BHP

MT ARTHUR COAL MINE
MODIFICATION 2

Modification Report

Attachment 2

Alternate Mine Land Re-Use Prospectus

Resource Strategies

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Mt Arthur Coal Mine Modification 2

Attachment 2 – Alternate Mine Land Re-Use Prospectus

September 2023

This Prospectus

A snapshot into alternate mine land re-use opportunities at the Mt Arthur Coal Mine

- ✓ **Overview of the Mt Arthur Coal Mine and the Modification**
- ✓ **Mining Exploration and Geoscience Post-Mining Land Use Practical Guide**
- ✓ **Site attributes of the Mt Arthur Coal Mine**
- ✓ **Snapshot of the potential alternate mine land re-use opportunities at the Mt Arthur Coal Mine**
- ✓ **Illustrates the long-term value that the Mt Arthur Coal Mine could represent to the Muswellbrook and Upper Hunter community as it approaches closure**

THIS PROSPECTUS

Hunter Valley Energy Coal Pty Ltd (HVEC), on behalf of BHP, is proposing to modify Project Approval MP 09_0062 (the Project Approval) for the Mt Arthur Coal Mine (MAC) to allow for the extension of mining operations until 30 June 2030 (hereafter referred to as the Modification).

BHP is exploring opportunities to facilitate the continued utilisation of the land at MAC to allow for alternate mine land re-uses such as recreation and renewables, and land uses with high economic diversity and value. To achieve alternate mine land re-uses, BHP has identified that some activities, including consultation, approval planning and shaping of the landform, may occur prior to the cessation of mining activities in 2030.

Accordingly, separate to the Modification, BHP is working on a Transition and Mine Closure Project for MAC to provide workforce support, as well as consider alternate mine land re-use options for the site. Alternate mine land re-uses do not form part of HVEC's Modification, and would be subject to separate approval processes. Alternate mine land re-uses do not form part of the Modification, and would be subject to separate approval processes.

Closure opportunities that will be considered for MAC include alternate mine land re-uses that can continue to generate social and economic benefits in the region. This Prospectus aims to illustrate the long-term value that MAC could represent to Muswellbrook and the broader Hunter region communities through alternate mine land re-use opportunities.

Approved Mine Life to 2026
Proposed Mine Life to 2030

This Prospectus provides an overview of:

- MAC and the Modification;
- the government endorsed post-mining land use 'Practical Guide' (NSW Mining, Exploration and Geoscience [MEG], 2023) and other guidelines;
- key physical and locational attributes of MAC, relevant to alternate mine land re-uses; and
- potential alternate mine land re-use opportunities at MAC.

OVERVIEW OF THE MT ARTHUR COAL MINE

MAC is an existing open cut coal mining operation located approximately 5 kilometres (km) south-west of Muswellbrook, within the Muswellbrook Local Government Area in the Upper Hunter Valley of New South Wales (NSW).

MAC is owned and operated by HVEC, a wholly owned subsidiary of BHP. MAC is currently approved to operate until 30 June 2026 in accordance with the Project Approval.

HVEC is proposing to modify the Project Approval for MAC to allow for the extension of mining operations until 30 June 2030 (the Modification).

The conceptual final landform presented in the Modification has been designed to minimise sterilisation of future alternate mine land re-uses while also satisfying existing rehabilitation and offset commitments.

Progressive rehabilitation has commenced at MAC in preparation for closure, as seen on Plate 1.

Plate 1 Mt Arthur Coal Mine progressive rehabilitation. View from Muswellbrook Racecourse.

CLOSURE OF THE MT ARTHUR COAL MINE

BHP undertook an extensive review of MAC including considering offers received through a Divestment Review, life-of-mine planning, as well as financial performance. It was concluded by BHP that Mt Arthur Coal's commercial viability was limited beyond 2030.

