
Appendix J

Response to draft PER submissions

Response to draft PER submissions

J.1 Introduction

The draft Public Environment Reports (PERs) for the Hunter Valley Operations (HVO) North Action and HVO South Action were placed on public exhibition for a period of 30 business days, from 5 May to 17 June 2026, in accordance with the requirements of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Hard copies of the draft PERs were made available for public inspection at Singleton Library, Muswellbrook Library and the State Library of New South Wales (NSW) in Sydney. Electronic copies were also made available on the HVO website (www.hvo.com.au).

This appendix has been prepared to summarise the comments raised in submissions received during the public exhibition of the draft PERs and how those comments have been addressed. It documents the issues raised in each submission, provides HVO's response to those issues, and identifies where additional information, clarification or amendments have been incorporated into the PER.

J.2 Summary of submissions

A total of seven submissions were received during the public exhibition period of the draft PERs. Of these seven submissions, four submissions (57%) were received from individual members of the public and three submissions (43%) were received from organisations and stakeholder representatives being:

- Lock the Gate Alliance
- Hunter Environment Lobby
- Mr Scott Franks, on behalf of the Plains Clans of the Wonnarua People.

The submissions raised a range of matters relating to the HVO South and HVO North Action and the supporting draft PER documentation. Across the seven submissions, 73 individual issues were identified and categorised into six key themes. Water resources represented the most frequently raised issue, accounting for approximately 41% of all matters raised, followed by biodiversity (27%) and climate change and GHG emissions (21%). Collectively, these three themes represented approximately 89% of all issues raised during the exhibition period.

The number of the key issues raised in the submissions by category is presented in Table J.1.

Table J.1 **Number of key issues raised**

Issue category	Number of issues	Percentage of total issues
Water resources	30	41.1
Biodiversity	20	27.4
Climate change and GHG emissions	15	20.5
Assessment framework	6	8.2
Mine closure and rehabilitation	1	1.4
Stakeholder engagement	1	1.4
Total	73	100

J.3 Summary and response to submissions

All issues raised in the submissions have been reviewed and considered by HVO. Summaries of the key issues raised in submissions and a response, is provided in the sections below. A submission register outlining what specific issues were raised in the submissions and where they have been addressed are detailed in Section J.4.

J.3.1 Water resources

i Groundwater impacts

Concern that the Project will adversely affect groundwater resources, groundwater dependent ecosystems, connected surface waters and associated environmental values through groundwater drawdown and altered hydrological processes.

Assessment overview

Consistent with the recommendations of the Independent Expert Scientific Committee (IESC) *Information Guidelines Explanatory Note: Using impact pathway diagrams based on ecohydrological conceptualisation in environmental impact assessment* (2024), the approach to assessing potential impact on water resources and water-dependent assets adopted an integrated approach that considered the interconnections between groundwater, surface water and ecological values. The study brought together findings from hydrogeological, hydrological and ecological investigations to identify and evaluate potential impact pathways from Project stressors to environmental receptors. This integration of multiple technical disciplines aligns with the IESC's recommendation that ecohydrological conceptualisation and impact pathway analysis be used to provide clear lines of sight between Project activities, hydrological change mechanisms and ecological outcomes. The studies have been informed by extensive temporal and spatial groundwater, surface water, ecological and geochemical monitoring and historical assessments for the existing mining operation at HVO.

Evaluation of potential groundwater impacts has been informed by predictive groundwater modelling that commenced in 2020 and has undergone two peer reviews and assessment by the NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW). The modelling and assessments have been conducted in accordance with the requirements of the IESC explanatory notes (including uncertainty analysis for groundwater modelling (Peeters and Middlemis 2023)), PER Guidelines, NSW Government (including State significant development (SSD) guidelines), *NSW Aquifer Interference Policy* (AIP), and *Australian Groundwater Modelling Guidelines* (Barnett et al 2012).

Carrington West Wing low permeability barrier wall mitigation measure

Construction of the Carrington West Wing (CWW) low permeability barrier wall (LPBW) is a commitment and requirement under the existing HVO North development consent (Development Consent DA 450-10-2003, as modified) and remains an important control to mitigate and limit drawdown in the Hunter River alluvium. The timing, construction and location of the CWW LPBW has been discussed with the NSW Government as part of the NSW approval process. HVO proposes construction of the CWW LPBW prior to mining within 100 metres (m) of the remnant western arm of the paleochannel in connection with the Hunter River (currently assumed to occur in around Mining Year 8).

As discussed in Section 12.3 of the *Water Resources Impact Assessment* (WRIA) report (EMM 2026c), Timms et al (2013) conducted a study on LPBWs used in mining across Australia and internationally, including the different types of barrier wall types, design and construction. The study lists the importance of:

- Characterisation of site conditions: Extensive drilling and hydrogeological characterisation of the paleochannel area has been conducted as part of earlier investigations and assessments (MER 2003, 2010). Additional drilling will be conducted to install additional monitoring bores, as agreed and approved by relevant NSW Government agencies.

- Design considerations: Considering preferential pathways such as through fractured and weathered rock; hydraulic, geomorphic and seismic stability; risk from blasting; and the bentonite/grout/clay/slurry mix. The aspects will be considered as part of the LPBW design, also meeting the requirements of the NSW Government and as listed in the HVO North development consent.
- Construction: With consideration of Australian Standard (AS) 3798-2007 and site-specific quality assurance and quality control measures.
- Testing and monitoring (before, during and after construction): Including consideration of maintenance, and possibly repair, that may be required through the mine life, and post closure of the site. This will be captured in the LPBW management plan discussed in the Section 12.6 of the WRIA.

HVO has successfully constructed two LPBW's at the HVO Complex (Alluvial Lands in 1995 and Carrington Pit in 2010) in accordance with design requirements by the NSW Government, with design and construction by appropriately qualified and experienced engineers and contractors.

Condition 23 of the HVO North development consent lists specific design requirements for the CWW LPBW, including:

- detailed design by a suitably qualified and experienced expert(s)
- the design endorsed by the NSW Government prior to construction
- the design achieves the relevant performance measures including:
 - applicable permeability of 10^{-8} metres per second (m/s) or less
 - applicable AS 3798-2007
 - hydraulic, geomorphologic and seismic stability which will withstand any blasting-related vibrations, mining operations, fluvial and weather events, decay corrosive and biological attack.

Consistent with the approaches for the Carrington and Alluvial Lands LPBW's, the Carrington West Wing LPBW will be conservatively designed, through consultation with relevant NSW Government agencies, and constructed to meet the consent requirements.

Historical monitoring in the Carrington Pit alluvium and Alluvial Lands remnant alluvium (near the existing LPBW's), shows groundwater levels and salinity have been relatively stable, except following high rainfall and/or streamflow events when levels fluctuate due to infiltration or interaction with the Hunter River. There is no indication of deterioration of either LPBW.

The proposed Carrington West Wing LPBW is an accepted, industry standard, engineered mitigation approach.

Potential groundwater drawdown induced impacts

Section 9 of the WRIA discusses potential impact on water-dependent assets, including groundwater dependent vegetation, aquatic ecological communities and aquatic ecology. Potential impacts on streamflow due to groundwater drawdown is discussed in Section 7.3 of the WRIA and in the *Surface Water Impact Assessment* (SWIA) (Engeny 2026). The outcomes of the assessments are described below.

- Impacts on groundwater dependent ecosystems (GDEs):
 - Groundwater modelling predicts negligible incremental drawdown in the Hunter River alluvium near the riparian river red gum sites, with drawdown very unlikely to exceed 0.2 m and no dewatering of the alluvium is predicted. The cause of the drawdown relates to the extended mining duration compared to what is currently approved under the HVO North development consent. The small area of drawdown is due to an increased downward vertical gradient between the alluvial watertable and the Permian potentiometric surface, rather than lateral movement across the LPBW.
 - 0.2 m of cumulative alluvial drawdown (50th percentile) is predicted in the Carrington Billabong and river red gum vegetation area. This is a cumulative effect that includes effects from regional and historical mining.
 - The alluvial aquifer is predicted to remain saturated as downward leakage of water through the bed of the Hunter River will maintain aquifer saturation. Therefore, incremental impacts from the Project on stygofauna communities are predicted to be minor.
 - The western arm of the paleochannel will be mined during the excavation of Carrington West Wing as part of approved operations. This will have an impact on the local stygofauna community in the paleochannel, as they will not be able to migrate out of the impact area prior to excavation. However, this impact is already approved as part of Carrington West Wing extension (HVO North Mod 3, MER 2010).
 - During periods of drawdown, river red gum stands and Central Hunter Ironbark Grassy Woodland vegetation will continue to have access to shallow alluvial groundwater. In addition, the Project is predicted to have a negligible impact on Hunter River flow and flooding regime. Therefore, river red gum stands will continue to rely on flooding for germination.
 - The *Aquatic Ecology and GDE Assessment* (ELA 2025) demonstrates that the predicted variation in the watertable will not prevent the long-term viability of the ecosystem in the study area, outside of the mining area and no significant impact on groundwater dependent vegetation or stygofauna communities is expected due to the Project.
- Impacts on streamflow:
 - The Project has the potential to impact streamflow due to changes in catchment runoff and changes in surface water-groundwater interaction. Engeny (2026) used the groundwater model (EMM 2026b) predicted changes in surface water-groundwater interaction to inform the streamflow impact assessment. Engeny (2026) combined the 50th percentile predicted peak change in baseflow and river leakage values to calculate a net loss from the surface water system.
 - Generally, the predicted change (90th percentile) in baseflow and river leakage is minor to negligible, when compared to the average annual streamflow reported (Engeny 2026).
 - The predicted change in streamflow is negligible for the Hunter River and Wollombi Brook, and minor for the ephemeral tributaries. Modelling indicates the Project will result in reduced operational impacts to Wollombi Brook streamflow compared to the approved operations due to no changes to catchment area and reduced baseflow losses (that is, it is a positive change).
 - Potential impacts on surface water downstream users, including basic landholder users will be negligible.

- Impact on aquatic ecology:
 - As the streamflow assessment shows negligible to minor changes in streamflow and the duration of dry days (i.e. low flow periods) due to the Project, potential impacts on aquatic ecology will be negligible.
- Impact on third-party bores:
 - Three bores were identified as having 'likely' or 'very likely' likelihood of watertable drawdown exceeding 2 m. However, one of the bores (GW080516) is a test bore at Wambo Colliery; one is dewatering bore at Ravensworth Operations, owned by Glencore (GW080725) and the third is a stock bore at Wambo mining-owned land (GW017798).
 - The Project is not predicted to have a significant drawdown impact at third-party bores.
- Groundwater take:
 - HVO holds sufficient entitlement to account for the predicted groundwater take over the Project life and beyond in most water sources. Where the indirect take is predicted to exceed HVO's existing entitlement in the Jerrys Water Source (4 megalitres per year (ML/yr) during operations and up to 26 ML/yr post-mining), HVO will either apply to convert sufficient existing unregulated river entitlements to aquifer entitlements or purchase additional entitlement required via the open market to account for the small predicted indirect take, prior to the take occurring.
 - There is adequate share entitlement within the Jerrys Water Source for the predicted take. In addition, the Hunter Unregulated and Alluvial Water Sharing Plan allows for trade (permanently and temporarily) into the Jerrys Water Source from several (17) other upstream water sources. This demonstrates there is sufficient entitlement within the water source and upstream water sources for HVO to obtain additional entitlement via the open market, if needed.

