face discussions, phone calls or virtual interviews.

23.10.2 Stakeholders

The following groups were identified for stakeholder consultation:

- landholders – directly affected and adjoining
- government land managers
- government agencies and bodies
- statutory and utility authorities
- local government elected representatives
- Indigenous groups, including native title holders
- rail, port, energy and water infrastructure providers
- health, educational and emergency services
- local community and natural resource management groups
- state and national non-government organisations (NGOs)
- overlapping and adjacent resource tenure holders
- community groups, social service providers and other community representatives.

23.10.3 Consultation Activities

Consultation activities undertaken throughout the Isaac region, with a focus on Moranbah, encompassed a wide range of stakeholders.

The consultation for the Project's SIA gathered diverse insights across key stakeholder groups potentially affected by the Project and Stanmore's longer term presence in the Isaac region. Consultation was undertaken with government agencies, education and training providers, health and social service organisations, local businesses, Traditional Owners, and housing and workforce accommodation providers

The SIA consultation program involved a broad group of stakeholders that complemented engagement undertaken by Stanmore for the EIS. This reflects the need for the SIA to capture detailed, place based information on social conditions, service capacity, workforce dynamics and community wellbeing, which cannot be adequately informed through statutory submission-based processes alone.

In addition to statutory consultation requirements, Stanmore has undertaken proactive, non-statutory engagement to support transparent communication, relationship-building and shared outcomes for the Project. This has included ongoing engagement with Isaac Regional Council, involving early Project briefings, dedicated sessions with Isaac Regional Council executives, and follow-up site visits to discuss Project scope, workforce planning, housing pressures, cumulative impacts and opportunities for long-term regional benefit. Stanmore has also worked collaboratively with the Isaac Regional Council and local partners to explore partnerships and community investment opportunities aligned with Isaac Regional Council priorities for economic diversification, youth engagement and skills development.

Targeted consultation has been undertaken with local landholders, including the owners of Winchester Downs, to facilitate early identification of land use considerations, access requirements and mitigation measures, and to support ongoing dialogue throughout Project planning. This approach reflects Stanmore's commitment to good corporate citizenship by engaging early, listening to stakeholder concerns, and seeking to deliver social, economic and community benefits alongside Project development.

23.10.4 Indigenous Engagement

The BBAC is a key stakeholder for Stanmore and the Project. BBAC holds the native title rights and interests of the Barada Barna People on trust. Consultation with BBAC has primarily been undertaken through the native title agreement process, with Stanmore also engaging with BBAC on other matters, including the PRCP. The 'Right to Negotiate' process under section 29 of the *Native Title Act 1993* for the Project's tenements formally commenced in October 2025 and remains ongoing at the time of EIS submission. The native title agreement is expected to include matters such as employment and business opportunities.

Consultation with First Nations peoples has been undertaken in accordance with the principles of the "Interim engaging with First Nations People and communities on assessments and approvals under the *Environment Protection and Biodiversity Conservation Act 1999*" (DCCEEW, 2023). This includes:

- identifying and acknowledging all relevant affected Indigenous peoples and communities, in particular the Barada Barna People, represented by the BBAC
- committing to early engagement, as evidenced through SIA engagement, native title processes and cultural heritage management (see Section 23.8.6 and **Chapter 20**)
- building trust through early and ongoing communication during the initial and approvals stages for the Project
- setting appropriate timeframes for consultation, including SIA engagement, native title processes and cultural heritage management (see Section 23.8.6 and **Chapter 20**)
- demonstrating cultural awareness, through the development of a cultural heritage management plan (CHMP) (see Section 23.8.6 and **Chapter 20**).