As a result of the above, in June 2022, HVEC announced a decision to cease mining activities at MAC in 2030, as part of a plan to provide a pathway to closure of the operation. Accordingly, HVEC is seeking a modification of the Project Approval for a four-year extension of MAC to 30 June 2030. After this period, MAC would be in closure for a period of several years whilst the site is rehabilitated.

The Modification, if approved, would provide additional time for the workforce and community to prepare for closure.

The approved final land uses at MAC comprise a combination of woodland and agricultural land uses, and previously contemplated land uses include pastoral, commercial forestry, recreation and/or wildlife habitat opportunities. It is important to note that BHP is not seeking approval for any of the conceptual alternate mine land re-uses as part of the Modification. These would be subject to separate future approvals, to be sought either by BHP or another applicant (such as a proponent for an alternate use).

Since June 2022, BHP has undertaken extensive stakeholder engagement with the community and government stakeholders. A significant portion of the feedback received from consultation focused on a preference for beneficial alternate mine land re-uses for the site, ideally ongoing uses that generate continued economic activity and diversification outcomes.

The Transition and Mine Closure Project is separate yet complementary to the Modification and aspires to create a positive legacy from BHP mining in the Hunter Valley. Key elements of the Transition and Mine Closure Project include:

- alternate mine land re-uses assessment and evaluation;
- stakeholder consultation and engagement;
- planning and approvals;
- progressive implementation of sustainable rehabilitation of MAC;
- workforce and community support; and
- socio-economic benefit considerations.

Post-mining (or alternate mine) land use is a description of the process of implementing new uses for mine sites that are nearing the closure stage (MEG, 2023). Identifying an alternate or post-mine land re-use is required under the *Mining Act 1992* as all land disturbed by mining activities must be rehabilitated back to a state that is safe and stable, while having regard to an identified land use.

In the absence of BHP or another applicant seeking approval for an alternate mine land re-use, the final land uses at MAC would remain a combination of woodland and agriculture as previously contemplated (and retained infrastructure as may be required for an ongoing use if one is determined).

Mine sites often possess a range of beneficial features and attributes that make them suited to generating significant economic and social benefits for the local community and the State.

In 2023, the NSW Government released the guidance document *Practical Guide – Post-Mining Land Use* (MEG, 2023) (the Practical Guide), which encourages investigation of alternate mine land re-uses and highlights the key attributes that typically make mine sites suitable for various alternate mine land re-uses. Other relevant guidelines include *A Guide to Leading Practice Sustainable Development in Mining* (Australian Government, 2011) (the Guide to Leading Practice) and the *Integrated Mine Closure: Good Practice Guide* (ICMM, 2019) (the Good Practice Guide).

The Guide to Leading Practice provides practical guidance on environmental, economic and social aspects through all phases of mining operations, including closure. This guide specifically encourages the early commencement of rehabilitation and closure phases during mine-life.

The Good Practice Guide builds on the Practical Guide through the identification and evaluation of closure options to achieve 'post-closure land uses', however, includes stronger focus on responsible closure of mining operations which could assist the Transition and Mine Closure Project for MAC.

Further, the *Hunter Regional Plan 2041* (DPE, 2022) provides a strategic land use framework for continued economic growth and diversification in the Hunter Valley. The *Hunter Regional Plan 2041* has identified that there may be opportunities for mine sites to adopt new uses early if the land is well suited for re-use (i.e. new uses could occur while mines continue to operate). The suitability of MAC for potential alternate mine land re-uses is described below.

