

1 March 2024

Joe Fittell
Team Leader
Department of Planning, Housing and Infrastructure
4 Parramatta Square 12 Darcy Street
Parramatta, NSW 2150

Re: HVO Continuation Project - Response to supplementary advice

Dear Joe,

1 Background

Hunter Valley Operations (HVO) is an established multi-pit open cut coal mining complex, comprising the two mine sites of HVO North and HVO South. HVO is approximately 24 kilometres (km) north-west of Singleton in the Hunter Valley of New South Wales (NSW).

HVO is seeking approval for the HVO Continuation Project (the Project) under the provisions of Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Project broadly comprises the continuation of mining at HVO North and HVO South, from the current approved mining completion dates of 2025 and 2030 respectively, to the end of 2050 at HVO North and 2045 at HVO South. An environmental impact statement (EIS) was prepared to support the two State significant development (SSD) applications being:

- SSD-11826681 - HVO North Open Cut Coal Continuation Project
- SSD-11826621 – HVO South Open Cut Coal Continuation Project.

The EIS was submitted and subsequently placed on public exhibition for a period of four weeks from Monday 30 January 2023 through to Monday 27 February 2023.

In November 2023 a response to the issues raised in submissions received during the public exhibition of the EIS was submitted to the Department of Planning, Housing and Infrastructure (DPHI, formally the Department of Planning and Environment) along with an Amendment Report prepared to assess proposed changes in the Project design.

Following the submission of these documents, supplementary agency advice was received from:

- NSW Department of Climate Change, Energy, Environment and Water (DCCEE, formally Department of Planning and Environment – Water)
- Department of Primary Industries – Agriculture (DPI Agriculture)

- Department of Region NSW – Mining, Exploration and Geoscience (MEG)
- Department of Regional NSW - Resources Regulator
- Heritage NSW
- Muswellbrook Shire Council
- Transport for NSW.

This document has been prepared following a request to provide a response to the supplementary agency advice received from DPHI on 19 December 2023. As noted in the correspondence from DPHI, supplementary agency advice from the Environment Protection Authority (EPA), Biodiversity Conservation Division (BCD) and Singleton Council remained outstanding. A response to any further supplementary agency advice received will be provided separately, if required.

2 Response to supplementary agency advice

In response to the DPHI request dated 19 December 2023 a summary of the supplementary advice received to-date from government agencies, residual issues raised, and a response to any residual issues, is provided below.

2.1 Department of Climate Change, Energy, Environment and Water

Supplementary advice was received from NSW DCCEEW identifying residual concerns in relation to water licensing for the Project and impacts of works on waterfront land.

Responses to the matters raised by NSW DCCEEW are provided in a separate letter included in Appendix A.

2.2 Department of Primary Industries – Agriculture

DPI Agriculture noted that the information provided in the Submissions Report adequately clarified matters identified in the DPI Agriculture advice provided on the EIS dated 1 March 2023 and had no further comment on the application.

No further information is required to be provided in response to advice received from DPI Agriculture to support the Department's assessment of the Project.

2.3 Department of Region NSW – Mining, Exploration and Geoscience

Supplementary advice on the Submissions Report from MEG was received 15 December 2023. The supplementary advice noted that following a review of the submissions report, MEG had no further comments in relation to *Mining Act 1992* considerations regarding the Project at this stage.

No further information is required to be provided in response to the supplementary advice received from MEG to support the Department's assessment of the Project.

2.4 Department of Regional NSW - Resources Regulator

Supplementary advice from the Resources Regulator dated 15 December 2023 was received. The Resources Regulator noted that matters 1-4 of their original submission had been adequately addressed by the submissions report and supplementary response.

Regarding the Project's slope stability design criteria, the Resources Regulator noted concerns regarding a slope stability design achieving a factor of safety (FoS) value of between 1.2 and 1.5, and that a FoS value of 1.2 was not supported by literature available to them.

The Resources Regulator advised that long term stable landform stability criterion will need to be developed as part of the Project's rehabilitation completion criteria that is acceptable to the Resources Regulator in accordance with the requirements under Schedule 8A of the Mining Regulation 2016.

HVO supports the Resources Regulator approach to the development of acceptable long term stable landform criterion for the Project.

Regarding the potential use of final voids for pumped hydro, the Resources Regulator recommended that the risks associated with pit-lake rapid draw down should be considered in the landform design and implementation phase, not post cessation of mining as suggested in the Submissions Report; and the adoption of this post-mining land use option may need to be considered well in advance of mine closure.

HVO note the considerations by the Resources Regulator regarding alternative post mine closure land uses in relation to the use of pit lakes for pumped hydro. At this staged, pumped hydro is not a consideration of the Project, and any risks associated with alternative land use options, should they be pursued, will be considered by HVO in advance of mine closure.

2.5 Heritage NSW

Heritage NSW provided advice on the EIS, advising that additional information was required to ensure that the management recommendations were adequate and that the Aboriginal Cultural Heritage Assessment Report (ACHAR) substantially complied with the Secretary's Environmental Assessment Requirements (SEARs) issued for the Project. A subsequent ACHAR Addendum was prepared and provided as Appendix C to the Submissions Report. The Submissions Report, a revised ACHAR and summary cover letter was also provided to the Registered Aboriginal Parties (RAPs) on 9 November 2023 seeking any further feedback on the additional documentation by 19th January 2024 along with an invitation for a further meeting to discuss the findings. No comments from the RAPs were received and no meetings were requested.

The supplementary advice received from Heritage NSW noted that the Submissions Report, including the ACHAR addendum, adequately addressed the concerns raised by Heritage NSW and acknowledged that the proposed management and mitigation measures meet standard expectations for salvage methodologies.

Heritage NSW concurred that an approved Aboriginal Cultural Heritage Management Plan (ACHMP) be implemented prior to any works associated with the Project, and that the requirement for the development and implementation of an ACHMP should be included in any conditions of consent. Heritage NSW requested that the conditions of consent and ACHMP include provision for additional consultation with the RAPs, Heritage NSW, and the DPHI regarding additional mitigation or management requirements if regionally significant and/or or highly culturally significant (e.g. burial, ceremonial grounds) finds are identified during the salvage operations.

Heritage NSW further requested that the salvage excavation methodology be submitted to Heritage NSW for review and comment prior to commencement of the excavations.

HVO accept the advice from Heritage NSW and advise that HVO will continue to engage with the RAPs, Heritage NSW and the DPHI regarding the salvage methodologies through the development of the ACHMP.

2.6 Muswellbrook Shire Council

2.6.1 Employment

Muswellbrook Shire Council (MSC) noted in their supplementary advice that they required additional assurances that HVO would encourage employment of people who reside within the Muswellbrook Shire Local Government Area (LGA) and employment of women, Aboriginal and young people.

MSC noted that they will seek to include these commitments within the Voluntary Planning Agreement (VPA) currently being discussed. MSC acknowledged discussions regarding a VPA had commenced and acknowledged these discussions would continue.

2.6.2 Bayswater Creek

MSC advice noted residual concerns remained around the water quality and ecological health of Bayswater Creek. As noted in Section 3.2.8 of the EIS, an area of at least 0.14 hectares of riparian vegetation adjacent to Bayswater Creek will be revegetated to represent Swamp Oak Floodplain Forest community. This is consistent with approved activities at HVO North under Development Approval (DA) 450-10-2003. The Project does not seek to change or modify this requirement.

2.6.3 Housing and accommodation

MSC also seeks to have a condition of the development consent imposed to require HVO to prepare a Workforce Accommodation Strategy. In this regard, further information relating to the Project's workforce and approach to potential accommodation needs was provided in the Submissions Report (EMM 2023). As described, the Project will not result in any change to the existing operational workforce and therefore there is little to no long-term substantial population change associated with the Project.

In relation to construction, the Project may result in slight short-term changes to local populations through the temporary influx of the construction workforce for a duration of 3–6 months. It is likely that all construction workers sourced from within a one-hour commute will be accommodated at their existing place of residence within the local, regional area and area of reference. As outlined in Section 6.1 of the Social Impact Assessment (SIA) prepared for the Project (EMM 2022), the assumption that around 30% of the construction workforce would need to be sourced from beyond a one-hour commute distance, would result in up to 180 construction workers needing to be accommodated when working on the Project. It is anticipated that the preferred form of accommodation sought by these workers would be short-term accommodation (hotels/motels etc); however, due to the limited availability of short-term accommodation, rental accommodation may also be sought most likely from neighbouring towns within an hour commute such as Muswellbrook, Singleton, Jerrys Plains, and Denman.