The studies predict the potential for the Project to have a significant impact on water resources, including water-dependent assets, is minor to negligible.

ii Groundwater modelling and assessment methodology

Concern that groundwater modelling contains inconsistencies, uncertainties and assumptions regarding hydrogeological processes that may underestimate Project impacts and require further justification and validation.

Modelling process

The groundwater modelling for the Project has been conducted in accordance with the *Australian Groundwater Modelling Guidelines* (Barnett et al 2012) and IESC explanatory notes, including *Uncertainty Analysis for Groundwater Modelling* (Peeters and Middlemis 2023).

The groundwater model and associated predictions conducted to support the PERs is based on the model designed and developed to support the State approval process (EIS and Amendment reporting). Consistent with the *Australian Groundwater Modelling Guidelines* (Barnett et al 2012), the HVO groundwater model is not fixed in time and is a tool that is refined over time as new hydrogeological information (including monitoring data) becomes available.

Figure J.1 illustrates the groundwater modelling and assessment process for the Project, which started in 2020 to support the State approval process with refinement made to predictions to respond to NSW Government requests for information (RFIs) and adjustments to the mine plan. Studies for the Commonwealth PERs commenced in early 2025 and included updated history-matching, as part of HVO's commitment to revisions and updates to the model over time as outlined in the HVO Water Management Plan.

The groundwater modelling conducted for the Project is robust and follows industry-standard methods. The groundwater modelling has undergone peer review by Chris Strachotta at Kohn Crippen Berger who deemed that the model objectives were satisfied and that the model is fit for purpose where the purpose is to assess potential groundwater impacts as a result of the Project development.

Conceptualisation of the alluvium and representation in the groundwater model

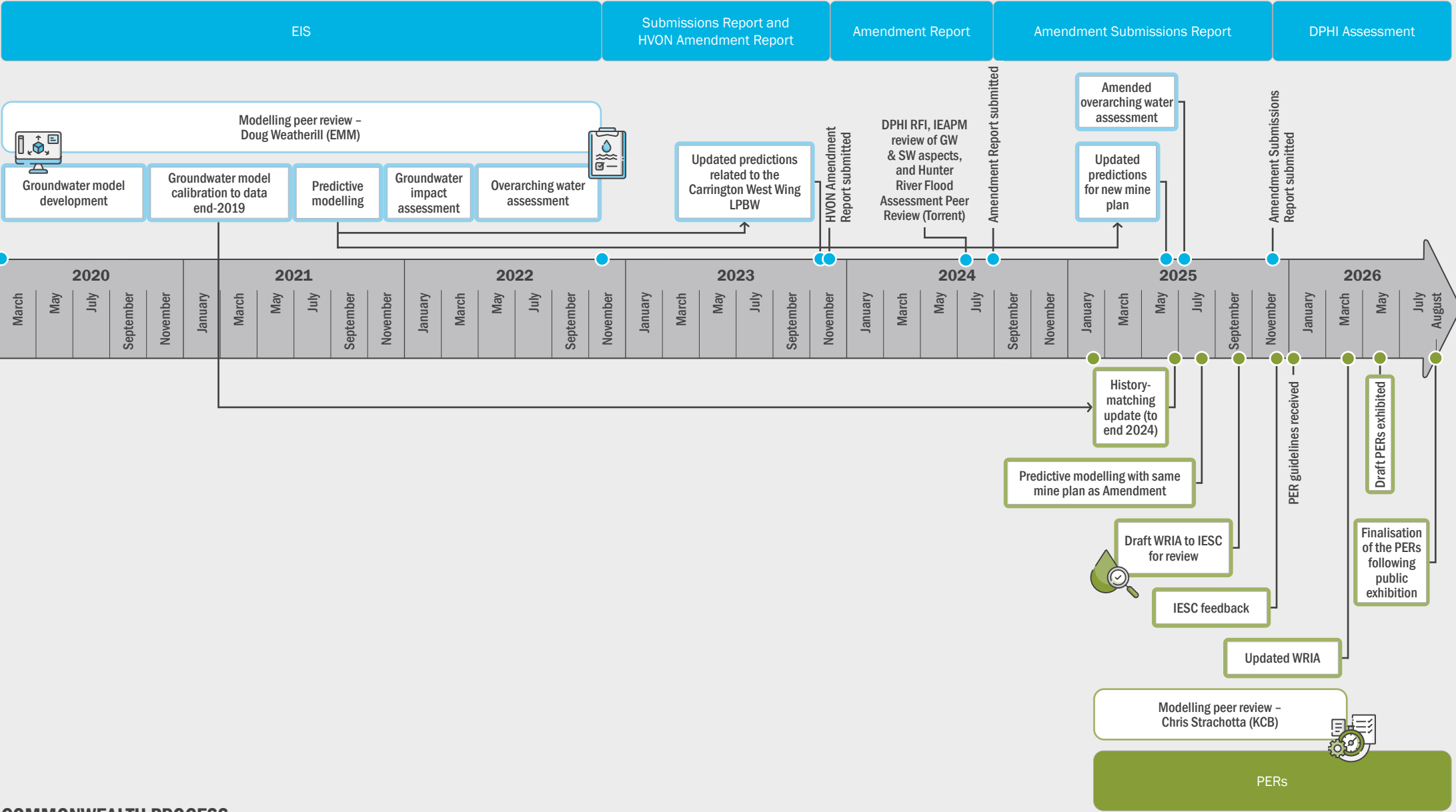
The conceptual understanding of the hydrogeological setting at HVO and in the study area is described in Section 4 and 5 of the WRIA.

Groundwater levels and flow direction in the alluvium are largely controlled by surface topography and surface water flows. Analysis completed by AGE (2022) shows a strong connection between alluvial groundwater level trends, climate and streamflow. This observation is supported by observations provided in HVO's Annual Reviews and by groundwater level monitoring at NSW Government monitoring bores in the area.

The conceptualisation and modelling is not based on explicit hydraulic disconnection between the alluvium and Permian sediments. Groundwater level monitoring shows the potentiometric surface in the Permian is generally lower than the alluvial watertable (downward gradient from the alluvium to the Permian units) due to historical mining in the area. Therefore, there is expected to be downward leakage from the alluvium to the Permian units that will be limited by hydraulic properties of the regolith and interburden. Mining-induced drawdown is generally not evident in the alluvial groundwater level monitoring data, due to the strong hydraulic connection with the surface water flows and infiltration of rainfall.

As shown in Figure 4.14 of the *Groundwater Modelling* report (Appendix E, EMM 2026d), measured data from 2004 to 2024 show differing trends between the shallow alluvium and deeper depressurised Permian units, which is well replicated by the model. This is significant for the predictions of the model as, discussed in Section 5.3.1 of the *Groundwater Modelling* report, the alluvium is predicted to continue to experience a buffering capacity against mining-induced drawdown.

NSW DPHI PROCESS



COMMONWEALTH PROCESS

Figure J.1 Groundwater modelling and assessment process flow chart

Climate change considerations

The potential effects of climate change have been considered as part of the groundwater modelling and described in Section 3.5.2 of the *Groundwater Modelling* report (Appendix E, EMM 2026d). For conservatism, the high-emissions scenario representative concentration pathway (RCP) 8.5 was adopted. A climate change scenario was run with rainfall 15% lower than yearly historical average and evapotranspiration 15% higher than yearly historical average (in the base realisation). The net result is a lowering of groundwater levels under climate change, with variable magnitude depending on location and depth.

As described in the WRIA (EMM 2026c) and SWIA (Engeny 2026), the Hunter River is a regulated system, with streamflows controlled by releases from Glenbawn Dam. Priority of access to water during low flow and drought periods is a function of the rules of the water sharing plans that establish the water sharing priorities. These rules are developed specifically to manage cumulative impacts on water sources during low flow and drought periods, including cease-to-pump provisions and reductions in water allocations via available water determinations. Water sharing plans are developed to give effect to the water management principles set out in Chapter 2 of the NSW *Water Management Act 2000* (WM Act), including prioritisation of the protection of the water source and its dependent ecosystems and basic landholder rights.

As mentioned above, the alluvium is conceptualised and predicted to be buffered against mining-related drawdown due to leakage from the Hunter River dominating over downward leakage losses to the deeper Permian units. Explicit consideration of whether this outcome would remain valid in times of severe drought has not been included, as it was not a requirement of the modelling. However, the historical period of the model provides some valuable context to evaluate effects during drought periods.

A review of rainfall trends shows:

- rainfall was below average between 2000 and 2006
- a wetter period followed between 2007 and 2016
- a significant drought was recorded between 2016 and 2019
- rainfall has been above the long-term average since 2020 through to the end of 2025.

The model history-matching period spans both drought conditions and periods of above-average rainfall, enabling the model to be tested across a wide range of hydrological stresses. This provides confidence that the model appropriately represents key hydrological and hydrogeological processes and can generate reliable long-term predictions under varying climatic conditions.

NOTE: the *Aquatic Ecology and GDE Assessment* (ELA 2025) reported drawdown of 2 m south of Carrington West Wing LPBW. This is a typographical error and should read 0.2 m, consistent with Figure 5.5 of the *Groundwater Modelling* report (EMM 2026d) and as discussed in Section 9 of the WRIA (EMM 2026c).

Concern that the Project presents an unacceptable risk of groundwater contamination, contaminant seepage and degraded surface and groundwater quality associated with mining infrastructure, flooding and long-term mine water management.

Contaminant seepage

Sections 7.4, 8.5 and 10.5 of the WRIA discusses the potential impact on surface water and groundwater quality. Regarding potential contaminant seepage from HVO impacting and degrading surface water and groundwater quality, the following have been considered amongst other things:

- Potential for seepage from mining areas backfilled with overburden and interburden material to the alluvial watertable and Hunter River, evaluated using outcomes from the groundwater model, site observations and geochemical characteristics reported by EGi (2022).
- Changes to groundwater salinity (e.g. freshening) in the Hunter River alluvial aquifer, evaluated using observations from ongoing monitoring at the existing operation and consideration of change in groundwater flow directions predicted by groundwater modelling.

Groundwater modelling has been used to evaluate risk to groundwater resources from contaminant seepage through advective particle tracking. Particles were released at the watertable in early 2046 at regular spacing between HVO North and HVO South, targeting the backfilled and tailings areas, and tracked to the end of the modelled recovery period (3,000 years). 50 realisations were randomly selected for particle tracking, and the results are presented in Figure 5.14 of the modelling report (note that the particle traces are 3-dimensional, moving downwards as well as laterally). The risk of seepage from the backfilled mine areas migrating through the existing and proposed LPBW towards the Hunter River alluvium is considered negligible.

The predicted increasing lake salinity at the voids will not pose a risk to highly connected surface water sources, shallow groundwater or associated receptors, as:

- there is negligible risk of spilling from the pit lakes to the surface water environment
- the pit lake levels will remain below the base of the alluvium and base of weathering
- the voids will remain permanent sinks, creating a hydraulic gradient from the backfilled mine areas towards the voids.

