

1 July 2025

Nicole Brewer
Director, Energy Assessments
Department of Planning, Housing and Infrastructure

Re: SSI-76014961 Muswellbrook Pumped Hydro - Changes from Scoping Report

Dear Nicole,

1 Introduction

Muswellbrook Pumped Hydro Pty Ltd (MPH, the Proponent), a joint venture (JV) partnership between AGL Energy Pty Limited (AGL) and Idemitsu Renewable Developments Australia Pty Ltd (Idemitsu Australia), propose to develop and operate the Muswellbrook Pumped Hydro Energy Storage Project (MPHES, the Project).

The Project involves the construction of a new pumped hydroelectric storage scheme with up to eight hours of energy storage, ancillary works and associated infrastructure. The Project is located in the Hunter-Central Coast renewable energy zone (REZ) in the Muswellbrook Local Government Area (LGA).

MPH submitted a scoping report to the Department of Planning, Housing and Infrastructure (DPHI) in December 2023, initially as a State Significant Development (SSD) project. Planning Secretary's Environmental Assessment Requirements (SEARs) and agency comments were issued for the project on 13 February 2024.

The Project was declared as Critical State Significant Infrastructure (CSSI) on 19 June 2024, and amended SEARs were issued on 1 November 2024.

Ongoing design development and environmental assessment has resulted in minor amendments to the Project. These changes are detailed in Section 2.

2 Project design changes since scoping

The key Project elements remain largely similar to that described in the scoping report (Section 3.1.1 of the scoping report). Table 2.1 outlines the changes to the Project since the scoping report was prepared.

Figure 2.1 shows the indicative Project footprint as provided in the scoping report. Figure 2.2 provides the Project layout that will be assessed in the EIS.

Table 2.1 Key changes from scoping report

Scoping section	Element	Scoping		EIS	
Table 1.3	Lot and DPs*	Lot 19 DP16352	Lot 1 DP113760	Lot 1621 DP852356	Lot 3 DP571355
		Lot 1 DP1004305	Lot 167 DP752444	Lot 1622 DP852356	Lot 41 DP551146
		Lot 1 DP45194	Lot 85 DP752484	Lot 183 DP752484	Lot 42 DP551146
		Lot 57 DP752484	Lot 84 DP752484	Lot 57 DP752484	Lot 1 DP45525
		Lot 58 DP752484	Lot 23 DP752484	Lot 59 DP752484	Lot 1 DP45194
		Lot 59 DP752484	Lot 24 DP752484	Lot 60 DP752484	Lot 1 DP396313
		Lot 60 DP752484	Lot 93 DP752484	Lot 62 DP752484	Lot 82 DP231202
		Lot 61 DP1113302	Lot 1 DP134665	Lot 70 DP752484	Lot 23 DP220328
		Lot 62 DP752484	Lot 1 DP398873	Lot 71 DP752484	Lot 1 DP184481
		Lot 44 DP1112699	Lot 180 DP627509	Lot 93 DP752484	Lot 19 DP16352
		Lot 1 DP184481	Lot 41 DP1112699	Lot 97 DP752484	Lot 20 DP16352
		Lot 100 DP666041	Lot 101 DP1167081	Lot 1 DP723294	Lot 21 DP16352
		Lot 126 DP752444	Lot 1 DP1135590	Lot 2 DP723294	Lot 5 DP1178473
		Lot 5 DP1178473		Lot 22 DP715655	Lot 101 DP1167081
				Lot 302 DP715492	Lot 101 DP1148216
				Lot 100 DP666041	Lot 1 DP1135590
				Lot 71 DP629631	Lot 61 DP1113302
				Lot 180 DP627509	Lot 41 DP1112699
				Lot 1 DP614842	Lot 44 DP1112699
				Lot 681 DP611756	Lot 55 DP1025497
				Lot 682 DP611756	Lot 56 DP1025497
				Lot 1 DP571355	Lot 1 DP1004305
		^Blue highlight denotes lots added to the disturbance footprint from the scoping report. Additional lots relate to amended transmission line and addition of an accommodation camp, as well as inclusion of lots missed in the scoping report. Despite the inclusion of additional lots, the development footprint has reduced by 145 ha since the scoping report.			
		* A review of associated lots as part of this process determined that the lots included in the scoping report were not exhaustive. ^Red highlight denotes lots removed from the disturbance footprint for the EIS.			