23.10.5 Consultation Findings

Key findings from the consultation program include:

- Positive community sentiment about Project as it extends employment and business opportunities, additional Project information to be provided explaining the transition from IDM to the Project
- There is community desire to encourage workers to live locally.
- A wholly FIFO workforce is not supported, with only a small percentage of the Project workforce likely to be FIFO.
- The community would like to see retention of youth in community with improved training, education, and employment opportunities.
- Mental health amongst residents and non-resident workforce was a common theme.
- Housing affordability for 'non-mining' workforce in local towns (i.e. Moranbah) is a key issue, even with recent increases in rental vacancies.
- Short-term accommodation for visiting services and trades has affordability constraints.
- Emergency services do not expect material change in demand from the Project

- Local partnerships have been formed to address key findings, for example with the Isaac Affordable Housing Trust (IAHT), Childcare Leadership Alliance (CLA), Country University Centre (CUC), Winchester Foundation, with support for partnerships from Isaac Regional Council

These findings were used to inform Project design and the social impact management plan (SIMP) (**Appendix AK**).

The consultation program for the Project has been comprehensive, transparent and responsive, ensuring that stakeholders were informed, engaged and able to contribute meaningfully throughout the EIS process. Engagement commenced early and continued throughout Project development.

23.10.6 Future Consultation, Reporting and Monitoring

Stanmore understands the importance of ongoing consultation through the life of the Project to inform environmental and social performance objectives. In order to achieve this, long term and meaningful relationships with stakeholders is fundamental.

Stanmore will implement the proposed Community and Stakeholder Engagement Plan (CSEP) (a component of the SIMP, as described in **Appendix AK**), which describes:

- stakeholders for ongoing consultation
- types of consultation activities
- timing of consultation
- objectives and outcomes of consultation
- reporting of consultation
- feedback into the Project.

As the needs of the community and stakeholders is fluid over time, the CSEP will be reviewed and updated as required over the life of the Project.

23.11 Economic and Social Matters

23.11.1 Social Impact Assessment and Management Plan

This section provides a summary of the findings of the SIA (**Appendix Y**) and the associated SIMP (**Appendix AK**) for the Project. **Chapter 21** details the findings of the SIA and SIMP, which were prepared in accordance with the Queensland Coordinator-General's Social Impact Assessment Guideline (DSDMIP, 2025) (SIA Guideline).

The SIA is underpinned by extensive and ongoing stakeholder engagement undertaken throughout the preparation of the EIS. Engagement has involved a broad range of stakeholders, including local and regional communities, landholders, government agencies, Traditional Owners, local businesses, service providers and industry representatives. Engagement outcomes have informed the identification of key matters, the assessment of potential impacts and benefits, and the development of targeted management and enhancement measures. Overall, there was positive sentiment for the Project in the community, recognising that it would allow for continuation of mining activities at IPC with associated workforce transition and stability.

A comprehensive assessment of the existing social environment was undertaken to establish a robust social baseline for the Project, with a particular focus on Moranbah being the closest regional centre to the Project, and the wider Isaac local government area. This included consideration of population and demographic characteristics, workforce and labour market conditions, housing and accommodation, local business and industry, and health and community wellbeing. The baseline assessment provides the foundation for understanding community context, sensitivities and opportunities relevant to the Project. Key findings identified through consultation and baseline analysis included affordability of housing (despite increasing vacancy rates), encouragement for more workers living locally, desire for retention of youth in community with improved training and employment opportunities, mental health concerns for residents and non-resident workers, and affordability of short-term accommodation for visiting services and trades.

Potential social impacts and benefits were systematically identified and assessed in alignment with the SIA Guideline key matters. The assessment applied a structured impact significance methodology, resulting in the identification of low and moderate social impacts, and positive social benefits. No high or major residual social impacts were identified. Positive impacts were largely associated with employment stability, economic contribution, workforce participation and local procurement opportunities. The majority of residual social impacts were assessed as low, reflective of the Project being a transition from existing mining activities at IPC to the Project. Moderate residual impacts were assessed for the workforce decline and transition at Project closure, and psychosocial risks associated with non-resident work arrangements.