Beneficial Site Attributes
Beneficial Land Uses

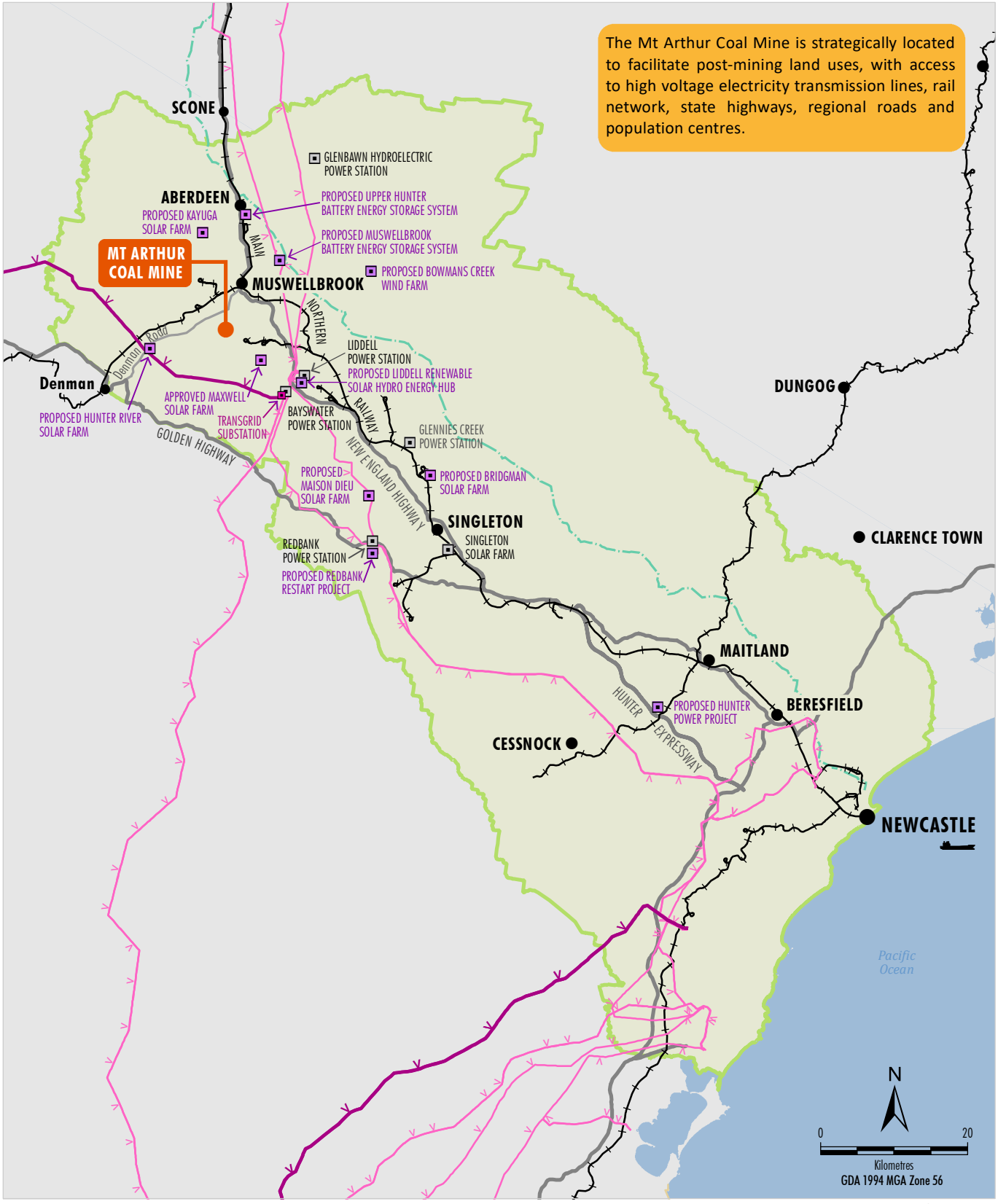
SITE ATTRIBUTES

MAC possesses all of the attributes presented in the 'Practical Guide', making the site highly desirable and beneficial for a range of potential alternate mine land re-uses (Table 1).