Density variations in groundwater caused by elevated salinity can influence groundwater flow directions by creating hydraulic gradients that arise from differences in fluid density. To account for these effects and compare hydraulic heads within such variable-density environments, hydraulic head measurements were converted to equivalent freshwater head, which provides a consistent reference frame for interpreting groundwater flow. To reverse the hydraulic gradient and direct seepage towards the Hunter River, the Carrington Void pit lake would need to have a salinity much greater than 600,000 milligrams per litre (mg/L) total dissolved solids (TDS) and capture a larger catchment of surface water to result in a much deeper pit lake. Therefore, the likelihood of that occurring is negligible.

The Carrington Pit Void is an approved void under the HVO North development consent. The planned elevation of the void is also consistent with that approved under the HVO North development consent.

The final voids at HVO North and HVO South are predicted to be terminal sinks, with particles flowing towards, and terminating at, these locations.

In 2022, AGE conducted sensitivity analysis to evaluate if changes to the hydraulic properties and high recharge rates to the in-pit mine spoils at HVO could result in groundwater flow within the backfilled mine areas migrating towards the Hunter River alluvium rather than towards the voids. A number of model scenarios were run with the hydraulic conductivity and storage properties of the spoil reduced and the rainfall recharge rate increased to enhance watertable mounding within the backfilled pit areas.

The outcomes of the sensitivity analysis (AGE 2022) predicts that the voids remain strong sinks and dominate the groundwater flow direction. The study found that the risk of seepage from the backfilled mine areas migrating through the existing and proposed LPBW towards the Hunter River and alluvium is negligible (AGE 2022).

There is therefore a low potential for a shallow watertable to form within in-pit spoils and migrate to the Hunter River alluvial aquifer.

The IESC Advice raised the potential for preferential pathways to the Hunter River and associated alluvium, via remnant paleochannels, which are not accounted for in the groundwater modelling (advice number 13). The IESC notes that dilution effects are likely to occur between the backfill and the alluvium, and between the alluvium and Hunter River, but may not be effective in reducing risk if the seepage volume is higher than predicted. This is discussed in Section 8.5.2 of the WRIA, noting that various field studies have been conducted since approximately 1999 to investigate and delineate the paleochannel including drilling and hydraulic tests. As part of detailed design of the CWW LPBW, HVO will review field investigations conducted in the past and implement field investigations to fill data gaps and conceptual uncertainties as needed. In addition, the approved but not yet constructed LPBW will be designed and constructed to key into Permian strata (interburden or overburden) adjacent to and below the alluvial sediments.

The potential for seepage to the alluvial aquifers from active tailings storage facilities (TSFs) is low as tailings stored at West Pit will be stored below the base of weathering and alluvium, if present, or a seepage assessment will be undertaken prior to deposition to prevent seepage and overtopping. In addition, the active mining areas will act as groundwater sinks during mining.

Regarding the North Void TSF, HVO has been implementing seepage control measures through pollution reduction programs with the NSW Environment Protection Agency (EPA). In addition, the North Void TSF is being progressively decommissioned, which will include capping typical of tailings storage facilities once decommissioned. Therefore, ongoing and increased seepage from the North Void TSF is unlikely.

As outlined in the PERs, HVO proposes to improve the flood protection levee for the North Void TSF (up to 0.1% Annual Exceedance Probability (AEP)) as per HVO's operating standards. Submissions mention flooding under the Extreme Event, which Engeny (2026) deemed to be the maximum flood likely to occur by scaling the 1% AEP design flood. The Extreme Flood for the HVO flood model was defined as a ratio of 4 (i.e. multiplying the 1% AEP by a factor of 4). The risk of flood inundation of the North Void TSF during operation or post closure is very low.

Figures in the flooding assessment (Engeny 2026) show changes in flood hazard rating (consistent with *Australian Rainfall Runoff: A Guide to Flood Estimation*, Ball et al 2014) under the Extreme Event and shows there are no broadscale changes to flood hazard categories forecast due to the Project. The location of all levees has been optimised to minimise encroachment. As the residual impacts have been shown to be of small magnitude, the levees are compatible with the hydraulic function of the land. All levees have been designed specifically for management of flooding and are appropriate for the flood hazard of the land.

Salinity and the Hunter River Salinity Trading Scheme

As discussed in Section 4.6 of the SWIA (Engeny 2026), all discharges from the HVO Complex are expected to occur under the Hunter River Salinity Trading Scheme (HRSTS) and existing EPL conditions. Under the HRSTS, releases can occur during periods of high streamflow. The water balance model predicts the Project will, on average, utilise 19% to 52% of the average total allowable discharge opportunities during operations. The Project does not fully utilise the average allowable discharge opportunity as the operating rules established in the water balance model prevent releases from occurring when there are low inventories on site (Engeny 2026).

Engeny (2026) calculated the potential change to water quality in the Hunter River due to licensed discharge via the HRSTS, using the conservative dilution ratio of 80:1 (Hunter River flow 80 times larger than discharge volume). This calculation included observed water quality concentrations in the Hunter River upstream of the HVO Complex, which includes water quality effects from upstream mining discharges and other activities.

Following mixing, water quality concentrations in the Hunter River are generally predicted to remain below the observed 80th percentile background concentrations. All mixed concentrations were found to remain below the 95th percentile background concentrations indicating that the expected water quality is within the existing natural range of the Hunter River.

Therefore, discharge under the HRSTS is not expected to have an adverse effect on surface water quality or social and environmental values.

Every 10 years a statutory review of the HRSTS is conducted, with the last being conducted between 2013 and 2016. The next review of the scheme is to be completed in 2026. Although the focus of the HRSTS is on managing salinity within the river, the Hunter Catchment Salinity Assessment (EPA 2013) also considered how different analytes might have an influence on the ecological health of the river.

HVO will continue to operate within the requirements of the HRSTS and EPL conditions.

iv Water resources and water security

Concern that the assessment has not adequately characterised the Project's impacts on regional water resources, water security, cumulative catchment values and the long-term availability of surface water and groundwater resources.

Streamflow impacts and water security

Potential impacts on streamflow and downstream users have been assessed as part of the SWIA (Engeny 2026) and summarised in Section 7.3 of the WRIA.

HVO's surface water take is in accordance with the rules of the relevant water sharing plans and the conditions of its water access licences (WALs). Water sharing plans are developed to give effect to the water management principles set out in Chapter 2 of the WM Act, including prioritisation of the protection of the water source and its dependent ecosystems and basic landholder rights. Water sharing plans set annual extraction limits to ensure that water extractions do not increase and therefore erode the water for the environment and also the security of supply to water users.

Priority of access to water during low flow and drought periods is a function of the rules of the water sharing plans that establish the water sharing priorities. These rules are developed specifically to manage cumulative impacts on water sources during low flow and drought periods, including cease-to-pump provisions and reductions in water allocations via available water determinations.

Extension of mining operations into the 2040s does not increase HVO's licensed extraction above volumes already assessed and authorised by their WALs, and any associated impacts on downstream users have been assessed against the rules of the water sharing plan, which are structured specifically to prevent impacts to the water source, its dependent ecosystems, basic landholder rights and other licensed water users.

On site water management prioritises reuse of coal contact and sediment-laden runoff ahead of extractions from the Hunter River. The capture and use of runoff from the mine site is undertaken in accordance with the exemptions provided under the NSW Water Management (General) Regulation 2025 and are not required to be licensed. Runoff arising from hardstand and disturbed mine-affected areas requires containment and management to prevent uncontrolled discharge to the receiving environment. The regulatory exemption for such runoff reflects the industry-standard position that capture and reuse of this water on-site is preferable to

uncontrolled release, which would pose a risk to downstream water quality. The potential downstream impacts of the runoff capture have been assessed as part of the streamflow assessment (Engeny 2026).

HVO holds sufficient unregulated river entitlement in the Jerrys Water Source and can convert this entitlement to the aquifer category as required, in accordance with the rules of the water sharing plan. The Jerrys Water Source alluvium and the associated unregulated river source are recognised in the water sharing plan as highly connected systems, and the conversion mechanism exists to allow entitlement to be managed across the connected resource without increasing the net volume of extraction from the source as a whole. On this basis, the predicted loss of approximately 26 ML/yr post-closure does not represent a net increase in extractive pressure on the Jerrys Water Source; it represents a reallocation of existing entitlement held by HVO from a hydraulically connected source. The water sharing plan rules for such conversions are designed to ensure long-term water security for other entitlement holders in the source is maintained.

Climate change

The potential effects of climate change have been considered for:

- Groundwater modelling of long-term effects, described in Section 3.5.2 of the *Groundwater Modelling* report (EMM 2026d). For conservatism, the high-emissions scenario RCP 8.5 was adopted. A climate change scenario was run with rainfall 15% lower than yearly historical average and evapotranspiration 15% higher than yearly historical average (in the base realisation). The net result is a lowering of groundwater levels under climate change, with variable magnitude depending on location and depth.
- Performance of the operational water management system, detailed in Section 4.8 of the SWIA. Under RCP/ Shared Socioeconomic Pathway 5 – Fossil-Fueled Development (SSP5) 8.5 climate scenario, the Project is expected to maintain sufficient inventory to meet water demands, while relying less on discharges to the HRSTS and more on extraction from the Hunter River. The water balance modelling indicates that HVO holds sufficient WALs to operate in the RCP/SSP5-8.5 scenario. Increases in rainfall intensity associated with climate change on the daily timestep rainfall water balance model does not have any significant influence on forecast overflows from the Water Management System (WMS).
- Flooding, described in Section 6.2 of the SWIA. The 0.5% and 0.2% AEP design flood events are typically used as proxies for climate change. These proxies were validated using the Climate Futures Tool (CSIRO 2015). A comparison of the flood extents between these events indicates that there is generally little difference in flood extent for the Hunter River in the vicinity of the Project for the climate change scenarios. The design event adopted for Project levees (0.1% AEP) exceeds the magnitude of events shown in the climate change assessment with additional freeboard allowance.
- Pit lake recovery, detailed in Section 5.1 of the SWIA. A climate change assessment was undertaken on the final void pit lakes by applying predicted annual change to rainfall and evaporation (%) for various climate change scenarios, to the base case final void hydrology model. This process results in changes to rainfall runoff estimates as well as evaporation losses from the pit lake surface. All climate change scenarios result in lower lake levels and higher salinity with the exception of “RCP8.5 Higher” scenario. This shows that when considering climate change impacts the final pit lake levels are likely to be lower than the base case, with greater freeboard.

Cumulative impacts

As discussed in Section 6.7 of the WRIA, the HVO Complex is in an area where the surface water and groundwater environment has been highly modified by historical mining, industrial and agricultural activities over the past 70 years or so. Due to the dynamic nature of the regional hydrogeology, ongoing impacts associated with approved and historic mining will continue to affect groundwater levels and pressures, and connected surface water resources, irrespective of whether the Project occurs.

From a surface water perspective, as the Hunter River is a regulated system, the main potential cumulative impact pathway is related to changes in baseflow or river leakage through changes in groundwater levels. As such, the potential cumulative impact on streamflow has been informed by the groundwater modelling (Section 4.3 of the SWIA). The potential cumulative impact of licensed water discharge on the Hunter River water quality has been considered as part of the SWIA and is managed by the EPA as part of the HRSTS.

v Water trigger and regulatory assessment

Concern that the assessment has not appropriately considered the applicability of the EPBC Act water trigger and has incorrectly excluded aspects of the proposed mining activities and associated water resource impacts from assessment.