Project-specific management and benefit enhancement measures have been developed for each key matter and are documented within the SIMP. These measures directly address identified impacts and benefits and also respond to community concern issues raised through engagement, including matters not solely caused by the Project but relevant to cumulative and contextual community outcomes. The SIMP incorporates dedicated management plans covering community and stakeholder engagement, workforce management, housing and accommodation, local business and industry procurement, and health and community wellbeing. Key proposed management measures include housing and funding support for the Isaac Affordable Housing Trust, making surplus Stanmore WAV rooms available for short term accommodation needs for visiting services and trades, and annual contributions to organisations supporting youth and community education, youth support services, childcare resourcing and mental health. In addition, Stanmore will implement policies on subsidies to workers for living locally, local content and procurement strategies, apprenticeships and training, ongoing funding of an annual community grants program, and supporting workforce transition through various stages of Project life.

The SIMP includes targets for Ingenuous employment and business procurement, aligned with the native title agreement with BBAC and Stanmore's reconciliation action plan.

An ongoing process for monitoring, review and continual improvement is embedded within the SIMP and aligned with the Project's broader IPC framework. Management measures will be reviewed and updated over time to reflect monitoring outcomes, stakeholder feedback, changes in Project activities and evolving community expectations. This adaptive approach ensures social impact management remains effective throughout the Project lifecycle.

Overall, the SIA and SIMP demonstrate that social impacts and benefits associated with the Project have been comprehensively assessed, appropriately mitigated and constructively enhanced. Through robust assessment, targeted management measures and ongoing engagement and monitoring, the SIA and SIMP are expected to achieve their intended outcomes and support positive social outcomes for local and regional communities over the life of the Project.

23.11.2 Economic Assessment

This section provides a summary of the findings of the economic impact assessment (**Appendix Z**), with details provided in **Chapter 22.**

The Project's economic assessment was undertaken in accordance with the State Coordinator-General's economic impact assessment guideline including a regional impact assessment and a cost benefit analysis (CBA). These established forms of economic assessment were undertaken to identify the Project's beneficial and adverse economic impacts, develop mitigation strategies for potential adverse economic impacts, and ultimately demonstrate the Project's economic viability.

The regional impact assessment used computable general equilibrium modelling to identify the Project's beneficial and adverse economic impacts on the regional catchment (Isaac and Mackay regional council areas) and Queensland economies (where the majority of economic activity will occur) during construction and operations.

The regional impact assessment identified that the Project would contribute to the regional catchment and Queensland economies by supporting business/industry output, gross product, employment, and employee incomes, both directly and indirectly.

The construction phase is estimated to contribute $17.7 M in gross regional product (GRP) for the regional catchment and $32.9 M in gross state product (GSP) for Queensland. The mining phase is estimated to support an average annual contribution of $106.6 M in GRP for the regional catchment and $198.5 M in GSP for Queensland.

The Project's economic modelling indicates a net increase in regional and State employment generated by the Project of 143 full time equivalent (FTE) jobs during construction (118 FTE jobs in the region plus 25 FTE jobs in the rest of the state) and 259 FTE jobs per annum on average (160 FTE jobs in the region plus 99 FTE jobs in the rest of the state), compared to what would be expected to occur without the Project.

Incomes supported by the Project are estimated to be around $180 - 220 M more per annum in Queensland relative to the base case (i.e. without the Project), with a peak year with $233 M more income, of which 49.7% ($115.7 M) would be captured in the regional catchment. The Project is anticipated to contribute an approximate 0.6% increase to real wages in the regional catchment at its peak year.

The Project will result in various taxation and royalty payments to the Commonwealth and the State. The Project is estimated to provide additional revenues of approximately $965 M over the life of Project operations to the Australian Government, equating to $60.3 M per annum. The Project is estimated to provide additional revenues of approximately $698 M over the life of Project operations to the Queensland Government, equating to $43.6 M per annum.

Over the Project life, the Project will result in minor contribution to economic impacts associated with reduced agricultural production ($1.6 M) and environmental value of the land to be disturbed ($5.2 M). The Project will result in additional mining activities in the regional catchment to supplement and replace the activities of IDM as it winds down production. This supplementation and replacement of IDM's activities will provide an important retention of employment and economic activity within the regional catchment and Queensland economies that would otherwise be lost without the Project. The Project will also result in a continuation of support for local suppliers and contractors, providing additional security and longevity of business incomes and employment in the region.