The influx of up to 180 construction workers due to the Project may result in additional demand for rental accommodation which places upward pressure on rental prices. However, it is also noted that the peak construction period in which there is the potential for heightened demand for accommodation is only anticipated to occur for up to six months. As part of planning for construction and throughout the construction period, HVO will continue to engage with council so that any relevant considerations that may affect accommodation availability, such as local tourist events, are identified and appropriate measures implemented in consultation with council.

Additional mitigation measures to avoid impacts associated with the short-term construction workforce recommended in the SIA included:

- where possible, prioritisation of short-term accommodation rather than rental accommodation to meet requirements
- maximising the number of workers with applicable skills able to be sourced from within a one-hour commute from HVO.

2.6.4 Buffer land

MSC acknowledged that alternative uses for buffer land surrounding the Project were beyond the scope of the Project. Regardless, HVO acknowledge that a review of alternative uses for buffer lands would be considered during the development of a detailed mine closure plan that would be developed within five years of the cessation of mining and in consultation with key government agencies and other relevant stakeholders including MSC.

This is an existing commitment in the EIS. Should HVO determine, prior to closure, to pursue alternative land uses of mine buffer land this would be subject of appropriate assessment and determination independent of the Project.

MSC noted concerns regarding the management of socio-economic impacts of closure and whether management will be controlled via a condition/s of development consent. MSC consider that managing the socio-economic impact from the closure of the HVO should not be confined to a rehabilitation plan and recommended a condition of consent be imposed requiring the preparation of a Socio-Economic Mine Closure Plan.

2.6.5 Closure planning

HVO reiterates that as part of the detailed mine closure planning, HVO is committed to working with key stakeholders, the community and relevant government agencies to implement a coordinated and collaborative approach to mine closure planning and the development of a detailed mine closure plan to ensure any post mine land use achieves a suitable, long-term benefit for the local and regional communities, maximises the potential for future employment opportunities and ensures the impacts of mine closure on the local and regional communities are minimised. HVO considers the development of a detailed mine closure plan within five years of mine closure, in collaboration with key stakeholders, as the appropriate tool to guide the closure of the mine should the Project be approved.

2.7 Transport for NSW

TfNSW advice on the submissions report noted that the proposed upgrade of the existing Golden Highway/Comleroi Road intersection is to include, but not be limited to, an auxiliary left turn (AUL)/channelised right turn (CHR) type treatment and that any further requirements for the intersection upgrade could be determined as part of the necessary Works Authorisation Deed (WAD) assessment process.

TfNSW further noted that they had previously requested a Strategic Plan for the proposed upgrade of the existing Golden Highway/Comleroi Road intersection which had not been provided and TfNSW were unable to fully clarify the necessary scope of development works, and subsequent Environmental Assessment for DPE's consideration.

In response to this matter raised by TfNSW, a strategic plan for the preferred upgrade of the existing Golden Highway/Comleroi Road intersection has been provided as Appendix B. As noted within the EIS (Section 4.4.1), the Project allows for two options with respect to the connection to the Golden Highway; one assuming that the Golden Highway is realigned by United Wambo State significant development (SSD) 7142 as approved, and a second option that aligns with the current alignment of the Golden Highway. At this time, it is assumed the intersection will be constructed along the current alignment of the Golden Highway, which is reflected in the strategic plan provided in Appendix B.

Should the Golden Highway be realigned in accordance with SSD 7142, prior to Project construction, the alternative intersection will be pursued. HVO will consult with TfNSW prior to construction and, if necessary, issue a strategic plan for the alternative intersection if required.

3 Conclusion

We trust this information is sufficient for your purposes. Should you have any questions or require any further information regarding this information, please contact Jason Martin (HVO Approvals Manager) on 0422 215 589 or email jason.martin@glencore.com.au.

Appendix A

Response to NSW DCCEEW – Water Group

1 March 2024

Joe Fittell
Team Leader
Department of Planning, Housing and Infrastructure
4 Parramatta Square
12 Darcy Street
Parramatta NSW 2150

Re: Hunter Valley Operations Continuation Project - Response to supplementary advice on water licensing and waterfront land

Dear Joe,

1 Background

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HVO is seeking approval for the HVO Continuation Project (the project) under the provisions of Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The project broadly comprises the continuation of mining at HVO North and HVO South, from the current approved mining completion dates of 2025 and 2030 respectively, to the end of 2050 at HVO North and 2045 at HVO South. An environmental impact statement (EIS) was prepared to support the two State significant development (SSD) applications being:

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In November 2023, a response to submissions received during the public exhibition of the EIS was submitted to the Department of Planning, Housing and Infrastructure (DPHI, formally the Department of Planning and Environment) along with an Amendment Report prepared to assess proposed changes in the project design.

Following the submission of these documents, supplementary advice has been received from the Department of Climate Change, Energy, the Environment and Water – Water Group (Water Group, formally part of the Department of Planning and Environment). This document responds to residual queries from the Water Group in relation to water licensing for the project and impacts on waterfront land that it recommended be addressed prior to determination. These recommendations from the Water Group (in advice dated 1 December 2023) are reproduced below.

1.1 Recommendation – prior to determination

The proponent should update the water balance for the median, 5th and 95th percentile climate scenarios to include the entire period of proposed operation for HVO North (2050) and HVO South (2045), and post closure.

Explanation

The documentation provided has included an operational water balance only up until 2040. This does not address DPE Water’s review of the EIS which requested the water balance to cover the project life and post closure for the median, 5th and 95th percentile climate scenarios.

1.2 Recommendation – prior to determination

The proponent should review the water licensing requirements for dams where diversions are existing or proposed and the dam still captures runoff.

Explanation

Section 4.3 of Appendix D to the response to submissions (RTS) report has referred to a number of dams as off-stream storages after construction of diversions. Should these dams still have a catchment which is a source of runoff (i.e. not a turkeys nest dam), this water take and/or the dam itself needs to be assessed for licensing or a relevant exemption.

2.1 Recommendation – prior to determination

The proponent should provide an assessment of impacts on watercourses as requested by DPE Water’s response submitted on review of the environmental impact statement.

Explanation

Section 4.6.3 of the response to submissions report has referred to the intention to carry out any works within waterfront land generally in accordance with the Guidelines for Controlled Activities on Waterfront Land (DPE 2022). However, an assessment has not been provided of impacts on waterfront land due to the proposed works.

2 Water balance

2.1 During operations

As discussed in the Surface Water Impact Assessment (SWIA; Engeny 2022) in Appendix K to the EIS, historical climate records for use in the water balance model were obtained from the SILO database at the HVO site from 1892 to 2012 (121 years). The model uses a time-shifting element to forecast 121 possible climate sequences (‘realisations’) over the 27-year project life. The data from all realisations have been used to predict the model response under a range of climate conditions such as the very dry, average and very wet climate scenarios.

Water balance modelling has been undertaken for the full operational period of the project, from mining year 1 (2024) through to 2050 for HVO North and 2045 for HVO South. Table 4.12 of the Submissions Report (EMM 2023a) presented annual median, 5th and 95th percentile water balance results for conceptual mine stages for indicative years 3, 7, 11, 18 and 22. The results presented for 2044 (Year 22) were mislabelled as Year 18 in the table (two columns labelled Year 18 were incorrectly presented). Therefore, the results in the second column labelled Year 18 represent the results for the period from Year 22 to the end of the operational phase of the project.

Table 2.1 presents the predicted operational water balance results for the median, 5th and 95th percentile, with the corrected heading for Year 22 shown in italics. Note that results have been presented as percentiles, which give a ranking, in percentage terms, of all results from lowest to highest for the 121 model realisations based on the historical climate record from 1892 to 2012. For a given percentile, the corresponding result is the threshold below which that percentage of all recorded years falls. For example, a 5th percentile result marks the threshold for the lowest 5% of results. This means that 5% of results are less than this value, and 95% of results are above this value. Similarly, a 95th percentile result marks the threshold for the lowest 95% of results, equivalent to the highest 5%. This means that 5% of the results are greater than the 95th percentile result.