Scoping section	Element	Scoping	EIS
2.4.4(i)	Interaction with MCC approvals	It is expected that at the time of the commencement of the project, post 2026 pending necessary approvals, the MCC mine will be rehabilitated and activities proposed under the project will be undertaken on the rehabilitated and relinquished landform. In this way the project would have no interaction with existing approvals for the MCC mine.	It is now understood that the long-term rehabilitation objectives mean that the existing mine DA202/2005 and subsequent mining leases cannot be surrendered until completion criteria are met and signed off by the Resources Regulator. A modification to DA202/2005 would be required to amend the final landform outcome for the overlapping area.
3.1.1	Penstock location	Combination of tunnel and surface penstock	Fully underground penstock
3.1.1	Number of units	Up to four hydro-electricity generation units	Two hydro-electricity generation units
3.1.2	Capital project investment	\$600-700 million	\$2.2 billion
3.2.1 3.3.7 3.6.3	Site access	Via Sandy Creek Road	Limiting use of Sandy Creek Road due to known constraints based on feedback during consultation with Council and TfNSW. Proposed primary construction access via Muscle Creek Road, however, OSOM deliveries will need to use Sandy Creek Road due to weight and geometry restrictions on Muscle Creek Road rail bridge.
3.2.1	Reservoir elevations	Upper reservoir elevation approximately 580 m AHD Lower reservoir 130 m AHD	Upper reservoir elevation approximately 590 m AHD Lower reservoir 165 m AHD The lower reservoir has been raised to allow for hydraulic isolation from the surrounding groundwater catchment which is understood to be locally lowered and will equilibrate over the life of the project above current levels. This reduces the risk of pressure on the liner from the surrounding groundwater.
Figure 3.2 Project layout 3.2.3iii	Transmission line and connection (altered)	Transmission line is through Lot 180 DP627509 and Lot 41 DP1112699. Connection on the east of the existing substation. Land agreements for an easement will be required for the freehold properties affected by the transmission line corridor.	Transmission line is still through Lot 180 DP627509 and Lot 41 DP1112699 Slightly different alignment to enable connection on the west of the existing substation following engagement with Transgrid. Options to purchase have been secured over these properties.
Figure 3.2 Project layout	Temporary construction areas (new)	-	Inclusion of temporary construction areas on Lot 41 DP1112699
Figure 3.2 Project layout	MCC access road connection (new)	-	Footprint extended slightly to allow connection with existing mine access road to facilitate construction access via Muscle Creek Road.

Scoping section	Element	Scoping	EIS
Figure 3.2 Project layout	Accommodation camp (new)	-	Inclusion in the footprint of an accommodation camp for up to 500 workers and internal access roads linking this to the lower reservoir on Lot 180 DP627509.
Figure 3.2 Project layout	Hunter River pipeline corridor	The project layout as provided in the scoping report shows an indicative alignment for the Hunter River pipeline corridor along Burtons Lane.	The Hunter River pipeline corridor remains at Burtons Lane, with some modification of the corridor near the New England Highway and Sandy Creek Road in consultation with landowners and Transport for NSW.
Figure 3.2 Project layout	Access road to the upper reservoir	The access road to the upper reservoir on the western side of Bells Mountain is indicated on the project layout figure.	The access road to the upper reservoir on the western side of Bells Mountain has been modified with consideration of avoidance of existing transmission infrastructure, ecological impacts and inclusion of sedimentation and erosion controls.
Figure 3.4	Land ownership	Erroneously indicated a privately-owned property in the upper reservoir area was owned by AGL (yellow).	This property is now under an option to purchase by AGL.
3.2.5i	Upper reservoir access	Eastern access from Dolahentys Road.	This access is no longer being considered. This existing access would be used for emergency egress only.
3.3	Development footprint	Excluding Hunter River water pipeline: 566 ha	Including Hunter River water pipeline: 421 ha
Table 3.4	Construction methods	Lower reservoir and intake: Pit 2 is already excavated. The lower intake portal will likely be excavated using civil methods into the side of the reservoir while the pit is dry. Upper reservoir and intake: Likely construction will include clearing and ripping, drill and blast, and civil excavation. The intake will likely be constructed into the base of the reservoir as a short shaft. Headrace: Likely construction will include drilling, boring and blasting methods, and civil construction works. Power station: Likely construction will include drilling, boring and blasting methods, and civil construction works. Ancillary facilities: Civil and building work for the construction compounds, lay down yards, concrete batching plant, and site offices.	Amended construction methods: - Geotechnical information has indicated less blasting is required for underground works and mechanical excavation will be preferentially used for the power station and headrace New and additional construction methods include: - Waterway tunnels would be constructed with mechanical excavation (e.g. road headers). - Hunter River water pipeline will be under-bored under the New England Highway and the rail line.
3.6.5	Construction workforce	Peak workforce up to 250 people	Early engagement with potential construction contractors has informed a larger construction workforce is required to construct the Project, with a revised peak workforce of 650 people. The EIS describes the workforce as approximately 350, with a peak workforce of 650.