The Project is expected to result in a minor net increase in the number of workers living locally, with incentivisation to live locally. As a result, the change in overall demand for local property, attributable to the Project, is expected to be negligible. Potential adverse impacts to businesses attributable to the Project from competition for resources, is expected to be negligible. The impact of the Project on exchange rates is anticipated to be negligible.

Overall, the regional economic impact assessment demonstrated that the Project's economic benefits outweigh the costs of the Project.

While the potential adverse economic impacts from the Project are assessed to be negligible to low, Stanmore will continue to monitor and employ strategies to ensure the benefits of the Project to the regional catchment and Queensland are maximised and any potential adverse impacts are minimised. This includes mitigating impacts on agricultural production through compensation, staged mining activities and rehabilitation of the majority of disturbed land to a grazing post mining land use.

To maximise local benefits derived from the Project in a manner consistent with existing policies, Stanmore and its contractors will source labour locally where possible and practical, and provide training opportunities where practical. Stanmore possesses long-standing relationships with local business and an established supply chain for its existing mining activities in the regional catchment. To maximise local benefits derived from the Project, Stanmore and its contractors will continue to support local business by utilising established supply networks and providing sufficient opportunities and information for local business to secure new supply contracts.

While the Project is anticipated to have minimal impacts in terms of additional demand for accommodation and housing in the local area, Stanmore will monitor local accommodation and housing demands placed on the market by its workforce.

These strategies form part of the Project's economic impact assessment and are designed to enhance the potential economic benefits and mitigate the potential adverse economic impacts.

A cumulative economic impact assessment was completed for the Project and other major projects in the regional catchment. There are cumulative benefits associated with higher output, GRP, employment, and household income estimates in the regional catchment and Queensland relative to those presented in the Project's regional impact assessment. Other potential cumulative benefits include increased employment opportunities supporting the retention of labour in the region, increased labour compensation and real wage effects, expansion of local supply chain networks, increased government revenues through taxation and royalties, and enhanced business, consumer, and investor confidence. Potential cumulative impacts may occur; however, the Project's contribution to these cumulative impacts is expected to be negligible to minor as the Project represents a continuation of existing economic activity in the regional catchment and Queensland. This includes impacts on agriculture, competition for labour and labour retention, residential property values, trade-exposed industries through effects on exchange rates, and climate change related economic risks.

The CBA assessed the impacts of the Project compared to a scenario without the Project, to understand the net benefit of the Project. The CBA generates a NPV, with a positive NPV demonstrating that the Project is desirable.

The CBA considers all expected Project revenues and expenses, including capital expenditure. Furthermore, the CBA also includes a 'social cost of carbon' associated with greenhouse gas (GHG) emissions, potential lost agricultural and ecosystem values of the land that will be disturbed, societal costs associated with Project traffic generation, and the increase in employee compensation resulting from additional jobs in the economy.

In valuing the cost of GHG emissions, a social cost of carbon approach was applied using industry recognised methodologies. The total value of the cost of GHG emissions for the Project is estimated to be $325.9 M in present value terms. A range of potential valuations were considered for the cost of carbon, with these supporting the valuation methodology used in the assessment. As demonstrated in the Project's GHG assessment, the Project is anticipated to result in a negligible increase in climate change related economic risks compared to what would be expected to occur without the Project.

The CBA identified, across all discount rates examined (4%, 7% and 10%), that the Project would be deemed economically desirable, with the benefits outweighing the costs. At a 7% discount rate, the Project's modelling delivers a NPV of $653.5 M over the assessment period, with total present value benefits of approximately $3.5 billion compared to aggregated present value costs of approximately $2.8 billion.

A sensitivity analysis of the Project's CBA demonstrated that at a discount rate of 7%, there is a 90% probability that the Project will provide a NPV of between -$60.5 M and $1,294.2 M, with a positive NPV returned for 93% of modelled CBA iterations.

The Project's economic assessment indicates that the required environmental objective and outcomes for economics will be achieved over the life of the Project. Measures will be implemented to enhance benefits and mitigate impacts. Overall, the Project's economic assessment demonstrates that the Project will provide a significant range of positive economic benefits to the regional catchment and Queensland, and is economically desirable, with economic benefits outweighing economic costs.