The WRIA (EMM 2026c) has been prepared to encompass the entire Action area and all aspects of the Action, ensuring that all activities associated with the Action and their potential interactions with surface water and groundwater resources have been comprehensively assessed. The WRIA considers the full extent of mining activities from 1 January 2027 and evaluates the potential impacts on water resources in accordance with the relevant Commonwealth and State assessment requirements.

By assessing the entire Action area, the WRIA provides a complete and integrated evaluation of potential impacts on water resources. No aspect of the proposed mining operations or activities have been omitted from the assessment.

J.3.2 Biodiversity

i Biodiversity offsets and compensation

Concern that the adequacy, suitability, legal security, availability and implementation of proposed biodiversity offsets have not been sufficiently demonstrated to compensate for residual impacts on Matters of National Environmental Significance (MNES).

The Project has applied the mitigation hierarchy by avoiding and minimising impacts on biodiversity values wherever practicable. This included avoiding impacts to high value vegetation communities and fauna habitats by utilising existing mining infrastructure and existing and approved disturbance areas to reduce the overall mining footprint. Residual impacts and associated offset requirements have been quantified using the Biodiversity Assessment Method 2020 (BAM), consistent with the assessment approach developed in consultation with the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW). The BAM provides a recognised and repeatable framework for quantifying biodiversity impacts and determining offset requirements. The use of the BAM does not replace Commonwealth decision-making under the EPBC Act but provides an appropriate basis for quantifying impacts and offset requirements for consideration by the Commonwealth.

The Project's offset strategy will be implemented through legally recognised offset mechanisms, including the purchase of credits generated from biodiversity stewardship sites, consistent with the NSW Biodiversity Offsets Scheme and any additional Commonwealth approval requirements. The timing of offset delivery, credit retirement, compliance requirements and any additional offset measures will be determined through the approvals process in consultation with DCCEEW and the NSW Department of Planning, Housing and Infrastructure (DPHI).

For the *Central Hunter Valley Eucalypt Forest and Woodland CEEC*, Hunter Valley Delma (*Delma vescolineata*) and Swift Parrot (*Lathamus discolor*), credit obligations have been generated to directly reflect the residual impacts identified through the assessment process. HVO will continue to work with DCCEE and relevant NSW agencies to finalise suitable offset arrangements and conservation outcomes consistent with applicable regulatory requirements.

While the Project is not being assessed under the NSW Assessment Bilateral Agreement, the Commonwealth has endorsed the BOS and require the projects to be assessed and offset in accordance with the Scheme, where applicable. The variation rules under the BOS do not apply to offsets required for Commonwealth listed entities for controlled actions and therefore all offsets for MNES will be offset in a like-for-like manner.

In relation to the swift parrot, under the BAM, habitat for the species can be offset using ecosystem credits in accordance with the like-for-like offsetting rules, which includes strict requirements for offsetting, including securing credits:

- For the same threatened ecological community, or for non-threatened vegetation communities the same vegetation class. This ensures that offsets are secured within the same threatened ecological communities (e.g. *Central Hunter Valley Eucalypt Forest and Woodland CEEC*) or for non-threatened plant community types, contains the same vegetation class (groups of vegetation communities containing floristic similarities and structural and habitat characteristics (Keith 2004)).
- Occurring in the same or an adjoining IBRA subregion as the impacted site, or in any subregion that is within 100 km of the outer edge of the impacted site. This ensures offsets are secured locality to the impact.
- That contains hollow bearing trees, if the impacted vegetation contains hollow bearing trees. This provision ensures that structurally, any impacts on woodland/forest vegetation is offset with vegetation that contains hollow habitat features.

The PERs acknowledge that offset delivery will require the identification and securing of suitable offsets over the life of the Project. HVO's proposed offset strategy does not necessarily rely on a single approach to offsetting and maintains the ability to adopt the range of mechanisms available under the NSW and Commonwealth offset frameworks. This provides flexibility in offset delivery while ensuring that offsets are secured through appropriate legal protection and subject to long-term management arrangements.

Details of impact areas, offset requirements and associated credit calculations are provided within the BAM and BAM-C assessments supporting the PERs. These assessments form the basis of the proposed biodiversity offset strategy and provide the framework for determining the biodiversity credits required to compensate for residual impacts. It should be noted that the MNES reports amalgamate offset credit calculations for HVO North and South being:

- BDAR – assessing the NSW state and Commonwealth impacts (Domain 3 impacts).
- Biodiversity MNES reports – assessing the additional Commonwealth impacts (Domain 4 and Domain 2b impacts).

To avoid of double counting the Projects offset requirements it is noted that Domain 3 impact credits are common to both HVOs NSW state and Commonwealth impact areas while Domain 4 and Domain 2b are additional credits arising from the HVO North and HVO South MNES Reports.

Overall, the PERs demonstrate that residual biodiversity impacts have been quantified, offset requirements have been identified, and a framework has been established to secure and implement biodiversity offsets in accordance with State and Commonwealth approval requirements.

ii Threatened species and ecological communities

Concern that the Project will result in significant impacts to threatened species and ecological communities through habitat loss, disturbance and other direct and indirect impacts that have not been adequately avoided, minimised or justified.

Potential impacts to threatened species and ecological communities were a key consideration in the design and assessment of the Project. Extensive biodiversity surveys, habitat assessments and vegetation mapping were undertaken across the HVO Complex over multiple years and seasons to identify threatened species, threatened ecological communities and important habitats occurring within and surrounding the BIAAs. These investigations informed Project design and the assessment of potential impacts to MNES.

The Project incorporated a range of avoidance and minimisation measures to reduce impacts on threatened species and ecological communities wherever practicable. These measures included utilising disturbance within previously disturbed and rehabilitated areas, refining infrastructure layouts, entirely avoiding impacts to *Warkworth Sands Woodland of the Hunter Valley CEEC*, reducing impacts to *Central Hunter Valley Eucalypt Forest and Woodland CEEC*, and retaining higher quality habitat where feasible. As a result, impacts to a number of biodiversity values were avoided or reduced through Project design refinements.

Impacts were assessed in the context of the broader landscape, which has been substantially modified by historical mining, agriculture and infrastructure development. Notwithstanding this, the PERs acknowledge that the Project is expected to result in residual significant impacts to *Central Hunter Valley Eucalypt Forest and Woodland CEEC*, Hunter Valley Delma and swift parrot.

Additional surveys for the Hunter Valley Delma in the mine rehabilitation habitats has resulted in refined habitat estimates for the species in the BIAAs. The projects are expected to impact 318.5 ha of remnant derived native grasslands and sparse woodland and 297.1 ha of grassland and sparse cooba woodland mine rehabilitation habitat for the species (total of 615.6 ha of impact).

A flock of up to five swift parrots were identified utilising grey box (*Eucalyptus molucanna*) at the HVO site offices car park during winter bird surveys conducted in August 2025. Surveys in the remnant vegetation in the wider BIAAs during the same season did not record the species utilising this habitat, however this cannot be ruled out. While the *Central Hunter Valley Eucalypt Forest and Woodland CEEC* is acknowledged as habitat for the species in the Approved Conservation Advice for the community (DoE 2015), the remnant areas of the CEEC in the BIAAs does not contain key foraging resources as per the species Recovery Plan (DCCEEW 2024b) and nor do the BIAAs occur within the Key Biodiversity Areas (KBAs) noted in the Recovery Plan. Noting this, the reports consider this habitat to be marginal in the context of other more important habitat in the broader region.

While the PERs identify the threatened species and ecological communities likely to be significantly impacted by the Project, these impacts have been minimised wherever possible and residual impacts are proposed to be addressed under the approved and endorsed BOS and/or in accordance with Commonwealth requirements ensuring like-for-like offset outcomes for these species and communities under the EPBC Act.

iii Habitat loss, fragmentation and connectivity

Concern that vegetation clearing will result in habitat fragmentation, reduced landscape connectivity and the loss of important movement corridors for threatened fauna across the central Hunter Valley.

Potential impacts to habitat connectivity and fragmentation were considered throughout Project design. The Project has been designed to maximise the use of existing mining areas, previously disturbed land and rehabilitation areas to reduce impacts on remnant native vegetation and habitat. Impacts have been assessed in the context of the broader landscape, which has been substantially modified by historical mining, agriculture and infrastructure development.

A potential fauna movement corridor occurs in highly fragmented remnant woodland and rehabilitation between the Mitchell Pit and Carrington Pit, as well as the riparian corridor of the Hunter River to the south. The majority of the woodland habitat to be impacted is already highly fragmented and disturbed. Intact (moderate condition) woodland vegetation represents approximately 19% of the disturbance areas, with the remainder of the area being derived native grassland or exotic grassland. This represents lower value habitat when compared with native vegetation in a remnant state, of which very little is present within the BIAAs due to historical and ongoing clearing for mining and agriculture in the area.

HVO is centrally located in the Hunter Valley. The central Hunter Valley has been widely cleared of remnant vegetation primarily for agriculture and since the 1980s for mining. Review of historic aerial photographs demonstrates the lack of remnant vegetation and corridors. The Hunter River forms the most significant east-west trending corridor and the vegetation associated with Ravensworth State Forest to the north of HVO provides a moderate sized remnant through which a highly fragmented, 'stepping stone' corridor occurs trending generally north-south. Due to the location of HVO in the landscape, the Project is not expected to sever or interfere with corridors connecting different areas of habitat and migratory flight paths, to important habitat or local movement pathways. Broadly, the habitats of the locality are already fragmented in a largely agricultural and mining landscape.

The HVO North BIAA contains one large, connected patch to the south of Lemington Road. References in the submission relating to two 100 ha+ patches may refer to the patch size definitions in the BAM. Under the BAM a patch is "an area of native vegetation that occurs on the subject land and includes native vegetation that has a gap of less than 100 m from the next area of native vegetation (or ≤ 30 m for non-woody ecosystems). A patch may extend onto adjoining land." This can be challenging to assess over a large diffuse subject land, and often, for native wooded vegetation, patches are assumed to be in the >100 ha patch size class. As the patch can occur beyond the subject land, entering a patch score of >100 ha in the BAM does not mean that all patches are this large or within the area of impact.

The assessment specifically considered the larger habitat patches and movement corridors identified in submissions. While the Project will remove areas of woodland and derived native grassland habitat, it is not expected to sever regional movement pathways or isolate local populations of threatened fauna. Habitat connectivity for species such as the spotted-tailed quoll (*Dasyurus maculatus maculatus*) was assessed and no denning or breeding habitat was identified within the impact areas. Substantial movement habitat will remain within the locality, and habitat connectivity will continue to be available through retained vegetation, rehabilitation and surrounding habitat.

The biodiversity MNES reports assessed impacts in the context of the existing highly modified landscape and concluded that the Project would not remove regionally significant habitat corridors. In addition, progressive rehabilitation will re-establish native woodland and other vegetation communities across the HVO Complex, supporting long-term habitat availability and landscape connectivity.

iv Stygofauna and groundwater dependent ecosystems

Concern that impacts to stygofauna, groundwater dependent ecosystems and groundwater-dependent ecological communities have not been adequately assessed, and that the extent of potential impacts may be underestimated.