The water balance modelling was based on the conceptual mine stage plans for Years 3, 7, 11, 18 and 22. The results presented in Table 2.1 represent the estimated annual runoff for the following years:

- Year 3 results represent the period the time from Year 3 to 6 of the project
- Year 7 results represent the period the time from Year 7 to 10 of the project
- Year 11 results represent the period the time from Year 11 to 17 of the project
- Year 18 results represent the period the time from Year 18 to 21 of the project
- Year 22 results represent the period the time from Year 22 of the project to end of operations.

Table 2.1 **Annual operational water balance**

Parameter (ML/year)	Year 3			Year 7			Year 11			Year 18			Year 22		
	5th percentile	Median	95th percentile	5th percentile	Median	95th percentile	5th percentile	Median	95th percentile	5th percentile	Median	95th percentile	5th percentile	Median	95th percentile
Inflows															
Rainfall	550	1,100	1,892	550	1,152	1,932	531	1,128	2,093	551	1,173	1,962	577	1,283	2,160
Runoff	1,799	5,027	15,666	1,848	5,287	16,126	1,797	4,994	16,229	1,504	4,901	14,918	1,188	5,074	15,030
Groundwater inflows	283	283	283	690	690	690	1,136	1,136	1,136	809	809	809	128	128	128
Hunter River extraction (HSE)	338	3,759	4,704	222	3,700	4,707	531	4,263	4,707	119	1,952	3,967	204	629	2,420
Hunter River extraction (GSE)	0	0	448	0	0	646	0	0	528	0	0	0	0	0	0
Decant return (Liddell)	3,157	3,175	3,176	3,147	3,165	3,172	4,097	4,143	4,219	2,937	2,952	2,987	1,202	1,257	1,281
Outflows															
Evaporation	1,873	2,140	2,570	1,812	2,179	2,465	1,676	2,135	2,483	1,763	2,188	2,557	1,863	2,403	2,885
Pump to coal preparation plant	5,819	5,819	5,819	5,804	5,804	5,804	7,402	7,402	7,402	5,364	5,364	5,364	2,115	2,115	2,115
Dust suppression	3,685	3,987	3,987	3,665	4,224	4,224	3,710	4,532	4,532	3,056	3,867	3,952	936	1,102	1,337
HRSTS release	0	0	6,529	0	0	6,117	0	0	5,706	0	840	7,599	0	943	7,072
Overflows	86	173	707	14	50	307	12	50	251	11	53	346	7	55	379
Washdown	310	310	310	310	310	310	311	311	311	311	311	311	310	310	310

Table 2.1 Annual operational water balance

Parameter (ML/year)	Year 3			Year 7			Year 11			Year 18			Year 22		
	5th percentile	Median	95th percentile	5th percentile	Median	95th percentile	5th percentile	Median	95th percentile	5th percentile	Median	95th percentile	5th percentile	Median	95th percentile
Miscellaneous industrial use	350	350	350	672	672	672	634	634	634	351	351	351	350	350	350
Load point sprays	296	330	362	296	330	362	295	328	363	295	327	363	294	325	362

Notes: HSE = high security entitlement; GSE = general security entitlement; HRSTS = Hunter River Salinity Trading Scheme

2.2 Post-closure

A water and salt balance model of the HVO South and HVO North final voids was developed by Engeny (2022) and described in the SWIA (Engeny 2022) included in Appendix K to the EIS. Table 2.2 presents the median, 5th, 80th and 95th percentile annual long-term results (1,000 years post-closure) for each void.

Table 2.2 Annual long-term final void water balance (1,000 years post-closure)

Parameter (ML/year)	HVO North				HVO South			
	5th percentile	Median	80th percentile	95th percentile	5th percentile	Median	80th percentile	95th percentile
Inflows								
Rainfall	843	1,272	1,645	1,816	691	1,047	1,355	1,496
Runoff (pit wall)	68	301	562	686	55	242	452	551
Runoff (natural area)	0	0	0	0	5	15	30	52
Runoff (rehabilitated spoil)	36	133	330	592	40	148	366	657
Groundwater inflow	194	194	194	194	0	0	0	0
Spoil seepage inflow	166	169	171	169	268	266	264	265
Outflows								
Evaporation	2,192	2,259	2,175	2,297	1,804	1,868	1,799	1,900
Groundwater outflow	0	0	0	0	32	32	32	32

3 Closure water licensing strategy

3.1 Groundwater

The post-closure groundwater take (including groundwater inflows into the final voids) has been predicted using the groundwater model developed for the project (AGE 2022). The predicted groundwater take at 100 years after mining from each water source and management zone associated with the project is summarised in Table 3.1 along with the HVO entitlement held in the corresponding area (previously presented in Table 3.3 of the licensing strategy that accompanied the Submissions Report).

HVO holds more than sufficient entitlement to account for the predicted groundwater take over the project life and beyond in most water sources. Groundwater modelling predicts a small indirect take from the Jerrys water source (during operations) and the Glennies Creek Management Zone (post-closure) where HVO currently does not hold sufficient entitlement. Prior to the take occurring, HVO will purchase entitlement via the open market to account for the small predicted take.

Table 3.1 Post-closure groundwater take

Water source	Management zone	Ongoing (post-closure) take (ML/year)	Aquifer access entitlement held (unit shares)
Sydney Basin-North Coast Groundwater Source		1,200–1,300	5,560
Hunter Regulated River Alluvial Water Source	Upstream Glennies	468	568
	Downstream Glennies	33	289
	Glennies	3	–
Jerrys Water Source	Jerrys	12–18	–
Lower Wollombi Brook Water Source		22–27	144
Singleton Water Source		2	255

3.2 River leakage

The indirect surface water take due to river leakage to groundwater has been predicted by the groundwater model for the project (AGE 2022). The predicted surface water take at 100 years after mining from each water source and management zone associated with the project is summarised in Table 3.2 along with the HVO entitlement held in the corresponding area (previously presented in Table 3.4 of the licensing strategy that accompanied the Submissions Report).

Table 3.2 Post-closure surface water take due to river leakage to groundwater

Water source	Management zone	Ongoing (post-closure) take (ML/year)	Regulated river entitlement held (unit shares)
Hunter Regulated River Water Source	Zone 1B (Hunter River from Goulburn River Junction to Glennies Creek Junction)	63	3,180 (high security) 5,244 (general security)
	Zone 2A (Hunter River from Glennies Creek Junction to Wollombi Brook Junction)	3	1,506 (high security) 1,393 (general security)

3.3 Final landform

3.3.1 Final void runoff

The catchment runoff into the final voids at HVO North and HVO South has been predicted by the final void water balance model for the project (Engeny 2022). The predicted surface water take (runoff from natural areas and rehabilitated spoil) at 1,000 years after mining for both voids from the Jerrys Water Source is summarised in Table 3.3 along with the HVO entitlement held.

As part of detailed closure planning, licensing requirements will be reviewed in consultation with NSW Government. Prior to the take occurring, HVO will purchase any additional entitlement required via the open market (including trade, in accordance with water sharing plan rules).

Table 3.3 **Post-closure surface water take to final voids**

Water source	Management zone	Ongoing (post-closure) take (ML/year)		Unregulated river entitlement held (unit shares)
		Median	80th percentile	
Jerrys Water Source	Jerrys	296	726	705

3.3.2 Water management structures

Figure 3.1 presents the conceptual locations of water management structures established on drainage lines within the final landform. During the closure period, these storages will act as sediment dams to control runoff water quality by retaining sediment until adequate vegetation cover is established. Post-closure, when the vegetation cover criteria have been met, the dams will be decommissioned, retained as harvestable rights dams (if on minor streams) or retained with the required water supply work approvals acquired (if on non-minor streams).

HVO will seek an amendment to the Water Management (General) Regulation 2018 (WM Regulation) hydroline dataset to reflect the proposed drainage lines within the final landform. The licensing strategy presented below is based on the final landform drainage configuration to determine stream order.

The design criteria adopted for the sediment dams that form the closure water management system was described in Section 3.1.3.3 of the SWIA (Engeny 2022) at Appendix K to the EIS. The dams have been sized based on the requirements of *Managing Urban Stormwater: Soils and Construction* (Landcom 2004).