23.12 Ecologically Sustainable Development

23.12.1 Principles

The following principles of ecologically sustainable development (ESD) are set out in the EPBC Act:

a) Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.
b) If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
c) The principle of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.
d) The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.
e) Improved valuation, pricing and incentive mechanisms should be promoted.

The design, planning and assessment of the Project have been carried out applying the principles of ESD, through:

- incorporation of risk assessment and analysis at various stages in the Project design, environmental assessment and decision-making
- adoption of high standards for environmental, health and safety performance
- consultation with regulatory and community stakeholders
- optimisation of the social and economic benefits to the community arising from the development of the Project.

In addition, it has been demonstrated that the Project can be undertaken in accordance with ESD principles through the application of measures to avoid, mitigate and offset the potential environmental impacts of the Project. The following sections describe the consideration and application of the principles of ESD to the Project.

23.12.2 Precautionary Principle

Environmental assessment involves predicting what the environmental outcomes of a development are likely to be. The precautionary principle emphasises the need to address the threats of irreversible damage, even in circumstances where there is scientific uncertainty about environmental risk.

The scoping of impact assessments considered potential environmental impacts associated with the Project, including long-term effects. Assessments considered potential short, medium and long-term impacts of the Project. Short and medium term impacts are associated with the construction, operational and progressive rehabilitation phases of the Project. Short and medium term benefits of the Project are associated with social and economic benefits. The consideration of long term impacts and benefits included the post mining landform, rehabilitation, decommissioning and post mining land uses to achieve a safe, stable, non-polluting landform, with grazing as the majority land use.

Measures designed to avoid, mitigate and offset potential environmental and socio-economic impacts, and to enhance socio-economic benefits, arising from the Project are described in Section 23.11, and

Chapter 24 and **Chapter 25**, as informed by impact assessments and management plans in **Appendix D** to **Appendix AL,** of the EIS.

Minimal uncertainty regarding the information used in these specialist assessments is expected given:

- the number of site-based surveys and assessments conducted within and surrounding the Project area
- the comprehensive nature of the assessments
- the use of the latest modelling techniques and standards
- the consultation process conducted with key stakeholders (Section 23.10).

A range of measures have been adopted as components of the Project design to minimise the potential for serious and/or irreversible damage to the environment. These include design controls (e.g. mine scheduling, mine design, selection of preferred post mining landform, and use of existing infrastructure at IPC), operational controls (e.g. onsite environmental management measures) and physical controls (e.g. selection of location of infrastructure to minimise impacts), environmental management and monitoring programmes, and provision of biodiversity offsets for significant residual impacts.

23.12.3 Social Equity

Social equity is defined by inter-generational and intra-generational equity. Inter-generational equity is the concept that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations, while intra-generational equity is applied within the same generation.

The principles of social equity are addressed in the EIS through:

- assessment of the social and economic impacts and benefits of the Project, including post mining operations; with social impact management measures designed to mitigate impacts and enhance community benefits
- management measures for the potential impacts of the Project on groundwater resources, surface water resources, terrestrial ecology, aquatic ecology, and social and community well-being
- environmental management and monitoring programmes to minimise and evaluate potential environmental impacts (which include environmental management and monitoring programmes covering the Project's life)
- proposed biodiversity offsets during the life of the Project to compensate for residual ecological impacts.

The Project would benefit current generations through employment. It would also provide significant stimulus to local and regional economies and provide Queensland export earnings and royalties, thus contributing to future generations through social welfare, amenity and infrastructure (see Section 23.6).

23.12.4 Conservation of Biological Diversity and Ecological Integrity

The Project area is located in a largely agricultural landscape, with the majority of the vegetation within and surrounding the Project area cleared for grazing. The Project area comprises agricultural grasslands with areas of remnant vegetation, including woodlands and riparian corridors along the Isaac River and tributary creeks.