Potential impacts to stygofauna and groundwater dependent ecosystems were assessed as part of the Project's water and biodiversity assessments in accordance with the guidelines stipulated in the SEARs. These assessments considered groundwater drawdown predictions, the distribution of groundwater dependant ecosystems, and the potential interaction between mining activities and groundwater resources.

Groundwater modelling (EMM 2026d) predicts potential incremental drawdown (i.e. drawdown related to the Project) in only small parts of the Hunter River alluvial aquifer. Potential for drawdown in the alluvium along the main channel of the Hunter River is largely buffered from drawdown by low permeability barrier walls installed along sections of the aquifer (at the HVO North pit boundaries) and because infiltration from the Hunter River is a dominant recharge source to the aquifer and flows are regulated by releases from Glenbawn Dam. As a result, impacts to this aquifer ecosystem and the river red gum populations due to the Project are predicted to be minor or negligible.

Groundwater monitoring and associated studies indicate that communities such as PCT4089 Namoi-Upper Hunter Red Gum Forest and PCT4015 Central Hunter Swamp Oak Riparian Forest may access groundwater associated with an ephemeral perched watertable that is replenished during high rainfall periods. The Aquatic Ecology and GDE Assessment (Eco Logical 2022) states that “Modelling predicts some drawdown in the Quaternary alluvium of the Hunter River near the riparian river red gum sites, however, the incremental drawdown is predicted to be less than 0.5 m and no widespread dewatering will occur. Minor drawdown of 0.2–0.5 m is modelled for below Carrington Billabong (AGE 2022). Any decline in the water table due to mining activities in other parts of the aquifer is likely to be replaced by the leakage of surface water through the bed of the Hunter River (AGE 2022). River red gum populations close to the Hunter River will continue to have access to groundwater due to drainage from the Hunter River, and no significant impact is expected”.

Regarding groundwater dependence of the Central Hunter Valley Eucalypt Forest and Woodland CEEC, the assessment considered available information on vegetation communities, its position in the landscape, groundwater conditions and predicted drawdown, and concluded that groundwater drawdown is unlikely to significantly alter the condition, extent or ecological function of this CEEC. As outlined in AGE (2022), no significant impact from groundwater drawdown impacts is predicted to occur on any community in the BIAAs.

Table 5.12 of the BDAR (Umwelt 2026) provides a draft adaptive management plan for potential drawdown impacts which includes mitigation and adaptive management measures for hydrological processes. This includes conducting vegetative monitoring plots in retained potential areas of impact and additional survey and investigation work to determine nature and extent of GDE groundwater dependency in the drawdown zone.

J.3.3 Climate change and greenhouse gas emissions

i Greenhouse gas emissions and climate change

Concern that Project greenhouse gas (GHG) emissions, including Scope 1, Scope 2 and Scope 3 emissions, will make a significant contribution to climate change and associated impacts on Matters of National Environmental Significance (MNES).

To support the assessment of the Project's GHG emissions and any related impacts on MNES under EPBC Act, HVO prepared *HVO Continuation Project – Observations on GHG Emissions and Climate Change Impacts* report (HVO 2025), which was provided as Appendix H. The document considers the relevant case law regarding the consideration of GHG emissions and climate change in the context of assessing impacts on MNES under the EPBC Act, including the consideration of Scope 1, Scope 2 and Scope 3 emissions, and summarises the relevant legal principles. The document also explains why any increase in the total global GHG emissions and resultant increase in global temperatures are not 'impacts' of the Project as defined in section 527E of the EPBC Act, such that MNES not directly affected by the Project but which may be subject to climate change impacts would not constitute controlling provisions under the EPBC Act. Information on GHG emissions and climate change was also provided in the EPBC referral documentation for consideration by the Commonwealth Minister in determining the controlling provisions for the Project. Following assessment of the referral, the Minister determined the relevant controlling provisions under the EPBC Act, and impacts to the Great Barrier Reef World Heritage Area associated with climate change, or any other MNES that is not directly impacted by the Project but may be subject to climate change impacts, were not identified as a controlling provision for the Project.

The GHG emissions for both the HVO North and HVO South Actions (combined) have been comprehensively quantified in accordance with the *NSW Guide for Large Emitters* (EPA 2025) and the National Greenhouse and Energy Reporting (NGER) framework. The assessment considers Scope 1, Scope 2 and Scope 3 emissions across the full life of the Action. Over the life of the Project (including both the HVO North and HVO South Actions), Scope 1 emissions are estimated to total approximately 15.6 million tonnes (Mt) CO₂-e, while Scope 2 emissions are estimated at approximately 0.2 Mt CO₂-e. Diesel combustion and fugitive emissions are the dominant sources of Scope 1 emissions and have been specifically targeted through application of the NSW EPA mitigation hierarchy to avoid and reduce emissions where practicable. The average Scope 1 emissions intensity over the life of the Project is estimated to be ~0.04 tonnes CO₂-e per tonne of run-of-mine (ROM) coal, which is low relative to other Australian coal mining operations reported in 2023–24 and below the default industry average emissions intensity under the Commonwealth Safeguard Mechanism. Scope 3 emissions represent indirect emissions that occur outside the Project boundary but arise as a consequence of Project activities. These include upstream emissions associated with the extraction and transport of fuels, purchased electricity and construction materials, together with downstream emissions associated with the transport and end use of HVO coal. Total Scope 3 emissions are estimated to be approximately 800 Mt CO₂-e over the life of the Project.

Consistent with the *NSW Guide for Large Emitters* (EPA 2025), HVO has applied the mitigation hierarchy to avoid, minimise and reduce GHG emissions wherever reasonable and feasible. The most significant emissions reduction has been achieved through avoidance during the design of the Project. In particular, the Project has been redesigned to avoid coal extraction within the high-gas Domain 1 area, thereby avoiding a substantial source of fugitive methane emissions.

In addition, HVO has incorporated a range of operational initiatives to minimise GHG emissions throughout the life of the Project. These include optimisation of mine planning, haul routes and haul road gradients, payload management, fuel efficiency initiatives, energy-efficient equipment and optimisation of electricity consumption.

GHG emissions from the Project will be managed in accordance with the Commonwealth and NSW GHG reduction frameworks. As the Project is expected to emit more than 100,000 tonnes CO₂-e per annum, HVO will remain subject to the Commonwealth Safeguard Mechanism, requiring net operational emissions to decline in accordance with the prescribed baseline trajectory. HVO has also committed to additional voluntary emissions reductions consistent with the decline trajectory of the emissions reduction targets under the *NSW Climate Change (Net Zero Future) Act 2023*. To meet its obligations under the Commonwealth Safeguard Mechanism, HVO will need to abate or offset ~5.6 Mt CO₂-e. To meet its additional voluntary commitment to reflect consideration of the *NSW Climate Change (Net Zero Future) Act 2023*, HVO will need to abate or offset a further ~1.5 Mt CO₂-e. HVO will meet its net emissions commitments through the implementation of reasonable and feasible avoidance and mitigation measures and the surrender of Safeguard Mechanism Credits (SMCs) and eligible carbon offsets in accordance with the Commonwealth Safeguard Mechanism. This approach reflects the mitigation hierarchy in the *NSW Guide for Large Emitters* (EPA 2025), whereby direct emissions reductions are prioritised before reliance on offsets.

Climate change is a global phenomenon resulting from net cumulative GHG emissions from multiple sources over time. As noted in *HVO Continuation Project – Observations on GHG Emissions and Climate Change Impacts* report (HVO 2025) (provided as Appendix H), the Full Federal Court in *Environment Council of Central Queensland Inc v Minister for the Environment and Water* [2024] FCAFC 56 accepted that on any view, there are a wide variety of scenarios about how much coal will continue to be burned around the world and whether with or without the burning of coal global emissions will increase or decrease. The document concludes that, while the Action will generate GHG emissions, it will represent a very small contribution to global GHG emissions and is not a substantial cause of climate change impacts on MNES for the purposes of the EPBC Act.

Concern that the GHG emissions assessment lacks sufficient transparency regarding modelling assumptions, estimation methodologies, uncertainty and reporting, potentially resulting in an underestimation of Project emissions.

The PER was prepared consistent with the PER Guidelines issued in correspondence dated 26 February 2026. The PER Guidelines did not require preparation of a detailed GHG assessment or details regarding GHG emission calculation methodologies. The PER included the *HVO Continuation Project – Observations on GHG Emissions and Climate Change Impacts* report (HVO 2025), which is provided as Appendix H and quantified the Project's Scope 1, 2 and 3 emissions. This report specifically considered the relationship between the Project's GHG emissions and impacts on MNES and what constitutes an 'impact' under the EPBC Act. Separately, a detailed *Greenhouse Gas Assessment* (EMM 2025b) was prepared to support the NSW State significant development (SSD) assessment process in accordance with the *NSW Guide for Large Emitters* (EPA 2025). While prepared for a separate statutory assessment process, the *Greenhouse Gas Assessment* provided a comprehensive description of the GHG estimation methodologies, emissions modelling, assumptions, mitigation measures and impact assessment. Consistent with the requirements of the *NSW Guide for Large Emitters* (EPA 2025), the GHG emissions assumptions, methodologies and calculations were also subject to independent expert review to verify the accuracy, completeness, and transparency of the emissions data, as well as the assessments compliance with the requirements of the *NSW Guide for Large Emitters* (EPA 2025). The review determined that the GHG Assessment Report was compliant, with the *NSW Guide for Large Emitters* (EPA 2025).

With regards to fugitive emissions, the predicted fugitive emissions from the Project are based on gas assignment modelling which has been informed by the results of extensive gas drilling and sampling in the region, and also considers wider regional gas distribution trends. The gas assignment model is based on Method 2 methodology, in accordance with the *ACARP Guideline for the Implementation of NGER Method 2 or 3 for Open Cut Coal Mine Fugitive GHG Emissions Reporting*, as per the *National Greenhouse and Energy Reporting (Measurement) Determination 2008*. It includes data from over 36 gas drill holes – a combination of fully sampled (NGER “type” holes) and partially sampled (additional validation holes). The HVO North Amendment Report (EMM 2023) and Amendment Greenhouse Gas Assessment (EMM 2025b) provide additional information on calculation approaches and assumptions, including methane and carbon dioxide content and composition by gas domain and zone, and the locations of domains and zones.

The Independent Expert Advisory Panel for Mining (IEAPM) provided advice on the original Project (July 2024) and the amended Project (February 2026), in relation to GHG avoidance, mitigation and offsetting measures. In their July 2024 report the IEAPM stated that, “Using data requested from HVOPL, the Panel undertook its own evaluation of the gas reservoir properties and an analysis of uncertainty to assist in informing its advice on the feasibility of mitigating fugitive emissions. The gas content data examined is of high quality and the Panel’s assessment is essentially consistent with the HVO gas model.” This further supports HVO’s GHG estimation methodologies.

Collectively, the Independent Expert Review of the Amended Project (as required by the *NSW Guide for Large Emitters*) and the IEAPM’s reviews of both the Original and Amended Projects support the adequacy of HVO’s GHG estimation methodologies.

The Amendment Report (EMM 2025a) was also reviewed by the IEAPM with advice from the panel provided in February 2026. The IEAPM advice stated:

- HVO has made considerable reductions in Scope 1 CO₂-e emissions through avoidance of mining gas Domain 1.
- HVO has made a commitment to further reduce CO₂-e emissions from diesel through optimisation of haulage.