Table 3.4 summarises the water management structures proposed for the closure period. Using the amended drainage configuration (i.e. final landform drainage lines), there are a total of 14 dams located on minor streams (i.e. first or second order streams or not located on a stream), with the remaining four dams located on third order (i.e. non-minor) streams.

During the closure period when the water management structures are acting as sediment dams, the 14 dams located on minor streams will meet the excluded works purpose definitions in Schedule 1 of the WM Regulation and accompanying fact sheet (DPE 2022). These dams are located on minor streams and will be solely for the capture, containment and recirculation of drainage and/or effluent, consistent with best management practice to prevent the contamination of a water source. As excluded works, these dams will be exempt from requiring a water access licence (WAL) for any associated take in accordance with Schedule 4 of the WM Regulation.

The 14 dams on minor streams will be converted from sediment dams to harvestable rights dams for the final landform or will be decommissioned. These storages will not meet the excluded works purpose definitions in Schedule 1 of the WM Regulation. Any water take associated with these dams for the final landform will be accounted for under harvestable rights. HVO has 13,343 hectares (ha) of contiguous landholdings, which equates to a maximum harvestable rights dam capacity of 934 megalitres (ML). The total capacity of harvestable rights dams, within the final landform, will not exceed the maximum harvestable rights dam capacity. This will be reviewed as part of detailed closure planning, in consultation with NSW Government.

The closure water management system, to support the final landform, includes four dams on third order streams. During the closure period, when the water management structures are actively managed as sediment dams (i.e. dewatered to maintain sufficient capacity to capture sediment-laden runoff), the catchment runoff captured by these dams will be accounted for with sufficient entitlement in the appropriate water source. The water balance model developed by Engeny (2022) was used to estimate the water take by these dams under a range of climate scenarios. Table 3.5 presents the predicted surface water take for the closure period, along with the HVO entitlement held.

In the final landform, there will be no extraction (i.e. water 'take') from the dams on third order streams. They will be passive structures in the landscape for which water supply works approvals will likely be required. As is the case for other instream structure in NSW from which no water is taken, no WALs will be required.

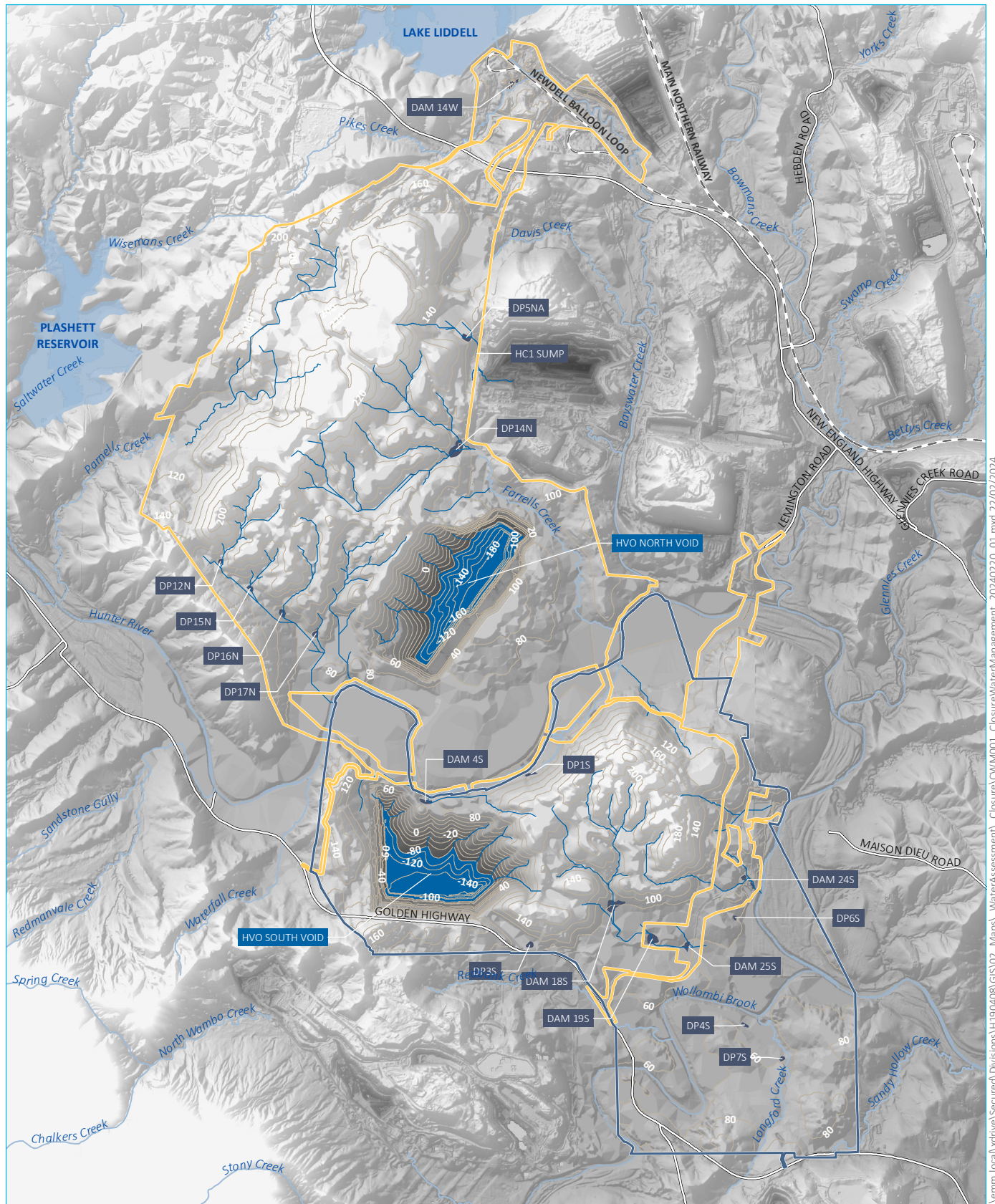
Table 3.4 Closure water management structures

Dam	Stream order ¹	Licensing strategy	
		Closure period	Final landform
Dam 14W	2	Excluded works exemption	Harvestable rights
Dam 18S	3	WAL required	No WAL required
Dam 19S	3	WAL required	No WAL required
Dam 24S	2	Excluded works exemption	Harvestable rights
Dam 25S	3	WAL required	No WAL required
Dam 4S	1	Excluded works exemption	Harvestable rights
DP1S	1	Excluded works exemption	Harvestable rights
DP3S	N/A	Excluded works exemption	Harvestable rights
DP4S	1	Excluded works exemption	Harvestable rights
DP5Na	2	Excluded works exemption	Harvestable rights
DP6S	N/A	Excluded works exemption	Harvestable rights
DP7S	1	Excluded works exemption	Harvestable rights
DP12N	2	Excluded works exemption	Harvestable rights
DP14N	3	WAL required	No WAL required
DP15N	2	Excluded works exemption	Harvestable rights
DP16N	2	Excluded works exemption	Harvestable rights
DP17N	1	Excluded works exemption	Harvestable rights
HC1 Sump	N/A	Excluded works exemption	Harvestable rights

1. Based on the amended drainage configuration within the final landform as shown on Figure 3.1.

Table 3.5 **Closure surface water take to sediment dams on third order streams**

Water source	Management zone	Median water take (ML/year)					80th percentile water take (ML/year)					Unregulated river entitlement held (unit shares)
		DP14N	Dam 18S	Dam 19S	Dam 25S	Total	DP14N	Dam 18S	Dam 19S	Dam 25S	Total	
Jerrys Water Source	Jerrys	520	216	0	0	736	591	246	0	0	837	705
Lower Wollombi Brook		0	48	60	44	158	0	55	69	50	174	88
Singleton		0	20	0	1	21	0	23	0	1	24	–



Source: EMM (2024); HVO (2023); DFSI (2017)

0 2.5 5 km
GDA2020 MGA Zone 56

KEY

- | | |
|--|---|
| HVO North proposed development consent boundary | Existing environment |
| HVO South proposed development consent boundary | — — Rail line |
| Water management area (indicative) | — Major road |
| Pit lake at equilibrium | — Named watercourse |
| — Predicted drainage | Named waterbody |
| — Final landform 20 m contour | |

Closure water management

HVO Continuation Project
Figure 3.1

3.4 Summary

A summary of the water licensing requirements for the closure and final landform associated with the project is presented in Table 3.6. HVO holds sufficient entitlement for the predicted water take in most water sources, indicated in green in Table 3.6. As part of detailed closure planning which would be developed within five years of cessation of mining, licensing requirements will be reviewed in consultation with NSW Government. Prior to the take occurring, HVO will purchase any additional entitlement required via the open market (including trade, in accordance with water sharing plan rules), indicated in yellow in Table 3.6.