Scoping section	Element	Scoping	EIS
3.6.5	Construction accommodation	Anticipated the majority of the workforce could be sourced from the local Muswellbrook community and nearby LGAs [and] out of area workers could be accommodated in Muswellbrook, and the nearby towns of Singleton, Denman, Aberdeen, and Scone if required.	Investigations supporting the SIA have shown an accommodation shortage (both in rental and short-term accommodation options) in Muswellbrook, so the EIS is allowing for a temporary accommodation camp for up to 500 workers. Consultation with Council has supported the camp due to known existing accommodation shortage and cumulative pressure from numerous proposed infrastructure and energy projects
3.6.6	Construction hours	Out of hours works that are likely to be required for the project include 24-hour concrete pours [and] below-ground construction activities such as construction of the tunnel section of the pipeline between the upper and lower reservoirs where receivers are unlikely to be affected would be on a 24-hour basis	24-hour construction is proposed for all underground works, and is not proposed for any new activities. However, there is increased tunnelling required due to the fully-underground penstock.
3.9	Project timing	Construction would occur over a four-year period.	Construction would occur over a five-year period.
4	Statutory	The project was considered as SSD.	The project is CSSI. SEARs have already been updated for this change.
Table 4.2	Dam	Table 4.2 of the scoping report identified that the upper reservoir may be considered a 'declared dam' for the purposes of the Dam Safety Act 2015 and therefore have compliance obligations under the Act.	The upper reservoir would be considered a declared dam, and MPH has consulted with Dams Safety NSW to understand EIS assessment and consultation requirements.