Table 1: Site Attributes at MAC consistent with the NSW Government's 'Practical Guide'

Site Attribute as per the NSW Government's 'Practical Guide'	Mt Arthur Coal Mine Site Attributes	Figure Reference
Large parcels of land	• Approximately 12,500 ha of BHP-owned land. • "Buffer properties" wholly surround MAC (typically flat land currently used for agricultural purposes [including thoroughbred breeding, viticulture and olive production]). • Over 2,000 ha remnant native woodland in existing biodiversity offset properties. • Primary Production (RU1) land zone under the *Muswellbrook Local Environment Plan 2009.*	Figure 3 and 4
Good transport linkages	• Golden Highway (6 km south-west). • New England Highway (3.5 km east). • Denman Road (immediately north). • Antiene Rail Spur adjoining the Main Northern Railway (immediately east). • Three existing mine access roads.	Figures 1 and 2
Access to regional population centres	• Hunter Valley (approximate population of 291,000 people [excluding Newcastle]). • Muswellbrook (5 km north-east) (approximate population of 12,000 people [ABS,2022a]). • Singleton (33 km south-east) (approximately population of 17,000 people [ABS,2022b]). • Maitland (70 km south-east) (approximate population of 8,000 people [ABS,2022c]). • Newcastle (100 km south-east) (approximate population of 179,000 people [ABS,2022d]).	
Variety of mine landforms and existing industrial areas	• Mine landforms including emplacement areas and voids. • On-site transport infrastructure including sealed roads and site access. • Ancillary infrastructure including electricity distribution, environmental monitoring and communication installations. • Significant variations in topography and slope. • Flat, bituminised infrastructure areas, as well as existing workshops, offices and warehouses.	Figures 2 and 3
Large volumes of stored water	• Two major water storage dams, Environment Dam and CHPP Dam. • Significant water storage potential in the mine voids.	Figure 2 and 5
Established water management infrastructure	• Existing water management infrastructure including diversions, drains and pipelines.	Figure 5
Access to good quality water	• BHP holds surface water and groundwater water access licences (WALs). • Close proximity to the Hunter River.	Figure 2
Electricity infrastructure	• Existing 500 kV electricity transmission line running through the site. • Connects to the TransGrid Bayswater 330 kV Substation located approximately 6.5 km south-east.	Figures 1, 2 and 5

Source: MEG (2023)



HVE-19-09 MOD2_Prospectus_202F

Source: NSW Spatial Services (2023)

LEGEND

- Hunter Central Coast Renewable Energy Zone
- Existing 500kV Electricity Transmission Network
- Existing 330kV Electricity Transmission Network
- Hunter Gas Pipeline
- Railway
- Highway