Table 3.6 **Summary of closure water licensing requirements**

Water source	Management zone	Entitlement held by HVO (unit shares)				Peak total water take (ML/year)		
		Aquifer	Regulated river (general security)	Regulated river (high security)	Unregulated river	Aquifer	Regulated river	Unregulated river ¹
Sydney Basin-North Coast Groundwater Source		5,560				1,200–1,300		
Hunter Regulated River Alluvial Water Source	Upstream Glennies	568				468		
	Downstream Glennies	289				33		
	Glennies					3		
Jerrys Water Source	Jerrys				705	12–18		1,032/1,563
Lower Wollombi Brook Water Source		144			88	22–27		158/174
Singleton Water Source		225				2		21/24
Hunter Regulated River Water Source	Zone 1B (Hunter River from Goulburn River Junction to Glennies Creek Junction)		5,244	3,180			63	
	Zone 2A (Hunter River from Glennies Creek Junction to Wollombi Brook Junction)		1,393	1,506			3	

1. Median/80th percentile predicted take into final void and closure water management structures on third order streams.

4 Off-stream storages

As discussed in the water licensing strategy in Appendix D of the Submissions Report (EMM 2023), there are five water management structures that are located on non-minor streams (i.e. third order or higher stream order), according to the current WM Regulation hydroline dataset. This hydroline dataset is based on historical topographic mapping and has not been updated to accurately reflect the current drainage configuration of the site which includes stream diversions approved by Government under the EP&A Act development consents and modifications. HVO is seeking a revision of the WM Regulation hydroline dataset to reflect the approved water management system, including approved stream diversions.

The water licensing strategy reviewed the hydroline and drainage configuration for each of the five water management structures located on non-minor streams. Amendment of the WM Regulation hydroline dataset to reflect existing or proposed diversions would render each of these storages as 'offstream' or at most on a minor stream.

The water licensing requirements for these five water management structures have been further reviewed. Specific details on each of the structures is provided in Table 4.1, including the stream order interpreted for:

- the current WM Regulation hydroline dataset
- revised hydroline dataset based on the current approved drainage configuration at the site
- revised hydroline dataset based on the drainage configuration proposed as part of the project.

4.1 Dam 15S

Dam 15S (Lake James) is a mine water dam that is currently mapped as being located on a third order stream, as shown in Figure 4.1. The dam stores water that has been dewatered from HVO South and has approval for discharge to the Hunter River under EPL 640 as part of the Hunter River Salinity Trading Scheme (HRSTS).

Currently, a diversion to the south of Dam 15S channels clean water from upstream catchments around the dam to join the natural watercourse downstream. A northern diversion channel directs sediment-laden water to a small dam downstream of Dam 15S known as the Lake James Dissipator Dam, which is then pumped into Dam 15S until water can be discharged to the Hunter River. There is a small catchment area to the north of Dam 15S that drains directly to the dam.

Revision of the WM Regulation hydroline dataset to reflect the approved diversions would render Dam 15S and the Lake James Dissipator Dam as on minor second order streams.

As part of the project, Dam 15S is proposed to be enlarged into this northern area, effectively making Dam 15S a 'turkey's nest dam' with no contributing catchment and no water take. Therefore, there is no licensing requirement for water take by Dam 15S as part of the project.

The Lake James Dissipator Dam captures sediment-laden runoff drained by the northern diversion channel meets the excluded works purpose definition in Schedule 1 of the WM Regulation, as the purpose is to *prevent the contamination of a water source*. Therefore, there is no licensing requirement for water take by this dam as part of the project.

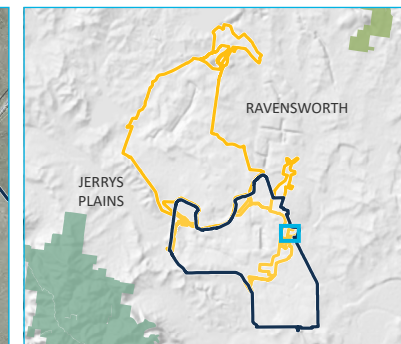
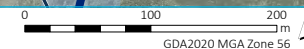
Table 4.1 **Dams on non-minor streams**

Name	Water source	Diversion in place or proposed	Stream order			Peak take – 50th/80th percentile (ML/year)		Licensing pathway
			WM Regulation hydroline	Current drainage lines with revised hydroline	Proposed (project) drainage lines with revised hydroline	Current drainage lines	Proposed (project)	
Dam 15S	Singleton	In place and modification proposed	3	2	2	8/21	0/0	Hydroline update No water take – no WAL
Dam 14W	Jerrys	In place	3	N/A	N/A	16/26	90/133	Hydroline update Excluded works exemption
Dam 9W	Jerrys	In place and modification proposed	3	N/A	N/A	0/0	0/0	Hydroline update No water take – no WAL
Dam 18W	Jerrys	Modification proposed	3	3	N/A	182/440	0/0	Hydroline update No water take – no WAL
Dam 35S	Jerrys	In place	4	2	2	19/63	18/48	Hydroline update Excluded works exemption

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Source: EMM (2023); HVO (2023); DCSSS (2023); DPI (2015); GA (2009)



KEY

- ▬ HVO North proposed development consent boundary
- ▬ HVO South proposed development consent boundary
- ▬ Lake James existing diversion
- ▬ HVO dam (existing)
- Strahler stream order
 - ▬ 1st order
 - ▬ 2nd order
 - ▬ 3rd order
 - ▬ 10th order
- Existing environment
 - ▬ Minor road
 - ▬ Vehicular track
 - ▬ Named waterbody

INSET KEY

- ▬ NPWS reserve
- ▬ State forest

Lake James- hydroline and current drainage configuration

HVO Continuation Project
Figure 4.1

4.2 Dam 14W

Dam 14W is a mine water dam that is the primary water management storage for the Newdell load point and captures runoff from the train loading facilities and product coal stockpile, as shown in Figure 4.2. Pikes Creek is a third order watercourse which flows in a north-easterly direction before joining Bayswater Creek. Approximately 2 km of Pikes Creek is diverted around the Newdell load point, which is approved under water supply work approval 20WA211427.

The project includes the option to upgrade the Newdell load point, including an upgrade to the existing train loading infrastructure, an increase in the product coal stockpile capacity and an enlargement of Dam 14W to provide additional containment capacity.

Revision of the WM Regulation hydroline dataset to reflect the approved diversion of Pikes Creek around Dam 14W would render the dam as an offstream storage that is not located on a hydroline. As the dam captures runoff from coal stockpile areas, it therefore meets the excluded works purpose definition in Schedule 1 of the WM Regulation, as the purpose is to *prevent the contamination of a water source*, and there is no licensing requirement for water take by Dam 14W as part of the project.

4.3 Dam 9W and Dam 18W

Dam 9W (Parnells Dam) and the upstream bywash dam (Dam 18W) are currently mapped as being located on Parnells Creek as a third order stream, as shown in Figure 4.3. Currently, the creek flows into Dam 18W and is then diverted around Dam 9W (under approval by water supply works approval 20WA210991). WAL 18307 with 500 unit shares in the Jerrys Water Source is held to account for the water take associated with Dam 18W. Dam 9W is a turkey's nest dam that is used to store water that has been dewatered from HVO North. Dam 9W is also approved to discharge to the Hunter River under EPL 640 as part of the HRSTS.

The project proposes to combine and enlarge Dam 9W and Dam 18W (collectively called "Parnells Dam") to provide additional containment capacity for HVO North (Figure 4.3). As part of these works, Parnells Creek will be diverted around the new dam to the north-west, effectively making the new dam an offstream turkey's nest dam with no contributing catchment and no water take. Therefore, there is no licensing requirement for Dam 9W and Dam 18W (Parnells Dam) as part of the project.