Surveys conducted for the Project have identified threatened ecological communities and habitat suitable for conservation significant flora and fauna species (refer to **Chapter 25**). The environmental assessment in **Chapter 25** describes the potential impacts of the Project on ecology. Surveys have been undertaken for potential groundwater dependent assets, including ecosystems and stygofauna. **Chapter 24** describes the potential impacts of the Project on surface water and groundwater resources.

In accordance with ESD principles, the Project addresses the conservation of biodiversity and ecological integrity by proposing environmental management measures designed to conserve ecological values, where practicable, after consideration of potential impacts.

A range of impact avoidance, mitigation and offset measures will be implemented for the Project to maintain or improve the biodiversity values of the surrounding region in the medium to long-term. These measures include the long-term viability of existing vegetation communities (i.e. the Project's biodiversity offset area management plan (**Appendix R**) and rehabilitation of landforms as described in the PRCP (**Appendix AB**).

An offset area management plan has been developed to address the potential residual impacts on biodiversity values associated with the Project, such that biodiversity values of the region are maintained or improved in the medium to long-term. Terrestrial flora, fauna and aquatic ecology management measures, and the biodiversity offset area management plan, are described in **Chapter 25**.

23.12.5 Greenhouse Gas Emissions

The National Greenhouse and Energy Reporting (NGER) scheme, established by the *National Greenhouse and Energy Reporting Act 2007* (NGER Act), is Australia's national framework under which companies are required to report their greenhouse gas (GHG) emissions and energy consumption and production. The objectives of the NGER scheme include informing government policy and helping to meet Australia's international reporting obligations.

In October 2021, Australia set a national net-zero target, while in June 2022 Australia committed to reducing GHG emissions to 43% below 2005 levels by 2030. Alongside these commitments, each state and territory has set their own net-zero target.

Starting on 1 July 2016, the Australian Government introduced a Safeguard Mechanism under the NGER Act. Responsible emitters for facilities that emit 100,000 t CO2-e (carbon dioxide equivalent) or more of scope 1 GHG emissions are required to meet the Safeguard Mechanism requirements, including keeping the facility's scope 1 emissions at or below a set baseline. Should the emissions exceed the baseline, the responsible emitter will be required to 'make good' the excess emissions by surrendering Australian Carbon Credit Units (ACCUs) or Safeguard Mechanism Credits (SMCs) or be liable to a substantial penalty.

The Safeguard Mechanism reforms introduced in 2023 apply a decline rate to facilities' baselines so that they are reduced on a trajectory consistent with achieving Australia's emissions reduction targets of 43% below 2005 levels by 2030 and net zero by 2050. The decline rate will be set at 4.9% each year to 2030. Post-2030 decline rates will be set in predictable five-year blocks, after updates to Australia's Nationally Determined Contribution under the Paris Agreement.

A GHG assessment and abatement plan has been prepared for the Project in accordance with the requirements of the ToR and other regulatory and policy requirements (see **Appendix T**). The assessment shows the total life of mine (LOM) Scope 1, 2 and 3 GHG emissions are estimated to be 82.45 Mt CO2-e, split as follows:

- Scope 1 emissions contribute 1.27 Mt CO2-e with average annual emissions of 0.049 Mt CO2-e, with:
    - stationery diesel combustion and fugitive methane emissions are the largest contributors to total LOM Scope 1 emissions at 0.75 Mt CO2-e and 0.38 Mt CO2-e respectively.
- Scope 2 emissions contribute 0.18 Mt CO2-e, with average annual emissions of 0.007 Mt CO2-e.
- Scope 3 emissions contribute 80.99 Mt CO2-e with average annual emissions of 3.12 Mt CO2-e with:
    - emissions within Australia of 0.89 Mt CO2-e and outside Australia of 80.10 Mt CO2-e.

The Project's combined total Scope 1 and 2 emissions are estimated to represent 0.087% and 0.020% of the remaining Queensland and Australian carbon budgets, respectively, under a pathway consistent with limiting warming to 1.5°C. Under a 2°C pathway, the corresponding contributions are 0.052% and 0.012%. The Project's total LOM emissions (Scopes 1, 2 and 3) are estimated to represent 0.016% of the remaining global carbon budget for 1.5°C warming, and 0.009% for 2°C warming. The Project will therefore make an insignificant contribution to state, national and global GHG emissions budgets.