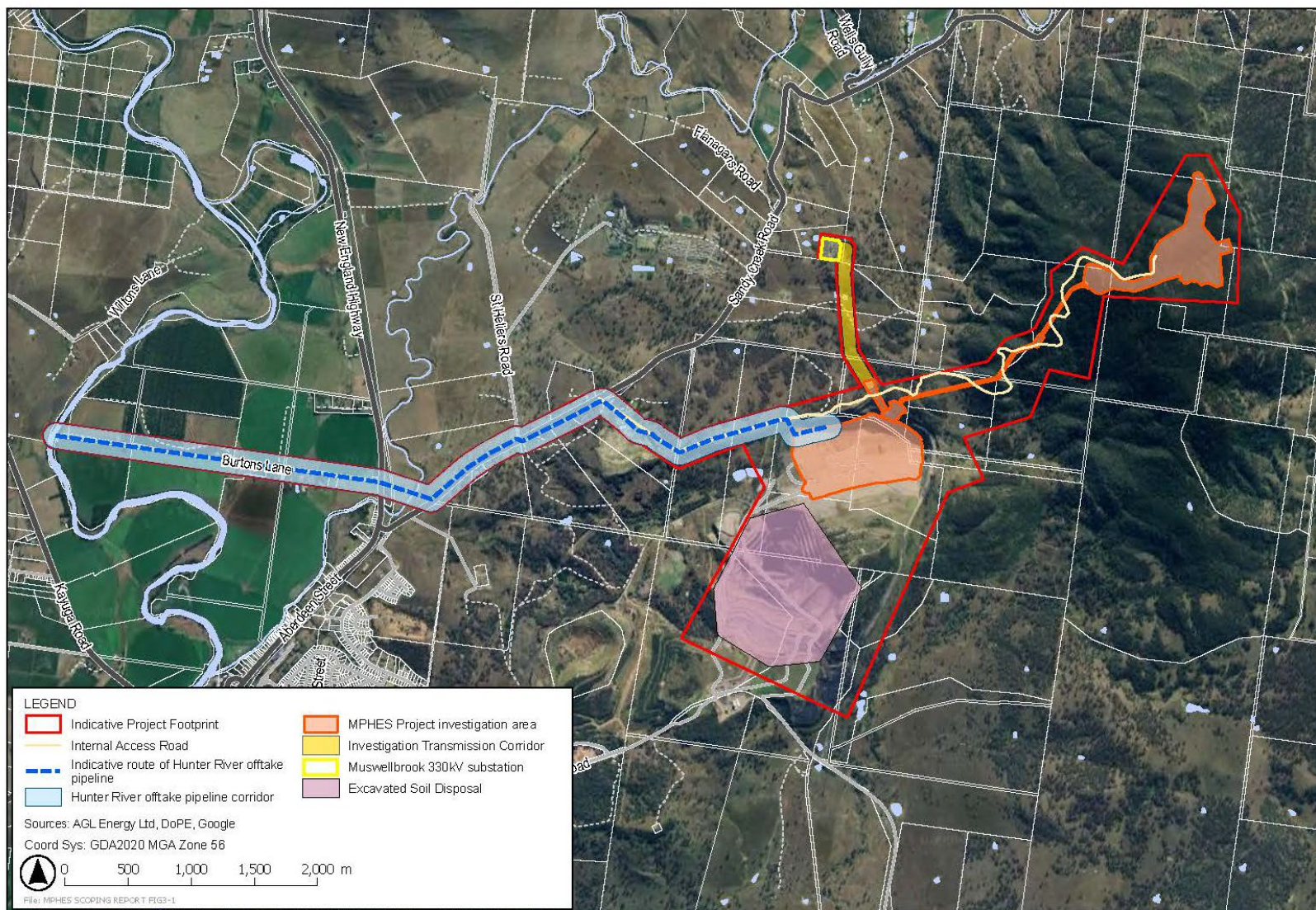


Figure 2.1 Scoping report indicative Project footprint

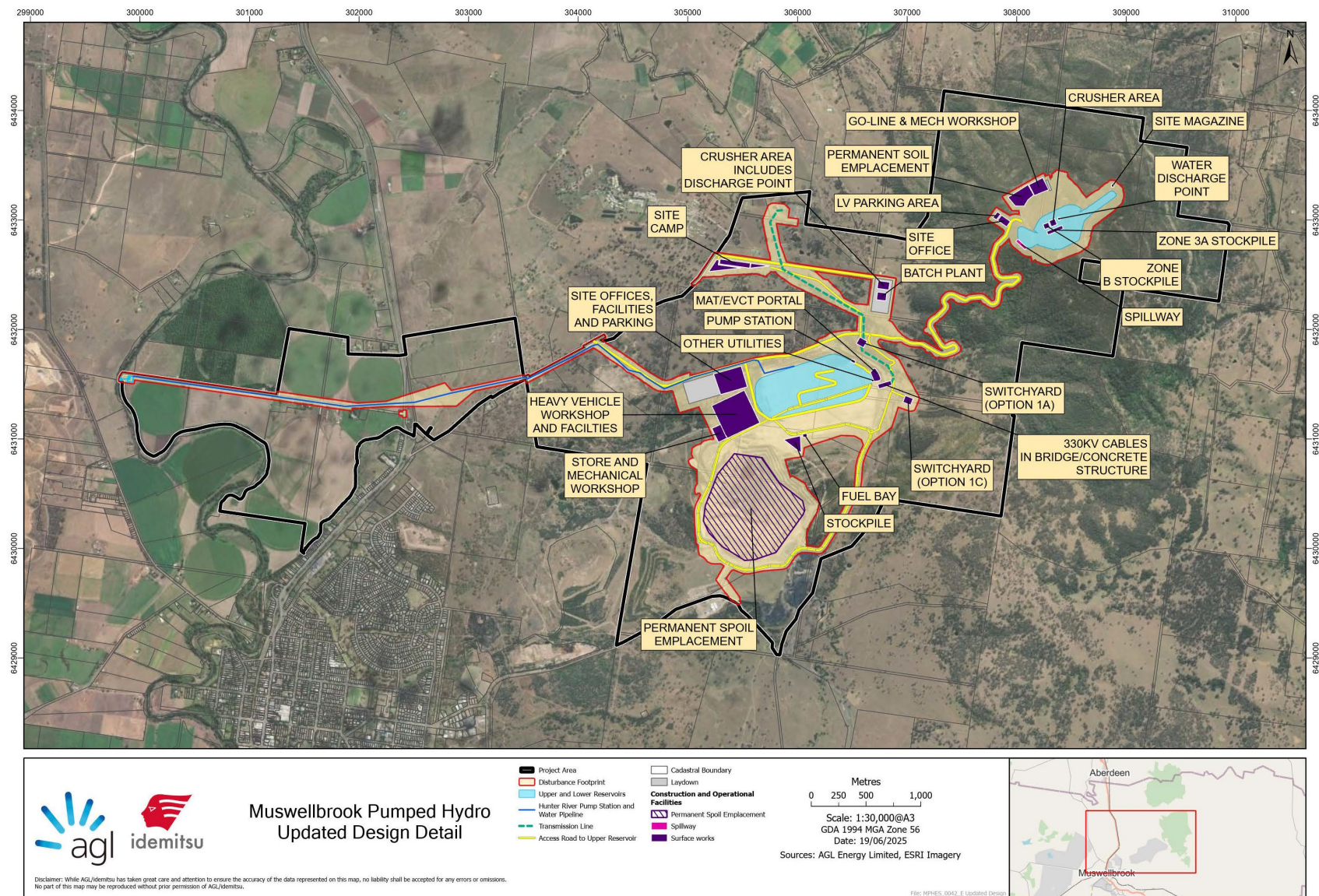


Figure 2.2 EIS indicative Project footprint

3 Consultation

During preparation of the EIS and technical assessments, MPH and EMM have consulted with various government agencies, as detailed in Table 3.1.

Table 3.1 **Agency consultation during EIS preparation**

Agency	Consultation
Dams Safety NSW	MPH have held a meeting with Dams Safety NSW to determine level of consultation and assessment required at concept design / EIS stage
Transport for NSW	MPH and EMM have consulted with Transport for NSW regarding site access, cumulative impacts and OSOM.
CPHR	A site visit was held in February 2025 with CPHR regarding assessment methodology, potential impacts and mitigation. Outcomes of these meetings have been incorporated in the BDAR.
Heritage NSW	Consultation regarding the ACHA, survey and test excavation and provision of project updates.
Transgrid	MPH has consulted with Transgrid regarding the connection to the Muswellbrook 330 kilovolt (kV) substation.
DCCEEW Water	MPH and EMM have consulted with DCCEEW Water regarding the groundwater modelling and assessment
Muswellbrook Shire Council	MPH has consulted with Council on a range of matters including the SEARs, traffic, water and sewer, local accommodation constraints and proposed accommodation camp, social impacts, waste, geotechnical works, and cumulative impacts.
Commonwealth DCCEEW	A referral was submitted in January 2025. A response to Requests for Information (RFIs) is in preparation and will shortly be provided. Consultation has been held with DCCEEW including a site visit and discussion of project design and layout.

4 Assessment of impacts

A review of the proposed assessment of impacts identified in the scoping report was carried out and is summarised in Table 4.1.