- The avoidance of gas domain 1 will have a material reduction on any potential offsets needed to comply with the Safeguard Mechanism.
- Due to the avoidance of mining gas domain 1, a test gas content borehole is no longer needed adjacent to the Hunter Valley Dyke.
- The origin of N₂ in gas test results is not deemed material in the current HVO Project. The IEAPM also acknowledged that that “by including N₂ as a gas naturally inherent within the coal, HVO has not contravened the NGER reporting guidelines.”

Collectively, the IEAPM’s February 2026 advice supports the adequacy of HVO’s fugitive emissions assessment and recognises the substantial mine redesign measures adopted to avoid emissions and reduce potential reliance on offsets.

iii Climate policy, Scope 3 emissions and legal considerations

Concern that Scope 3 GHG emissions and the resulting climate change impacts on MNES have not been appropriately assessed or considered in the determination of Project impacts.

The Project’s Scope 3 GHG emissions have been comprehensively quantified and considered in the *HVO Continuation Project – Observations on GHG Emissions and Climate Change Impacts* report (HVO 2025), provided as Appendix H to the PER. The report specifically considered the relationship between the Project’s GHG emissions (including Scope 3 emissions), climate change and MNES in the context of the EPBC Act and case law. This information was also provided to the Commonwealth Minister as part of the EPBC Act referral documentation for consideration in determining the controlling provisions for the Action. Scope 3 emissions were therefore not only comprehensively quantified but were also specifically assessed in relation to their potential to contribute to climate change impacts on MNES.

The assessment recognised that Scope 3 emissions associated with the downstream combustion of coal comprise the majority of the Project’s GHG emissions and acknowledged that climate change is a recognised threat to many MNES. The assessment concluded that, while Scope 3 emissions have been comprehensively quantified and assessed, they would not constitute a substantial cause of climate change impacts on MNES for the purposes of the EPBC Act.

The consideration of Scope 3 GHG emissions and resulting climate change impacts in the determination of the Project, both at the referral and determination of Action stages, is a matter for the Commonwealth Minister for the Environment.

J.3.4 Assessment framework

i Assessment approach, integrated assessment and cumulative impacts

Concern that the assessment framework does not adequately consider cumulative, integrated and life-of-mine environmental impacts across the HVO North and HVO South Continuation Projects, including shared infrastructure and environmental risks.

The HVO North PER has considered the HVO North Action in the context of the broader HVO Complex, including its relationship with the HVO South Action (EPBC 2025/10176). Section 1.6 of the PER specifically acknowledges the inter-relationships between the HVO North and HVO South Actions and states that the PER considers the cumulative impacts of both Actions. The HVO South Action is also summarised within the HVO North PER to provide the necessary context for assessment of the HVO North Action.

The proposed mining schedule for HVO North and HVO South was developed and assessed as an integrated life-of-mine extraction sequence for the Project. The PER presents conceptual staged mine plans that demonstrate how mining, infrastructure development, overburden emplacement, rehabilitation and closure will progress across the HVO Complex over time.

Cumulative impacts have been considered throughout the PER and supporting technical assessments. Importantly, the WRIA (Appendix E, EMM 2026c) was prepared as a single consolidated assessment for the HVO Continuation Project, rather than as separate assessments for HVO North and HVO South. The WRIA assesses the HVO Complex as an integrated operation and considers cumulative groundwater and surface water impacts associated with historical, existing and approved mining activities, including both the HVO North and HVO South Actions.

Similarly, the Biodiversity MNES Report (Appendix D, Umwelt 2026) includes consolidated consideration of impacts and offsets across the HVO Complex, including a combined summary of HVO North and HVO South impacts and ecosystem credit requirements associated with MNES.

While separate EPBC referrals have been prepared to reflect the two proposed actions, the supporting assessments adopt an integrated approach where cumulative impacts and shared environmental risks relevant to the assessment have been considered.

ii Economic benefit and public interest

Concern that the Project's economic and employment benefits have not been appropriately balanced against the environmental impacts, long-term liabilities, climate risks and uncertainties associated with the continuation of mining operations.

The HVO South and HVO North Action represents the continuation of mining operations at the existing HVO Complex rather than the establishment of a new mining operation. The need for the Action is outlined in Chapter 2 of the PER and reflects the continued recovery of an existing approved coal resource, maintenance of an established mining operation and efficient utilisation of existing approved infrastructure.

As outlined in Section 8.4.1 of the PER and the *Economic Impact Assessment* (Appendix F), continuation of the HVO Complex would support an ongoing workforce of approximately 1,500 employees, with around 75% of the workforce sourced from the Lower Hunter region, providing continued employment and income for local communities. The Economic Impact Assessment estimates that the Project would deliver a net economic benefit of approximately \$5.7 billion (NPV) to NSW, including approximately \$2.4 billion in royalties, payroll tax and council rates, \$373 million in company income tax, \$1.16 billion in benefits to NSW workers, and \$1.78 billion in benefits to NSW suppliers. At the regional scale, the Project is estimated to deliver a net economic benefit of approximately \$1.78 billion (NPV) to the Lower Hunter region, including \$991 million in benefits to local workers, \$790 million in benefits to local suppliers, and \$72 million in royalties, payroll tax and council rates.

The Economic Impact Assessment does not assess the Project's economic and employment benefits in isolation, nor does it assume that environmental impacts are irrelevant. Rather, it applies the NSW Government's *Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals*, which require a whole-of-society cost-benefit analysis (CBA) that considers both the benefits and costs of the Project. The assessment therefore seeks to quantify, where practicable, the net social benefit of the Project after accounting for relevant costs and externalities.

Consistent with the NSW Government Guidelines, the assessment incorporates:

- the capital and operating costs of the Project
- environmental, social and transport-related mitigation costs identified through the specialist environmental assessments

- public infrastructure costs
- GHG compliance costs associated with the Commonwealth Safeguard Mechanism and HVO's proposed voluntary emissions reduction commitments beyond regulatory requirements
- rehabilitation and closure costs that form part of the Project's life-cycle costs.

The assessment also explicitly incorporates current Commonwealth and NSW climate policy settings, including declining Safeguard Mechanism baselines and the costs associated with compliance over the life of the Project. These policy settings internalise a significant proportion of the Project's GHG externalities by requiring progressively greater emissions reductions or the acquisition and surrender of offsets where required.

Importantly, not all environmental values can or should be monetised. The NSW assessment framework recognises that some environmental and social impacts are more appropriately assessed through the specialist environmental studies and the statutory approval process rather than solely through economic valuation. Accordingly, matters such as biodiversity, water resources, heritage, air quality, noise, visual amenity and climate impacts were subject to detailed technical assessment under the EIS (EMM 2022), Amendment Report (EMM 2025) and draft PERs (EMM 2026a and EMM 2026b), with regulatory agencies determining whether residual impacts are acceptable having regard to avoidance, mitigation, rehabilitation, offsetting and applicable legislative requirements. Economic benefits do not override these environmental assessment requirements.

Long-term environmental liabilities are similarly addressed through the regulatory framework. The Project includes progressive rehabilitation, rehabilitation completion criteria, financial assurance requirements, biodiversity offset obligations, closure planning and ongoing environmental management conditions. These obligations ensure that rehabilitation and residual environmental impacts are managed as enforceable components of the Project rather than being treated as unpriced externalities.

The Economic Impact Assessment therefore represents one component of an integrated decision-making framework. It demonstrates that, after accounting for the relevant costs required under the relevant guidelines, the Project delivers a substantial positive net economic benefit. This finding does not replace the environmental assessment, but complements it by informing whether the residual environmental impacts, having first been avoided, minimised, mitigated or offset to the extent required by legislation, are accompanied by a net benefit to the broader community.

J.3.5 Mine closure and rehabilitation

i Final voids, rehabilitation and long-term management

Concern that long-term closure outcomes, including final void behaviour, rehabilitation performance, post-mining water management and associated environmental risks, have not been adequately demonstrated or supported by clear assumptions, monitoring, trigger thresholds and contingency commitments.

The PER and supporting technical assessments provide a comprehensive and evidence-based assessment of long-term closure outcomes for the Project, including rehabilitation performance, final landform development, final void assumptions adopted for the assessment, the modelling methodologies, predicted environmental outcomes and the evidence supporting the conclusions reached.

Closure performance has been assessed through the WRIA which includes detailed assessment of groundwater drawdown, Hunter River alluvium, surface water flows, flood behaviour, water quality, final void hydrology, pit lake salinity, groundwater interactions, long-term groundwater sink behaviour and closure water balance for the Action.

The WRIA clearly documents the assumptions adopted for the closure assessment, the modelling methodologies applied and the predicted post-mining environmental outcomes.

The WRIA concludes that potential impacts to groundwater, surface water, groundwater dependent ecosystems and aquatic ecology are generally negligible to minor, with no significant impacts predicted. These conclusions are supported by detailed groundwater, surface water, flood and final void modelling.

The PER identifies the mitigation measures incorporated into the Action, including progressive rehabilitation, revised water management infrastructure, and incorporation of natural landform design principles to improve long-term landform stability and closure outcomes. Importantly, the PER also identifies the monitoring and adaptive management framework that will be implemented throughout the Action.

Existing HVO environmental management and monitoring plans already provide an operational monitoring platform, and these plans will be revised and updated if the Action is approved to incorporate the final approval conditions, closure objectives and the outcomes of the detailed design process.

Detailed monitoring locations, performance indicators, trigger thresholds, response actions and contingency measures will be specified within these revised management plans. This staged approach is consistent with standard regulatory practice, whereby the overarching closure strategy and environmental performance objectives are assessed during the approval process, while the detailed monitoring and contingency requirements are progressively refined and implemented through the approved management plans as the Project advances toward closure.

Accordingly, the closure assessment does not rely on unsupported assumptions. Rather, it combines detailed predictive modelling, identified closure mitigation measures and a committed adaptive management framework that will include monitoring, trigger-based responses and contingency actions throughout the operational and post-mining phases of the Action.

J.3.6 Stakeholder engagement

i Aboriginal consultation

Concern that consultation with Aboriginal stakeholders was not undertaken in a manner that appropriately recognised the authority, cultural connection and negotiated agreements of the Plains Clans of the Wonnarua People, resulting in concerns regarding the adequacy and integrity of the consultation process.

Consultation with Aboriginal stakeholders has been undertaken throughout the development and assessment of the Project in accordance with the relevant NSW *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010). Consultation has been an ongoing process, commencing during the early stages of Project planning and continuing throughout the environmental assessment process to provide opportunities for Aboriginal parties to participate, provide information and raise issues relevant to the Project. This consultation has included engagement with the Plains Clans of the Wonnarua People, together with all other Aboriginal parties who registered an interest in the Project (RAPs).

Consultation extended well beyond notification and review of draft reports and included involvement in the design of the assessment, participation in archaeological field investigations, review and discussion of survey and excavation findings, identification and assessment of Aboriginal cultural values, and review of draft Aboriginal Cultural Heritage Assessment Reports (ACHARs). The consultation program comprised numerous meetings, workshops, correspondence and field investigations undertaken over successive stages of the Project assessment.