Stanmore acknowledge Australia's commitment to net zero emissions by 2050 and will continue aligning its decarbonisation efforts with the Australian Government's commitments to contribute to the goal of the Paris Agreement. Consequently, Stanmore has developed a GHG Abatement Plan for the Project, and more broadly is developing a decarbonisation strategy and is investing in decarbonisation projects for the company.

The Project will be a medium to high emitter under the State's Guideline - Greenhouse gas emissions (the GHG Guideline) (DETSI 2026) and has therefore prepared a GHG Abatement Plan (**Appendix T**). The option to avoid emissions production through not progressing with the Project is considered economically undesirable. Stanmore intends to meet the Safeguard Mechanism reduction requirements for the IPC facility, inclusive of the Project, through the following activities to avoid, reduce, substitute, and/or offset emissions where commercially and technically feasible:

- Avoid:
  - Minimising unnecessary clearance of vegetation to minimise emissions during land clearing activities.
- Reduce:
  - Mobile and stationary plant emissions are reduced from the base case through:
    - optimisation of mine layout and operations
    - optimisation of vehicles and processes for energy efficiency
    - replacement of diesel with premium diesel.
  - Staff are engaged in energy efficiency and emissions reduction.
- Substitute:
  - Use of an electrically powered dragline as preferred option for overburden removal, thereby reducing diesel consumption for equipment that would otherwise be used for overburden removal.
  - Emissions due to electricity usage will be minimised through:
    - purchase of renewably generated electricity through a Power Purchase Agreement where this is cost effective
    - onsite renewable electricity generation.
- Offset:
  - SMCs will be surrendered against Project emissions above baseline where this is the most economic use of them.
  - Purchase and surrender of ACCUs generated in Queensland where feasible and cost-effective, and in the rest of Australia.

The gas content of the Project's coal seams has been demonstrated to be very low, and therefore pre-drainage of coal seam gas (CSG) and flaring or combustion to produce electricity is unlikely to be technically and commercially feasible.

The measures that Stanmore are undertaking to reduce diesel use through efficiency measures will be reflected in a reduction in both Scope 1 and Scope 3 emissions. Scope 3 GHG emissions associated with the transport of product coal, are expected to reduce as contracted companies meet their published emission reduction goals.

Stanmore commits to a process of continuous improvement informed by engaged staff, monitoring, evaluation, and research. They will continue to build on its current commitments including electric dragline, use of premium diesel, replace light vehicles with battery electric vehicles (BEV) or hybrid, and solar powered crib hut. Potentially feasible decarbonisation initiatives requiring further assessment over the Project's life include electric excavator, dual fuel technologies in haulage fleet and BEV haul trucks. New and emerging technologies will be considered as they evolve.

Stanmore will report on its emissions and emissions reduction targets through the annual NGER and Safeguard Mechanism process and through Stanmore's annual Sustainability Report.

The Project will result in socio-economic benefits to the region and state. With the proposed GHG abatement measures proposed for the Project, as well as other socio-economic measures to management benefits and impacts from the Project, the Project will be compatible with Queensland's Human Rights Act 2019. By following the requirements of Commonwealth legislation on managing GHG emissions, the Project will not impact the GHG emissions targets set at national level.

23.12.6 Valuation

One of the common broad underlying goals or concepts of sustainability is economic efficiency, including improved valuation of the environment. Consideration of economic efficiency, with improved valuation of the environment, aims to overcome the under-pricing of natural resources and has the effect of integrating economic and environment considerations in decision making, as required by ESD. While historically, environmental costs have been considered external to project development costs, improved valuation and pricing methods attempt to internalise environmental costs and include them within project costing.

The Project's economic cost benefit analysis (see Section 23.9.2) includes 'external' Project costs and benefits including a social cost of carbon, lost agricultural value (for which compensation will be incorporated into landholder agreements), reduction in ecosystem values, societal costs associated with Project traffic generation, and the increase in employee compensation resulting from additional jobs in the economy. Even with these 'external costs' and benefits, the Project delivers a positive value.