4.4 Dam 35S

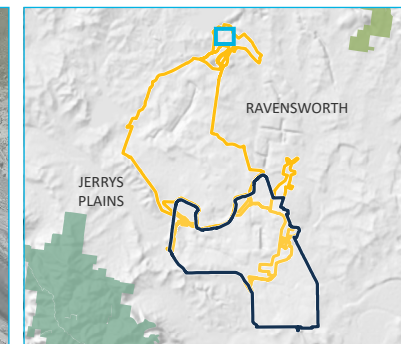
Dam 35S is a sediment dam located in an area of temporary stabilisation at HVO South, north of Riverview Pit. The mapped WM Regulation hydroline dataset shows Dam 35S on a fourth order stream, as shown in Figure 4.4. Diversions are in place to direct clean water from upstream catchments to the south-west of Dam 35S around the area of temporary stabilisation to join the natural watercourse to the north of Dam 35S, which then flows into the Hunter River. As part of the project, the catchment area draining to Dam 35S decreases slightly as the HVO South mining area progresses, with no other changes to this dam or drainage configuration proposed.

Revision of the WM Regulation hydroline dataset to reflect the approved diversions would render Dam 35S as an offstream storage that is not located on a hydroline. As the dam captures sediment-laden runoff from the temporarily stabilised area, it therefore meets the excluded works purpose definition in Schedule 1 of the WM Regulation, as the purpose is to *prevent the contamination of a water source*, and there is no licensing requirement for water take by Dam 35S as part of the project.

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Source: EMM (2023); HVO (2023); DCSSS (2023); DPI (2015); GA (2009)

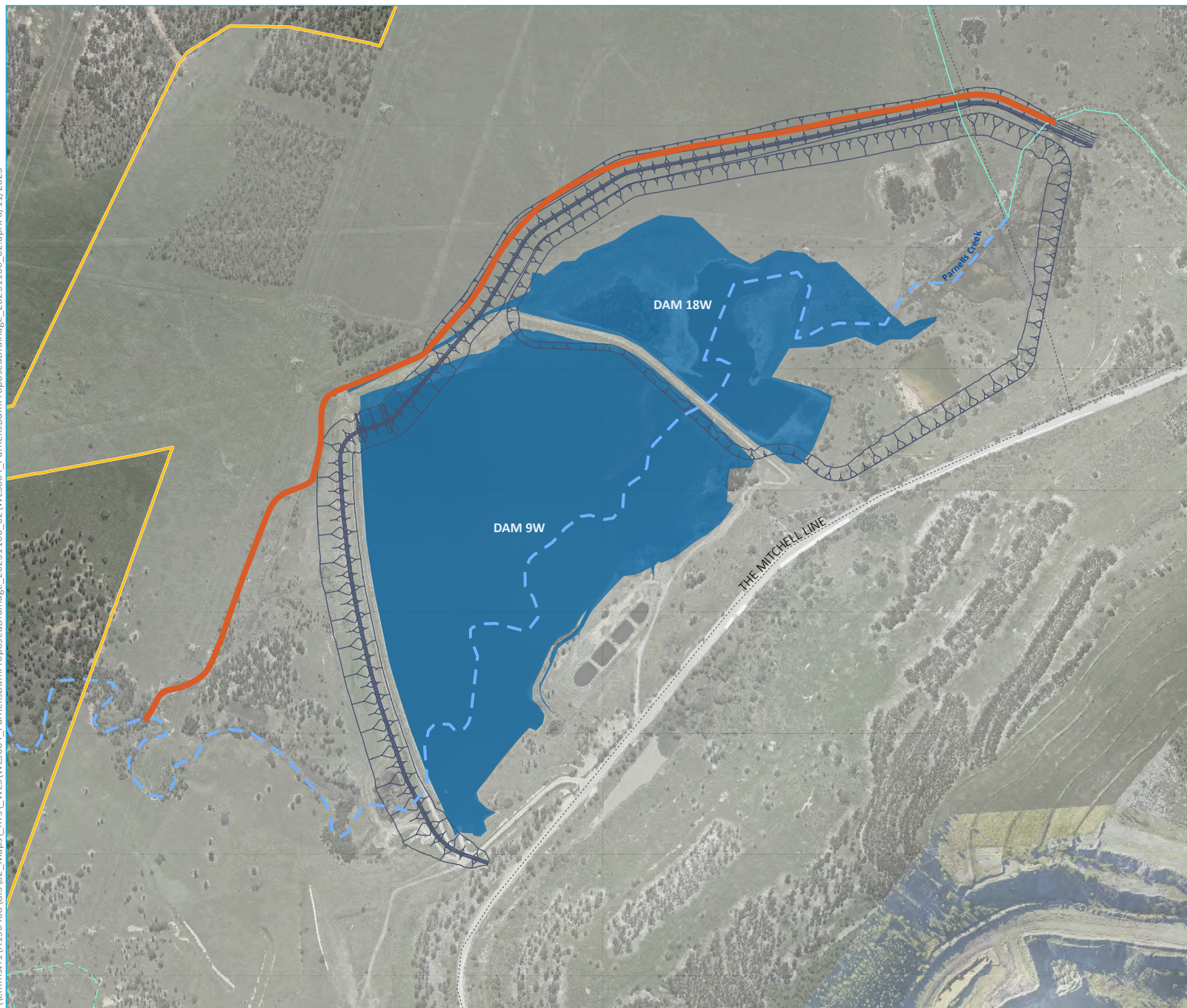


- KEY**
- HVO North proposed development consent boundary
 - HVO South proposed development consent boundary
 - Dam 14W diversion
 - HVO dam (existing)
 - Strahler stream order
 - 3rd order
 - 10th order
 - Existing environment
 - Minor road
- INSET KEY**
- NPWS reserve
 - State forest

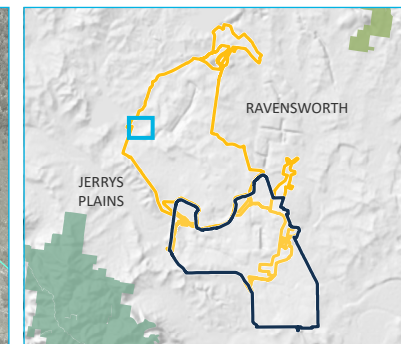
Dam 14W- hydroline and drainage configuration

HVO Continuation Project
Figure 4.2

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Source: EMM (2023); HVO (2023); DCSSS (2023); DPI (2015) GA (2009)



- KEY**
- HVO North proposed development consent boundary
 - HVO South proposed development consent boundary
 - Proposed Parnells Dam upgrade
 - Parnells Dam proposed diversion
 - HVO dam (existing)
 - Strahler stream order
 - 1st order
 - 2nd order
 - 3rd order
 - Existing environment
 - Vehicular track
- INSET KEY**
- NPWS reserve
 - State forest

Parnells Dam (upgrade) proposed drainage configuration

HVO Continuation Project
Figure 4.3



Source: EMM (2023); HVO (2023); DCSSS (2023); DPI (2015); GA (2009)

KEY

- HVO North proposed development consent boundary
- HVO South proposed development consent boundary
- Dam 35S diversion drainage
- HVO dam (existing)
- Strahler stream order
 - 1st order
 - 2nd order

- 3rd order
- 4th order
- 10th order
- Existing environment
 - Minor road
 - Vehicular track
 - Named waterbody

INSET KEY

- NPWS reserve
- State forest

Dam 35S- hydroline and current drainage configuration

HVO Continuation Project
Figure 4.4

5 Works on waterfront land

‘Waterfront land’ is defined by the WM Act as the bed of any river, lake or estuary and the land within 40 metres (m) of the highest bank of the river, the shore of the lake or the mean high-water mark of the estuary. Impacts to waterfront land due to works associated with the project have been assessed in the SWIA (Engeny 2022) in Appendix K to the EIS. A summary of the primary works proposed on waterfront land, potential impacts and proposed controls is provided in Table 5.1, based on information provided in the SWIA.

All works on waterfront land will be designed and constructed to ensure minimal harm to waterways and waterfront land. Detailed design, construction, operation and management of project infrastructure will consider the *Guidelines for Controlled Activities on Waterfront Land* (DPE 2022), *Managing Urban Stormwater: Soils and Construction – Volume 1* (the Blue Book; Landcom 2004) and *Volume 2E Mines and Quarries* (DECC 2008).