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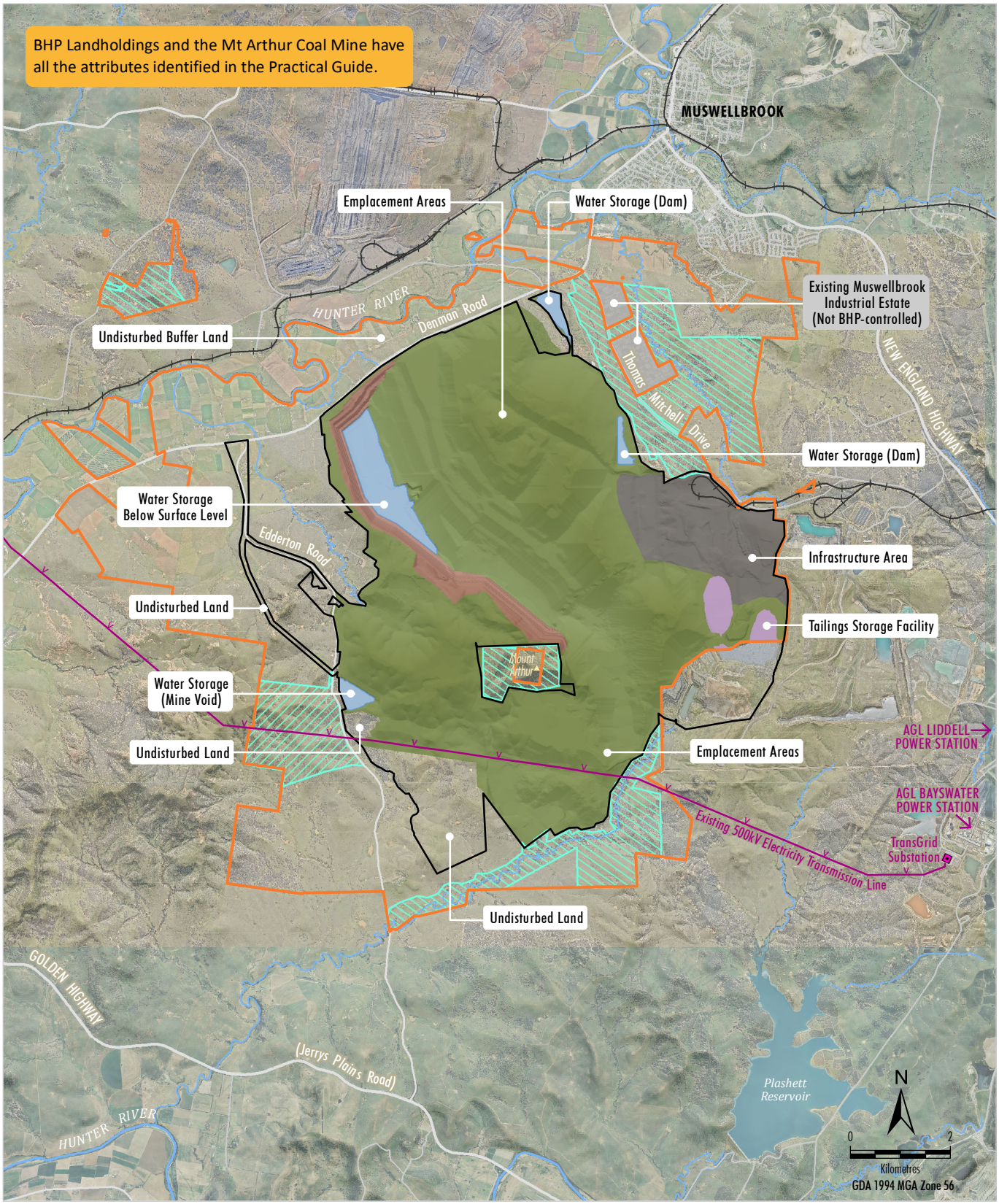
Regional Location

Figure 1



HVE-19-09 MOD2_Prospectus_207D

Source: BHP (2023); NSW Spatial Services (2023)

LEGEND

- Approximate Extent of BHP-controlled Land
- Existing Conservation/Offset Area
- Edderton Road Revegetation Area
- Approximate Extent of Modified Surface Development
- Emplacement Area
- Remnant Highwall
- Infrastructure Area
- Tailings Storage Facility
- Water Storage
- Existing 500kV Electricity Transmission Line

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Site Attributes of the Mt Arthur Coal Mine

Figure 2

HVE-19-09 MOD2_Prospectus_001A

Source: BHP (2023), Truescape (2023)

This figure shows the current Mt Arthur Coal Mine landform, showing various existing features such as varying topography and large water storage areas. Rehabilitation of the Mt Arthur Coal Mine will continue, and could occur in parallel to complementary alternate mine land re-uses.