Table 4.1 Overview of environmental assessment methods and potential scope amendment updates

Matter	Summary of scoping report method of assessment	Scope amendment assessment requirements
Biodiversity – detailed assessment	- Assessment (including detailed field surveys and significant impact assessments under the EPBC Act) to determine the need for the project to be referred to the Commonwealth DCCEEW. - Preparation of a BDAR in accordance with the BAM.	No change to assessment required. Biodiversity impacts are expected to be reduced by the change from above-ground to underground waterways between the reservoirs.
Aboriginal heritage – detailed assessment	- Detailed field survey, test excavation (where required), and consultation with the local Aboriginal community. - The assessment will involve preparation of an Aboriginal Cultural Heritage Assessment (ACHA) in accordance with: - Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (DECCW 2010) - Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010b) - Guide to Investigating, Assessing, and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011) - Aboriginal Cultural Heritage Consultation Requirements for Proponents, Part 6 National Parks and Wildlife Act 1974 (DECCW 2010a).	No change to assessment required.
Noise and vibration – detailed assessment	- A construction noise and vibration assessment will be carried out to characterise the existing ambient acoustic environment of the project site as part of the EIS as a technical report. - An operational noise and vibration assessment will be carried out as part of the EIS as a technical report.	Noise impacts of the accommodation facility will also be considered. No change to assessment required.
Non-Aboriginal heritage – standard assessment	A desktop and literature review will be undertaken, including database searches and consultation with local historical society and landowners with results provided in the EIS.	No change to assessment required.
Air quality – standard assessment	- A detailed air quality assessment will be carried out as part of the EIS in accordance with the guideline <i>Approved methods for the modelling and assessment of air pollutants</i> (EPA 2022). This will include: - a description of existing air environment - semi-quantitative air quality assessment of construction-related impacts - qualitative air quality mitigation and management measures - recommendation of air quality mitigation and management measures. - A quantitative greenhouse gas assessment for the construction and operation of the project will be carried out in accordance with the <i>National Greenhouse and Energy Reporting Act 2009</i> (NGER Act) framework.	No change to assessment required.

Matter	Summary of scoping report method of assessment	Scope amendment assessment requirements
Visual – detailed assessment	- The assessment will consider existing environment, potential changes to the landscape character and visual appearance of the project area, and visual impacts to potential visual receivers. The assessment will include identification of measures to minimise visual impacts. - The landscape and visual impact assessment will be carried out in accordance with relevant guidelines and standards including: - Guideline for Landscape and Visual Impact Assessment (Centre for Urban Design 2020) - Guidelines for Landscape and Visual Impact Assessment (GLVIA3) (Landscape Institute and IEMA 2013).	No change to assessment required. Visual impacts are expected to be minimised by the change from above-ground to underground waterways between the reservoirs.
Traffic – detailed assessment	- The traffic impact assessment will include consideration of: - assessment of existing traffic and road conditions including traffic volumes, intersection configuration and existing level of service - traffic access to and within the project site, including transport of plant and equipment and removal of waste materials - estimates of traffic generated by construction and during normal operations - temporary lane closures and impacts on school bus routes - transport of large or oversize infrastructure on the external road network - identification of measures to mitigate the impacts of proposed construction stages. - The assessment will identify and detail mitigation measures to avoid, minimise and control traffic and transport impacts resulting from the construction and operation of the proposed project. The assessment will be prepared in accordance with appropriate guidelines.	Muswellbrook Shire Council and Transport for NSW have both been consulted during EIS development. Traffic impacts of the accommodation facility will also be considered. No changes to the assessment are required.
Social and economic – detailed assessment	- The SIA for the project will be prepared in accordance with the <i>Social Impact Assessment Guideline</i> (DPE 2023a) and the <i>Technical Supplement Social Impact Assessment Guideline for State Significant Projects</i> (DPE 2023b). The preliminary assessment in the SIA scoping assessment worksheet will be reviewed and revised as required to inform the SIA for the EIS. - The SIA scoping assessment worksheet has identified that a detailed level of assessment will be required for the project, including broad consultation and targeted research. This will include a review of available technical reports, planning inputs, applicable legislation, demographic profiles, baseline assessment of impacts, impact assessment and identification of mitigation measures. - It is anticipated that the key economic and social issues associated with the project will relate to the construction phase such as workforce participation. This will be confirmed once consultation feedback has been received from DPE, Muswellbrook Shire Council and the local Muswellbrook community, after project SEARs have been issued.	The inclusion of an accommodation facility was identified through investigations supporting the SIA and engagement with Muswellbrook Shire Council. The impacts of this facility will be included in the SIA. No changes to assessment required.