Controls are documented in the water management plan (WMP), which includes a surface water management plan and groundwater management plan as well as sections that address erosion and sediment control and response plans. It is proposed to manage and construct the proposed infrastructure using the same methods and controls that are currently in place and specified in the WMP which will be updated as required for the project. General safeguards and mitigation measures that will be considered for all works on waterfront land include:

- The design and construction footprint of all project infrastructure and the extent of disturbance within waterfront land will be minimised.
- All waterfront land disturbed by the construction of project infrastructure will be rehabilitated to adequately restore the integrity of the watercourse and its riparian corridor.
- Scour protection will be designed and provided as necessary, for example as rock rip rap, vegetation or other materials, with protection of stream bed and banks provided downstream of infrastructure.
- Monitoring and maintenance of all project infrastructure to ensure integrity of the watercourse and its riparian corridor over time.
- The detailed design and construction of project infrastructure will accommodate natural watercourse functions and hydrological conditions as well as the maintenance of fish passage in accordance with the NSW Fisheries (2003) document *Policy and Guidelines for Fish Friendly Waterway Crossings*.
- Any works on waterfront land will be planned with consideration of weather conditions, forecast weather and river levels where appropriate.
- Planned works on waterfront land will have inspections completed as per the specific conditions outlined in the Ground Disturbance Permit process (as specified in the WMP).

Table 5.1 **Summary of works on waterfront land, potential impacts and controls**

Project element	Potential impacts to waterfront land	Assessment and controls
Extension of open cut mining area and extraction of deeper coal resources	• Change in catchment areas reducing or changing streamflow. • Ground disturbance, leading to an increase in erosion and loads of suspended solids in runoff into watercourses.	• No new watercourse catchments are proposed to be intersected by the project. Small changes in approved catchment areas at HVO North due to the small increase in mining extent. No change to catchment areas at HVO South. • Continued diversion of clean catchments around mine infrastructure and disturbed land. • Changes to streamflow volumes and occurrence of dry days of the Hunter River and watercourses surrounding the project are generally minor or negligible. • Erosion and sediment controls will be implemented prior to disturbance, designed in accordance with the Blue Book (Landcom 2004; DECC 2008) and existing management measures. • Progressive stabilisation and rehabilitation of overburden emplacement areas and mine infrastructure areas to reduce the generation of sediment-laden runoff.
Realignment of a section of Lemington Road and new Hunter River bridge crossing	• Ground disturbance, leading to an increase in erosion and loads of suspended solids in runoff into watercourses. • Changes in flow regime. • Channel and bank stability being adversely affected. • Restriction of fish passage.	• Detailed engineering design and construction plans to avoid adverse changes to flow regimes, including an allowance for cross-drainage structures along the alignment. • Construction work to avoid, or consider relevant controls, being scheduled during native fish migratory season (where possible). • Erosion and sediment controls will be implemented prior to disturbance, designed in accordance with the Blue Book (Landcom 2004; DECC 2008) and existing management measures. • Implementation of the ground disturbance permit (GDP) process including inspections during construction activities.
Increase in the capacity of Parnells Dam (Dam 9W and Dam 18W) Increase in the capacity of Lake James (Dam 15S)	• Ground disturbance, leading to an increase in erosion and loads of suspended solids in runoff into watercourses. • Change in catchment areas reducing or changing streamflow. • Dam discharge resulting in concentrated flows with the potential to increase erosion and sedimentation.	• Appropriate scour protection and energy dissipation will be specified during detailed design to reduce erosion potential from any discharges. • Erosion and sediment controls will be implemented prior to disturbance, designed in accordance with the Blue Book (Landcom 2004; DECC 2008) and existing management measures. • Implementation of the ground disturbance permit (GDP) process including inspections during construction activities.

Table 5.1 **Summary of works on waterfront land, potential impacts and controls**

Project element	Potential impacts to waterfront land	Assessment and controls
Construction of flood protection levees	• Ground disturbance, leading to an increase in erosion and loads of suspended solids in runoff into watercourses. • Changes in flow regime. • Channel and bank stability being adversely affected.	• The existing approved operations includes construction of levees, including the Carrington West Wing levee, so the additional incremental change due to the project is minor. • Flood modelling (comparison between existing/baseline and the project) shows low risk to channel stability or geomorphology of the Hunter River or watercourses surrounding the project. • Changes in velocity are predicted to be localised around project infrastructure and will remain within the existing ranges experienced, with a low likelihood of causing erosion or scour. • Detailed engineering design to include scour protection for levee structures. • Construction plans to minimise disturbance footprint and consider appropriate scheduling. • All disturbed areas will be stabilised and rehabilitated post completion of the works including topsoiling and revegetation and subject to ongoing maintenance such as weed control where necessary. • Erosion and sediment controls will be implemented prior to disturbance, designed in accordance with the Blue Book (Landcom 2004; DECC 2008) and existing management measures. • Implementation of the ground disturbance permit (GDP) process including inspections during construction activities.

References

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Engeny 2022, *HVO Continuation Project – Surface Water Impact Assessment*, Engeny Water Management, November 2022.

Landcom 2004, *Managing Urban Stormwater: Soils and Construction – Volume 1*, 4th edition.

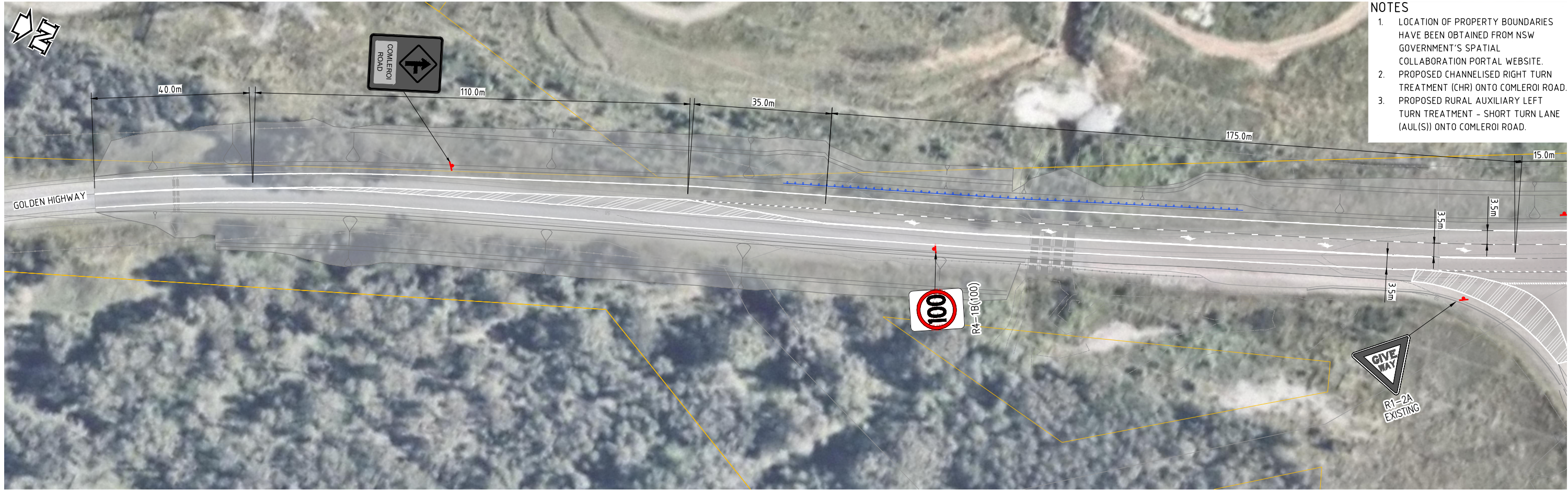
NSW Fisheries 2003, *Policy and Guidelines for Fish Friendly Waterway Crossings*, NSW Fisheries, Department of Primary Industries.