RAPs participated in archaeological surveys and test excavations across the Project area, providing cultural knowledge that informed the identification, assessment and interpretation of Aboriginal cultural heritage values and the development of impact assessment, mitigation and management measures. The duration and breadth of this consultation demonstrates that Aboriginal stakeholders were actively involved throughout the assessment process, with consultation undertaken over several years rather than as a single or discrete engagement activity.

HVO respects the views, cultural connections and interests of all Aboriginal parties who have registered an interest in the Project, including the Plains Clans of the Wonnarua People, and recognises the importance of engaging with Aboriginal stakeholders in a transparent, respectful and inclusive manner.

J.4 Submissions register

Table J.2 presents a summary of the specific issues raised in each submission and identifies where each matter has been addressed within the responses above.

Table J.2 **Summary of issues raised and where addressed**

Submitter	Specific issue raised	Where addressed
Christian Alexander	Do not accept residual MNES impacts unless offset suitability, adequacy and legal protection are demonstrated. Demonstrate residual-impact areas, offset source, credit-retirement and Project-traceability status, ecological outcome, timing, contingency and adequate legal protection for each affected MNES matter. Residual impacts on CHVEFW, Hunter Valley Delma and other protected matters should not be accepted before the offset pathway is ecologically credible and legally protected.	Section J.3.2i
Christian Alexander	The current Appendix D biodiversity assessments identify likely significant impacts on CHVEFW, Hunter Valley Delma and Swift Parrot. The final PERs should explain whether the proposed offset pathway will protect or improve habitat that Hunter Valley Delma can actually use, identify the actual species-specific offset mechanism, and explain whether proposed CHVEFW offsets already meet the relevant EPBC diagnostic criteria or are credibly capable of attaining and maintaining those criteria within the offset timeframe.	Section J.3.2i
Christian Alexander	The final PERs should explain how HVO's offset delivery will be made Project-traceable through the approval and compliance framework, rather than relying on general BOS register availability alone. The final PERs should disclose the offset pathway, credit-retirement timing, legal protection mechanism and contingency arrangements before residual MNES impacts are accepted.	Section J.3.2i
Christian Alexander	The final PERs should therefore state the groundwater-dependence assumptions relied on for CHVEFW, and identify any monitoring or review consequence if those assumptions prove wrong.	Section J.3.2iv
Christian Alexander	Require Method 2 methane adequacy, comparability and review safeguards. Disclose Method 2 assumptions, methane tonnes, CO2-e, uncertainty ranges, gas-domain assumptions, method-comparability notes and review triggers.	Section J.3.3ii
Christian Alexander	Method 2 methane estimates should not be treated as beyond scrutiny. The final PERs should explain the relationship between fugitive methane estimates, gas-domain assumptions, mine-plan choices, offset or credit reliance and review triggers over the approval life.	Section J.3.3ii
Christian Alexander	If HVO relies on market substitution or 'no net increase' reasoning, those assumptions should be explicit and sensitivity-tested.	Section J.3.3i
Christian Alexander	Water and final-void risks require approval-level controls. The WRIA identifies issues including groundwater drawdown, Hunter River alluvium, stygofauna, final void pit lake salinity and long-term final void groundwater sink behaviour.	Section J.3.1i

Submitter	Specific issue raised	Where addressed
Christian Alexander	The final PERs should disclose approval-level water, final-void and rehabilitation assumptions, trigger thresholds and contingency actions before approval. If the final PERs do not clearly disclose the water, final-void and rehabilitation assumptions relied on for the assessment, those matters should be resolved through further information or withholding/refusal before approval, rather than deferred into future management plans without approval-level performance outcomes. The WRIA identifies issues that should be made decision-ready, including Hunter River and Wollombi Brook streamflow, ephemeral watercourses, cumulative surface-water quality, Hunter River bridge construction erosion and sediment controls, minor flood-level increases at non-HVO properties, sediment dam overflow risk beyond design events, groundwater drawdown, Hunter River alluvium, stygofauna, final-void pit lake salinity and long-term final-void groundwater sink behaviour. The final PERs should provide a consolidated water and final-void assumptions table showing the key model assumptions, predicted impacts, trigger thresholds, monitoring points, response actions and review consequences. If HVO concludes that impacts are negligible or insignificant, the final PERs should clearly identify the evidence supporting those conclusions, together with the monitoring framework, trigger thresholds, response actions and contingency measures that will apply throughout the approval life and closure phase.	Section J.3.5i
Christian Alexander	The 'no annual production increase' framing is incomplete. Annual production rate is only one variable. The relevant assessment should also consider Project-life extraction, cumulative water impacts, final voids and rehabilitation, residual MNES impacts, offset timing and security, fugitive methane accounting, Scope 1/Safeguard compliance, Scope 3/economic substitution assumptions and transition risk.	Section J.3.4i
Christian Alexander	Do not treat the two referrals as separate accountability silos. HVO North and HVO South are separate EPBC proposed actions but operate as one integrated mining complex. Provide one consolidated HVO North/South residual-impact and approval-requirements crosswalk.	Section J.3.4i
Christian Alexander	Separate referrals create a condition-design risk. The need for consolidated assessment is reinforced if, as the HVO North Main Report indicates, HVO South depends on HVO North processing infrastructure and could not continue operating independently if HVO North ceased. That practical interdependence would make the two referrals more than adjacent paperwork exercises: it would make consolidated assessment across the HVO complex essential.	Section J.3.4i
Christian Alexander	Test economic and jobs claims against Project-life risks. Present employment and net-benefit claims alongside offset costs, closure/final-void liabilities, Safeguard/ACCU assumptions, coal-demand assumptions and transition risk. Jobs and economic benefits are relevant, but they do not lower the evidence standard for EPBC water and MNES impacts.	Section J.3.4ii
Christian Alexander	Jobs are real, but not decisive. Local employment, suppliers and regional economic interests are legitimate considerations. In this federal PER process, the narrow ask is not to model a full alternative regional economy, but to ensure HVO's public-benefit claims are tested against closure, offset, emissions, substitution and transition-risk assumptions.	Section J.3.4ii
Vaughn Cox	I am concerned the HVO South and North PERs fail to adequately compensate for impacts to the EPBC Act listed Central Hunter Valley Eucalypt Forest and Woodland TEC, Swift Parrot and Hunter Valley Delma. This is because there is no evidence in the PERs that a biodiversity credit requires the protected matter be present or likely to use the biodiversity agreement area, that the market will satisfy the biodiversity credit obligations, or that the credit obligations will compensate for impacts to protected matters.	Section J.3.2i
Vaughn Cox	The PERs do not adequately demonstrate how biodiversity credit obligations have been derived or satisfy the Department's Request for Information. In particular, inconsistencies between the BAM credit reports and the reported impact and credit figures should be explained, and supporting credit reports provided for all EPBC protected matters.	Section J.3.2i

Submitter	Specific issue raised	Where addressed
Vaughn Cox	Recommend the PER and offset strategy explain how the credits, retired or satisfied by payment to the BCF: • Ensure the offset site/s are at offset commencement, or attain, the weighted-average VI scores of the impacted TEC, Central Hunter delma and Swift Parrot habitat. • Provide an offset area that equates to 100% direct offset, using transparent, contemporary EPBC policy and practice assumptions employed in other jurisdictions.	Section J.3.2i
Bev Smiles	The Project includes the removal of 120 hectares of known winter foraging habitat for the Swift Parrot, which is on an extinction trajectory. The company's own assessment report rightly concludes that there 'is likely to be a significant impact on the population' and that any impacts to known habitat 'will likely contravene the objectives of the Recovery Plan'.	Section J.3.2ii
Bev Smiles	The Project proposes to remove an additional two remnant habitat patches over 100 ha in size that form part of important movement corridors across the heavily cleared central part of the Hunter Valley. The cumulative loss of threatened species habitat in the central Hunter Valley has now reached a critical level that cannot be adequately mitigated.	Section J.3.2iii
Bev Smiles	The Project will generate a total of over 800 million tonnes of greenhouse gas emissions. This includes a million tonnes a year of direct Scope 1 emissions in the first three years of operation. This represents an increase of over 50% of emissions from the Hunter Valley Operations mine site. This proposed increase in emissions will make an unacceptable contribution to worsening global warming and climate change.	Section J.3.3i
Bev Smiles	Extending pits at HVO North and South will reduce baseflow that feeds the Hunter River and Wollombi Brook from underground.	Section J.3.1i
Bev Smiles	A large tailings storage dam adjacent to the river (North Void tailings storage facility) was found six years ago to be seeping into groundwater. In the assessment of the expanded mine Project, it was found that this facility would be inundated again in an extreme flood event.	Section J.3.1iii
Bev Smiles	Most of the water assessment, except for the final voids modelling, has not accounted for the impacts of climate change, including the likelihood of reduced rainfall on water security and the health of the Hunter River.	Section J.3.1iv
Bev Smiles	The cumulative impact of mining operations in the Upper Hunter have not been assessed.	Section J.3.1iv and J.3.4i
Bev Smiles	Water usage is extreme and its impact is not addressed in the PER. HVO holds 62% of the high security licences in one of the most vulnerable reaches of the Hunter River... Extension of this operation into the 2040s presents an unacceptable water security risk for the region.	Section J.3.1iv
Bev Smiles	The scale of unlicensed runoff capture may reduce downstream flows to the Hunter Estuary, including Ramsar-listed wetlands, and these downstream impacts have not been assessed.	Section J.3.1iv
Bev Smiles	The cumulative impact of mining operations in the Upper Hunter have not been assessed or taken into account. The long term loss of groundwater and surface flows from large, contiguous open cut and underground mining operations in the region is highly significant with intergenerational equity impacts.	Section J.3.1iv
Rod Anderson	Proposed mining will remove two habitat patches over 100 ha in size that form part of important movement corridors across the heavily-cleared central part of the Hunter Valley. It will have unacceptable impacts on several species and communities.	Section J.3.2iii