Without the Project there would be a reduction in gross regional product, gross state product, full time equivalent jobs, support for local business and government revenue. Based on the economic assessment the benefits of the Project outweigh the costs.

23.13 Objects of the EPBC Act

The Project is considered to be generally consistent with the objects of the EPBC Act, because it:

- incorporates a range of measures for the protection of the environment, including listed threatened species and ecological communities (**Chapter 25**), and water resources (**Chapter 24**)
- incorporates relevant ESD considerations
- includes a proposal for offset of residual impacts to biodiversity, and other compensatory measures to promote the conservation of biodiversity
- includes the involvement and participation of the community and landholders through the consultation program, the public exhibition of the EIS and assessment of the Project's social impacts and benefits
- would not result in a significant impact on migratory species protected under international agreements
- is not predicted to result in a significant impact on surface water or groundwater resources (**Chapter 24**)
- results in social and economic benefits, with social impacts managed through the SIMP
- includes employment and business supply chain opportunities for people of Aboriginal and/or Torres Strait Islander descent.

23.14 Conclusion

This EIS has been prepared in accordance with the ToR. The EPBC Act controlling provisions for the relevant MNES to be assessed for the Project are:

- Listed threatened species and communities (sections 18 & 18A); and
- A water resource, in relation to coal seam gas development and large coal mining development (sections 24D & 24E).

The potential impacts of the Project on the relevant MNES have been assessed in this EIS. Assessments comprised desktop research and field based surveys, undertaken specifically to inform the EIS supplemented by other publicly available data, and modelling utilising that latest standards. The Project's impacts on the relevant MNES were assessed by experienced professionals in each relevant environmental discipline. Impacts were assessed for the Project and cumulatively with other regional resource projects, including IPM and IDM. Mitigation and management measures have been proposed to avoid or reduce impacts on MNES, through a combination of mine planning, maximising the use of existing IPC infrastructure, site environmental management, and integration with existing environmental management systems at IPC. Assessments of the significance of impacts on MNES have been undertaken in accordance with the relevant Commonwealth significant impact guidelines, which concluded that the Project:

- would have significant residual impacts on the Poplar Box on alluvial floodplains threatened ecological community (TEC), Brigalow (*Acacia harpophylla* dominant and co-dominant) TEC and habitat for the Koala, Greater Glider, Squatter Pigeon and Ornamental Snake
- would not have significant impacts on surface water resources
- would not have significant impacts on groundwater resources, including groundwater dependent ecosystems (GDEs) and stygofauna.

An offset area management plan has been developed to offset significant residual impacts to MNES.

As the operator of IPC and other mines in the Bowen Bassin, Stanmore continues to build solid relationships with local and regional communities. Stanmore engages with the community through multiple social investment programs, including a community grants program.

The Project is predicted to provide substantial economic benefits to the local region, Queensland and Australia. Approximately 300 - 400 people will be employed during operations with additional indirect employment created in the region and throughout Queensland. The Australian Government will receive significant direct and indirect tax revenue from the Project (forecast $965 M), and the Queensland Government will obtain substantial royalties from the Project (forecast $698 M).

The Project will mine an additional 46 Mt majority metallurgical (steel making) coal over 15 years (approximately 2 – 4.5 Mtpa) thereby providing medium to long term employment and economic benefits. The Project will require approximately $190 M of capital expenditure.

The proponent will implement workforce management measures for the Project which, in conjunction with the continuation of mining operations IPC, will provide social and economic benefits to the community. Stanmore actively seeks to engage local and regional contractors and suppliers for mining related services, and this will continue for the Project.

The Project's social and economic benefits, as a proposed majority metallurgical coal producer within the Bowen Basin mining region, outweigh the mitigated social and environmental impacts of the Project.

This EIS demonstrates that the Project can be undertaken in an environmentally acceptable manner, subject to the proposed management and monitoring measures. The Project would be subject to comprehensive conditions of approval from Commonwealth and State regulators. The Project can be undertaken in accordance with the principles of ESD and the objects of the EPBC Act.

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