Appendix B

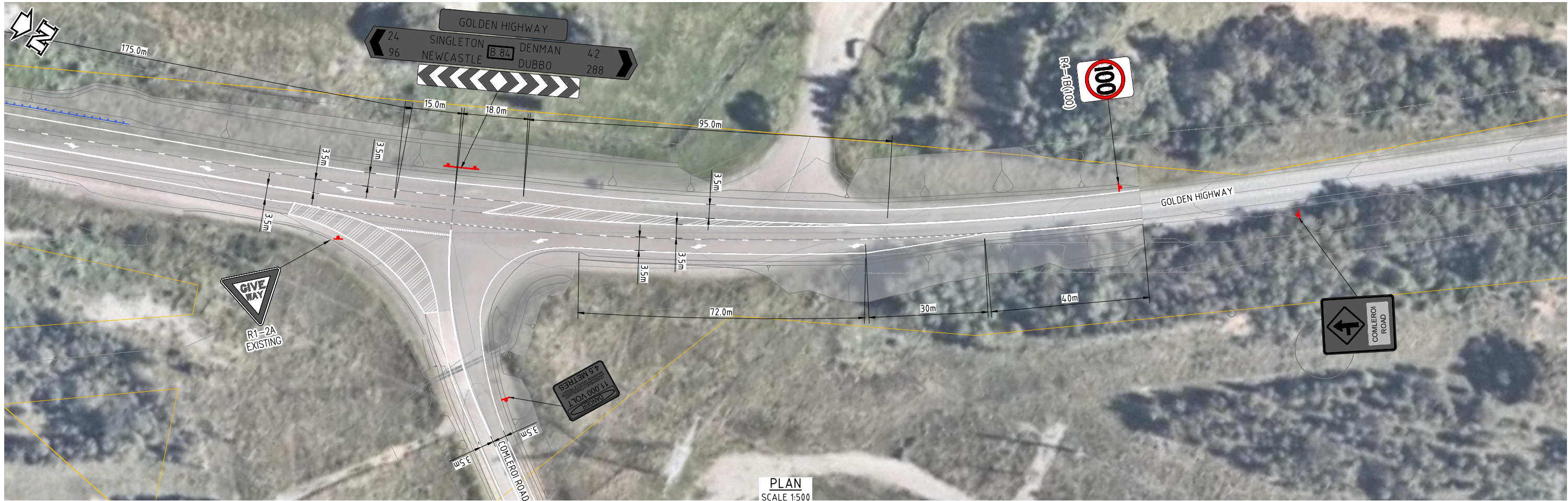
Golden Highway/Comleroi Road intersection strategic plan

HVOP-WSP-55.01.02.02-TR-0001

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- NOTES**
1. LOCATION OF PROPERTY BOUNDARIES HAVE BEEN OBTAINED FROM NSW GOVERNMENT'S SPATIAL COLLABORATION PORTAL WEBSITE.
 2. PROPOSED CHANNELISED RIGHT TURN TREATMENT (CHR) ONTO COMLEROI ROAD.
 3. PROPOSED RURAL AUXILIARY LEFT TURN TREATMENT - SHORT TURN LANE (AUL(S)) ONTO COMLEROI ROAD.

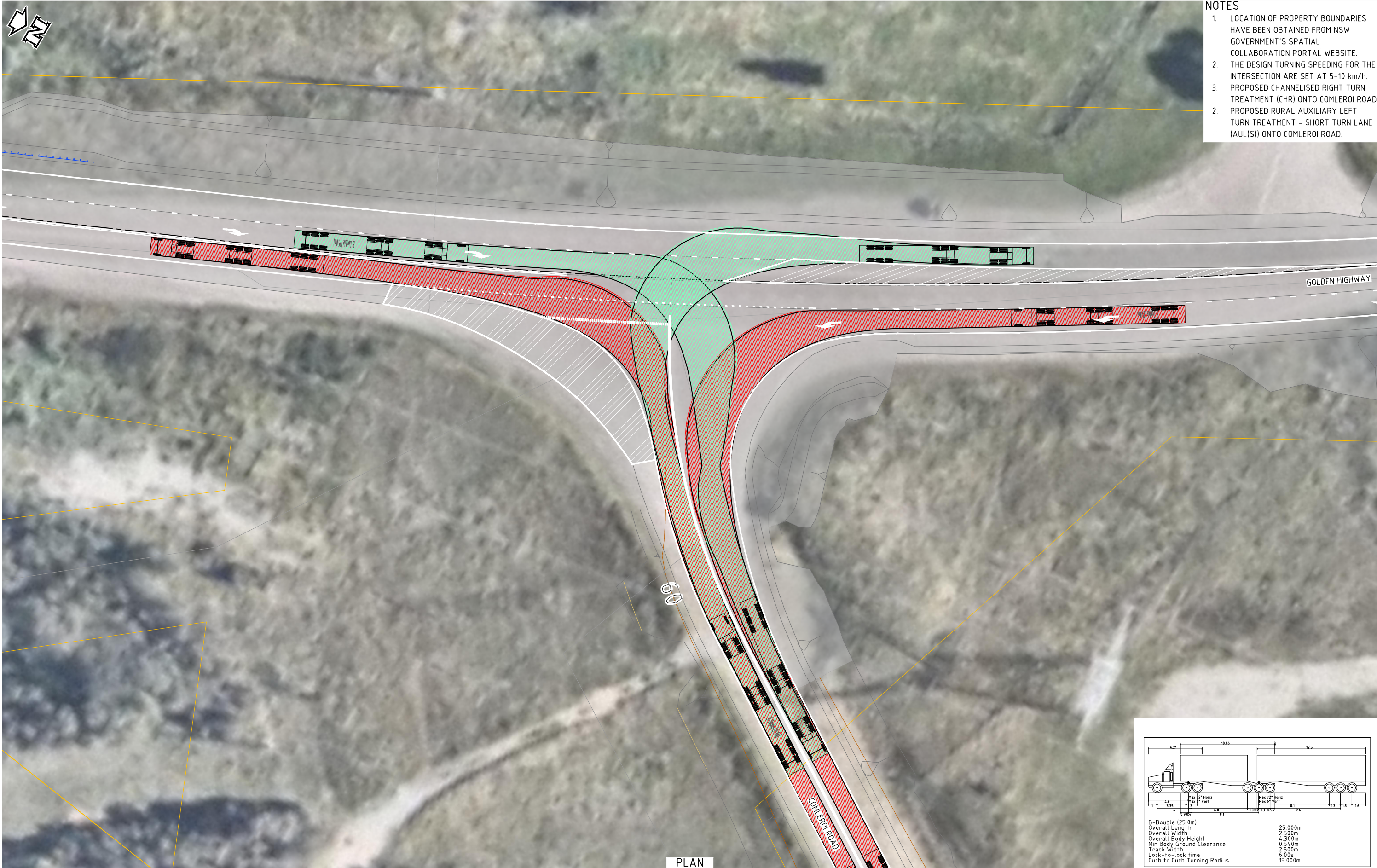


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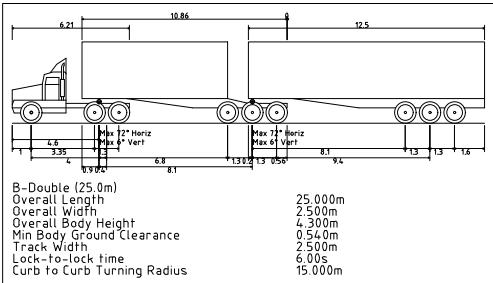
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HORIZONTAL DATUM: GDA2020-56				VERTICAL DATUM: AHD		SIGNED:		Level 3, 51-55 Bolton Street, Newcastle PO Box 1162, NSW 2300, Australia Tel: +61 2 4929 8300 Fax: +61 2 4929 8382 wsp.com		CHECKED: A.RUSSELL		APPROVED: S.MCMAHON	
REV	DATE	BY	DESCRIPTION	CHK	APPD	DATE	RPEQ	© WSP Australia Pty Ltd.		PROJECT NO: PS133792		DRAWN: J.HASTIE	
A	19.12.23	J.H	ISSUED FOR INFORMATION	A.R	S.M					DATE: 19.12.23		REV: A	

HVOP-WSP-55.01.02.02-TR-0002

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- NOTES
1. LOCATION OF PROPERTY BOUNDARIES HAVE BEEN OBTAINED FROM NSW GOVERNMENT'S SPATIAL COLLABORATION PORTAL WEBSITE.
 2. THE DESIGN TURNING SPEEDING FOR THE INTERSECTION ARE SET AT 5-10 km/h.
 3. PROPOSED CHANNELISED RIGHT TURN TREATMENT (CHR) ONTO COMLEROI ROAD.
 2. PROPOSED RURAL AUXILIARY LEFT TURN TREATMENT - SHORT TURN LANE (AUL(S)) ONTO COMLEROI ROAD.



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