Submitter	Specific issue raised	Where addressed
Rod Anderson	Total greenhouse gas emissions will be over 800 million tonnes, including a million tonnes a year of direct Scope 1 emissions in the first three years of operation. This represents an increase of over 50% of emissions from the Hunter Valley Operations mine site.	Section J.3.3i
Rod Anderson	Extending pits at HVO North and South will reduce baseflow that feeds the Hunter River and Wollombi Brook from underground.	Section J.3.1i
Rod Anderson	A large tailings storage dam adjacent to the river (North Void tailings storage facility) was found six years ago to be seeping into groundwater. In the assessment of the expanded mine Project, it was found that this facility would be inundated again in an extreme flood event.	Section J.3.1iii
Rod Anderson	The scale of surface water removal being undertaken for this action is extreme and its impact is not addressed in the PER because most of it is unlicensed... Extension of this operation into the 2040s presents an unacceptable water security risk for the region.	Section J.3.1iv
Lock the Gate Alliance	The executive summaries of both MNES Assessments state that the bilateral agreement does not apply to the Project, but then goes on to say that assessment would be undertaken in accordance with the Biodiversity Conservation Act 2016 and offsets calculated using the NSW Biodiversity Assessment Method (BAM). However, the BAM is unable to satisfy credit obligations for the Hunter Valley Delma or ensure the recovery of the critically endangered Swift Parrot.	Section J.3.2i
Lock the Gate Alliance	The Commonwealth Government cannot rely on the Swift Parrot Offset Strategy to compensate for impacts as it provides no detail on what form the offset could take. It offers no assurances that a suitable offset can or will be found to ensure the recovery of the species or that the required credits are available for purchase.	Section J.3.2i
Lock the Gate Alliance	Together the projects would significantly impact 212 ha of critically endangered Central Hunter Valley Eucalypt Forest and Woodland, 1,524 ha of known and potential habitat for Hunter Valley Delma and 262.9 ha of potential and known habitat for critically endangered Swift Parrot.	Section J.3.2ii
Lock the Gate Alliance	There is no evidence presented to support the MNES Assessments' conclusion that the winter foraging habitat within the BIAAs are marginal and temporary. The fact that they contain known winter foraging habitat for a species on a steep extinction trajectory means these areas are critical to the survival of the Swift Parrot and should not be characterised as marginal habitat.	Section J.3.2ii
Lock the Gate Alliance	The HVO North proposal will remove up to 1,524 ha or 6.3% of the total Hunter Valley Delma area of occupancy while HVO South will result in the loss of another 225 ha or 0.3% of the total area of occupancy.	Section J.3.2ii
Lock the Gate Alliance	Proposed mining will remove two habitat patches greater than 100 ha in size that form part of important movement corridors across the site. It does not appear to recognise the importance of this corridor in providing habitat for eight threatened fauna species and a movement corridor for quolls within a matrix of mines.	Section J.3.2iii
Lock the Gate Alliance	Stygofauna surveys undertaken predominantly in April 2020 are inadequate and do not follow the WA EPA Guidelines or the Independent Expert Scientific Committee (IESC) recommended methodology. A dedicated aquatic ecology study of the Hunter alluvium, its paleochannel and the Carrington Billabong is needed.	Section J.3.1i and J.3.2iv
Lock the Gate Alliance	The same applies for impacts on high potential groundwater dependent ecosystems in Namoi-Upper Hunter Red Gum Forest and Central Hunter Swamp Oak Riparian Forest.	Section J.3.2iv

Submitter	Specific issue raised	Where addressed
Lock the Gate Alliance	The PERs should fully account for the downstream or Scope 3 emissions of the Project in order to comply with Australia's duty to prevent significant harm to the environment.	Section J.3.3iii
Lock the Gate Alliance	HVO's failure to properly account for the costs of climate change by excluding Scope 3 emissions from its assessment of social or economic impact/benefit is inconsistent with this approach.	Section J.3.3iii
Lock the Gate Alliance	Mining for the Continuation Project will worsen groundwater drawdown already affecting the Hunter River alluvium and will worsen drawdown at mapped river red gum stands that are groundwater dependent.	Section J.3.1i
Lock the Gate Alliance	The impacts of groundwater drawdown predicted in the PER rely on the assumption that the proposed low permeability barrier wall will effectively separate the Hunter River alluvium from the depressurised Permian aquifer. If that assumption is incorrect, groundwater impacts may be substantially greater than predicted.	Section J.3.1i
Lock the Gate Alliance	The impacts of groundwater drawdown predicted in the PER are much reduced. At the basis of numerical groundwater modelling is a conceptual model that assumes that the alluvium is largely disconnected from the depressurised Permian. It is not clear if unsaturated flow is represented in the groundwater modelling. If the assumption that the shallow alluvial aquifers are disconnected from the depressurised Permian across the HVO site does not hold, then the impacts predicted by the model may be vastly different to what is expected.	Section J.3.1ii
Lock the Gate Alliance	Reduced baseflow and increased leakage from waterways - although high-security priority extraction would continue during low-flow drought periods, the cumulative dry-period impacts on the river have not been quantified. Groundwater modelling has not considered the increased risk of severe drought that is expected with climate change as it has relied on historical rainfall data and applied a climate change sensitivity analysis centred on 2030 when the mine is planned to operate until 2045.	Section J.3.1ii
Lock the Gate Alliance	The inconsistencies between water impacts reported in the EIS and those in the PER affect the predictions of leakage and baseflow for impacted waterways.	Section J.3.1ii
Lock the Gate Alliance	The Aquatic Assessment quotes drawdown estimates consistent with the NSW Amendment Report. However, while the Amendment Report states that there would be no incremental drawdown south of the proposed Carrington West barrier wall, the Aquatic Assessment claims that a small area immediately south of the Carrington Pit barrier wall is predicted to experience 2 m of drawdown.	Section J.3.1i
Lock the Gate Alliance	A large tailings storage dam adjacent to the river (North Void tailings storage facility) was found six years ago to be seeping into groundwater. In the assessment of the expanded mine Project, it was found that this facility would be inundated again in an extreme flood event. We are also concerned about the elevation of the Carrington void and the risk it presents for migration of poor quality water.	Section J.3.1iii
Lock the Gate Alliance	HVO has no water access licences in the Jerrys Water Source... The permanent loss of 26 ML per year represents 2% of the water entitlements in the Jerrys Water Source and poses an unacceptable risk to water security.	Section J.3.1iv
Lock the Gate Alliance	The scale of surface water removal being undertaken for this action is extensive and its impact is not addressed in the PER.	Section J.3.1iv

Submitter	Specific issue raised	Where addressed
Lock the Gate Alliance	Modification 3 of HVO North consent DA450-10-2003 was indeed granted in March 2013, four months before the commencement of the water trigger. However, at the time this action will be taken, the specific environmental authorisation DA450-10-2003 will no longer be in force... All references in the PER to mining that is 'already approved' must be removed from the PER and the assessment finalised on the basis that this action seeks approval to mine directly into the alluvium of the Hunter River and to excavate a large area of its paleochannel which currently supports endemic stygofauna.	Section J.3.1v
Hunter Environment Lobby	The Projects pose significant risks to the Swift Parrot, the Hunter Valley Delma, the Spotted-tailed Quoll, and the Central Hunter Valley Eucalypt Forest. They should not be approved.	Section J.3.2ii
Hunter Environment Lobby	The proponent acknowledges that mining CWW is likely to have substantial impacts on stygofauna (80% endemic to the Hunter, 4 species endemic to single aquifers) – but claims (wrongly, as shown above) that this impact is already approved and does not require further assessment or approval.	Section J.3.2iv
Hunter Environment Lobby	HEL is deeply concerned about the impacts of the greenhouse gas emissions resulting from the Project on matters of national environmental significance, in particular the Great Barrier Reef World Heritage Area and other reef ecosystems.	Section J.3.3i
Hunter Environment Lobby	The emissions from the projects will cause a net increase in global greenhouse gas emissions and thus global mean temperatures.	Section J.3.3i
Hunter Environment Lobby	New information demonstrates that the indirect impacts (Scope 3 emissions) of the HVO projects would make direct, measurable and substantial contributions to global warming and would therefore constitute a substantial cause of the significant impacts of climate change on the GBRWHA and other matters protected by Part 3 of the Act.	Section J.3.3i
Hunter Environment Lobby	The proposed Project represents 1.4%, 18%, and 46% of the coal emissions for a 1.5°C warming limit in 2030, 2040 and 2050 respectively.	Section J.3.3i
Hunter Environment Lobby	The carbon emissions forecast to result from the HVO projects will cause the loss of 912 hectares of coral habitat.	Section J.3.3i
Hunter Environment Lobby	The Minister is required to assess the potential for significant impacts on MNES resulting from the specific greenhouse emissions associated with the referred actions, including the indirect impacts of Scope 3 emissions.	Section J.3.3iii
Hunter Environment Lobby	Substantial cause' cannot be reduced to numerical calculations or replacement reasoning.	Section J.3.3iii
Hunter Environment Lobby	The Minister cannot reasonably rely upon countries' NDCs under the Paris Agreement to reason that the Scope 3 emissions from these proposed actions will not result in a net increase in global GHG emissions.	Section J.3.3iii
Hunter Environment Lobby	Cause further reductions of baseflow and increases in leakage during periods of low flow of the Hunter River and its tributaries.	Section J.3.1i
Hunter Environment Lobby	The proponent's modelling predicts that the reduction in groundwater in the Jerrys Water Source will escalate to 26 ML per year after closure of mining operations.	Section J.3.1i

Submitter	Specific issue raised	Where addressed
Hunter Environment Lobby	The proponent proposes to construct a low permeability barrier wall between its pit voids and the alluvium, but the PER concedes that this structure will not fully and permanently prevent groundwater flow between the alluvium, the Carrington void and across the Hunter River to the void at HVO South. The risks and impacts associated with the long-term performance or failure of the barrier wall have not been adequately assessed.	Section J.3.1i
Hunter Environment Lobby	Inconsistencies between numerical groundwater models. The ground and surface water impacts modelled in the PER are not consistent with those modelled in the Environmental Impact Statement (EIS) for the concurrent assessment process taking place for the same mining operations under the EP&A Act. The EIS modelling indicates substantially greater impacts on water resources than forecast in the PER. The proponent has not assessed the risks and impacts of mining CWW, including the risks and impacts of failure of the barrier wall.	Section J.3.1ii
Hunter Environment Lobby	Cumulative dry-period impacts on groundwater have not been quantified. Modelling has not considered the increasing risk of severe drought as climate change worsens. The proponent's claim that groundwater flow impacts will be 'negligible' or 'minor' are not supported by adequate evidence.	Section J.3.1ii
Hunter Environment Lobby	The PER fails to assess the risk to groundwater resources of contaminant seepage. This is not compliant with IESC guidelines (2024) and PER guidelines (January 2026) which require that seepage pathways for contaminants are assessed.	Section J.3.1iii
Hunter Environment Lobby	A large tailings storage dam adjacent to the river (North Void tailings storage facility) was found six years ago to be seeping into groundwater. In the assessment of the expanded mine Project, it was found that this facility would be inundated again in an extreme flood event. We are also concerned about the elevation of the Carrington void and the risk it presents for migration of poor quality water.	Section J.3.1iii
Hunter Environment Lobby	The PER concludes that there would be no impact to Hunter River flows... Increased water releases from Glenbawn Dam and the proponent's purchase of water entitlements will not cancel out the impact on water resources of the proponent's action.	Section J.3.1iv
Hunter Environment Lobby	The scale of surface water removal being undertaken for this action is extensive and its impact is not addressed in the PER.	Section J.3.1iv
Hunter Environment Lobby	The PER does not assess the likely impacts on water resources of proposed mining of the Carrington West Wing extension area (CWW). The proponent justifies this omission on the basis that mining at CWW is 'proposed to occur as approved'. Sections 24D and 24E (the 'water trigger') were not applied as controlling provisions to HVO's existing EPBC Act approval (2016/7640)... EPBC Act approval 2016/7640 does not authorise the mining of CWW.	Section J.3.1v
Scott Franks – Plains Clans of the Wonnarua People	Our ongoing concern, and one that has repeatedly been raised over many years, is that your consultant EMM and staff, acting within this process, continued to operate in a manner that actively sidelined and undermined the already accepted and recognised status of the Plains Clans of the Wonnarua People and our representatives. This occurred through the continued engagement of non-PCWP registered Aboriginal parties who were elevated in a manner that directly conflicted with our recognised authority, cultural connection and the intent of the Ancillary Agreement framework that supported the approval of this mining operation.	Section J.3.6

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