Matter	Summary of scoping report method of assessment	Scope amendment assessment requirements
Surface water – detailed assessment	- Hydrologic studies that would be carried out for the EIS will include developing a water balance. These studies will build upon hydrologic assessments carried out for the feasibility study in early 2021. - A water quality assessment will be carried out as part of the EIS to assess potential surface and groundwater contamination during the proposed construction and operation of the project. - Hydrologic, hydrogeological, and hydraulic studies to build on initial design feasibility studies including water balance details will inform the EIS of water quality, flood mitigation and dam safety. - Assessment of potential impact of the PHES project on surface water resources will include: - construction and operational impacts on water quality - operational water requirements throughout the life of the project, including the initial filling of the lower reservoir - impacts to downstream flow regimes, especially baseflow and low flow conditions - identification of construction phase and operational mitigation and management measures. - The assessment will be prepared in accordance with appropriate guidelines.	No change to assessment required.
Groundwater – detailed assessment	Assessment of potential impact of the PHES project on groundwater resources will include: - characterisation of the local and regional groundwater resource drawing on existing information from sources such as monitoring bores and piezometers, and geotechnical investigations - a numerical model may be developed to demonstrate project interaction with local and regional aquifers and the mine void. - identification and assessment of construction and operational activities that could impact on groundwater resources - identification of construction phase and operational mitigation and management measures.	No change to assessment required.
Soils and geology – standard assessment	Soil encountered during geotechnical investigations and field surveys will be characterised for physical and chemical properties including potential for soil erosion and sediment transport capability along with contamination risks. A detailed geological assessment would be included in the EIS to inform of soil profiles and geophysical structures within areas to be excavated.	No change to assessment required.

Matter	Summary of scoping report method of assessment	Scope amendment assessment requirements
Waste and resource recovery	- Spoil management would consider results of geotechnical investigation program including rock and soil material encountered and characterisation and test results to ascertain contamination impacts. Geotechnical drilling for detailed design will be used to estimate volumes of rock materials and quality for suitability for reuse and long term storage and management. - A waste assessment would be carried out for the EIS and would identify potential waste streams associated with construction and operation of the project. The EIS would include standard management practices compliant with the <i>Waste Avoidance and Resource Recovery Act 2001</i> and other relevant guidelines and good management practices.	Waste associated with the accommodation facility will also be considered in the EIS. No change to assessment required.
Hazards	There is a range of potential hazards and risk associated with the project These include but are not limited to: - bushfire - handling and storage of dangerous goods and hazardous substances - contaminated land - exposure to electromagnetic fields (EMF) - climate change - dam break.	No change to assessment required. The following assessments are under preparation: - bushfire assessment - hazards assessment considering dangerous goods and hazardous substances, as well as EMF - climate change risk assessment - preliminary site investigation (contamination) - preliminary dam break analysis for the upper reservoir for design development. Relevant details will be reported in the EIS.
Cumulative impacts	The preliminary assessment identified the following potential cumulative impact issues that would require further consideration in the EIS: - biodiversity, heritage, and noise and vibration (principally construction) impacts - visual impacts - traffic and transport impacts - surface water resources impacts - air quality impacts - social impacts such as increased demand for services	No change to assessment required.

5 Conclusion

A review of the scoping report has been conducted against the updated design that is being considered in the EIS. The scoping report was written at a high level and included consideration of several options for various design elements to enable flexibility. Some of these elements have been confirmed through ongoing design development, consideration of environmental impacts, or consultation with agencies. The most significant change to the scoping report is the inclusion of an accommodation camp in the disturbance footprint. Where possible, the design updates have resulted in a reduction in impacts and this will be outlined in the EIS.

Throughout preparation of the EIS and technical studies, MPH has consulted with agencies to provide project updates and seek advice. Agency advice has been incorporated into technical assessments.

MPH does not consider that the Project is materially different to that outlined in the scoping report. The existing SEARs and Agency requirements are considered appropriate for the Project in their current form, with no updates to SEARs or Agency advice considered to be required. No material change to the environmental assessments is required – the assessment scopes and requirements remain unchanged and will accommodate the Project as described in this letter.

Thank you for your consideration of this matter. If any further information or clarification is required, do not hesitate to contact me on 0416 018 429 or at rkelly@emmconsulting.com.au.

Yours sincerely

Ruth Kelly (Baker)

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