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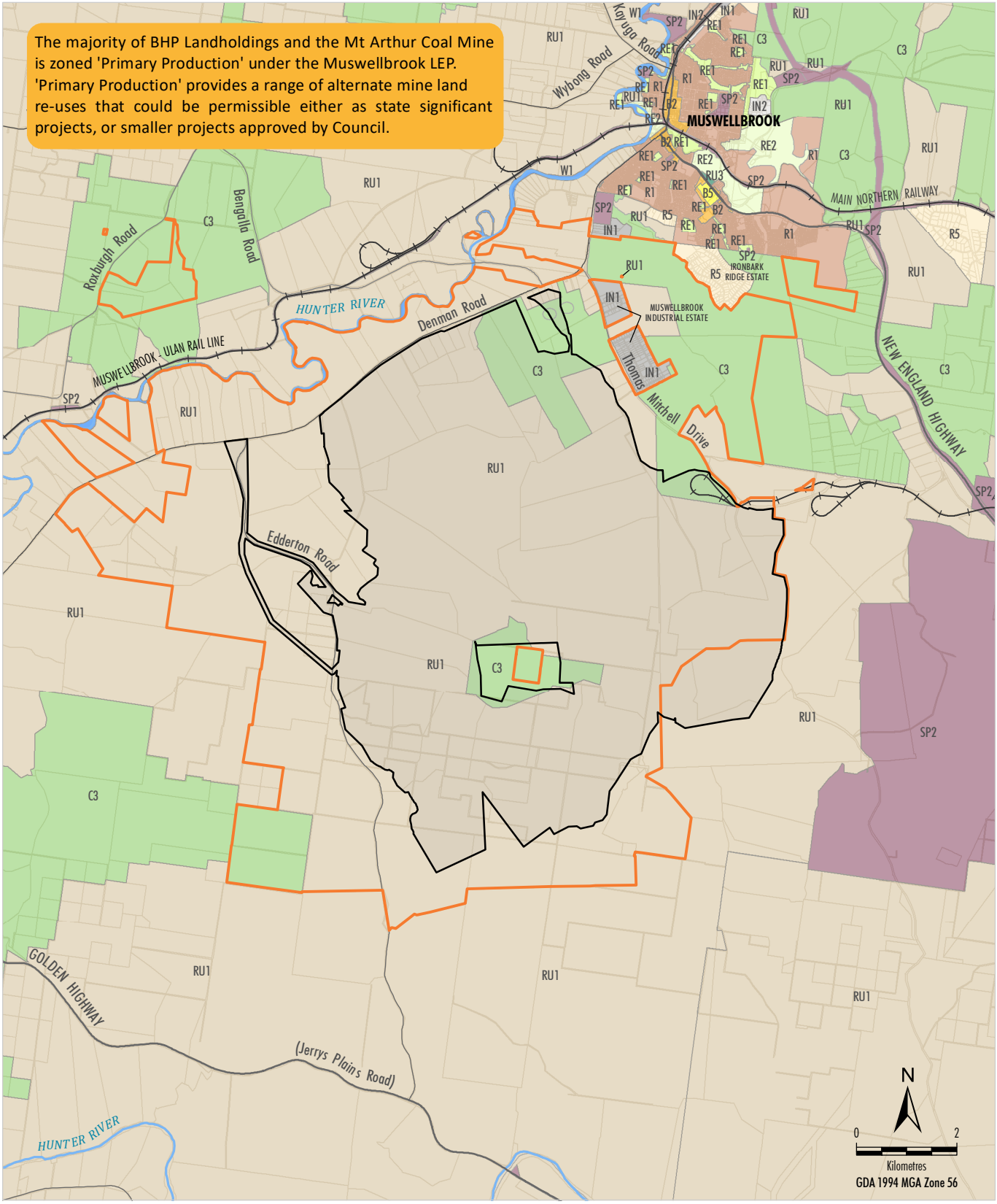
Mt Arthur Coal Mine
Current Topography

Figure 3



HVE-19-09 MOD2_Prospectus_206C

Source: NSW Spatial Services (2023); DPE (2023)

LEGEND

- Approximate Extent of BHP-controlled Land
- Approximate Extent of Modified Surface Development
- Lot Boundary

Land Zoning

- B2 Local Centre
- B5 Business Development
- R1 General Residential
- R5 Large Lot Residential
- IN1 General Industrial
- IN2 Light Industrial
- RU1 Primary Production
- SP2 Infrastructure
- RU4 Natural Waterways
- W1 Forestry
- C3 Environmental Management
- RE1 Public Recreation
- RE2 Private Recreation

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Muswellbrook LEP Zoning

Figure 4

ALTERNATE MINE LAND RE-USE OPPORTUNITIES

MEG (2023) has identified the Hunter Valley as a region seeking to maximise the opportunities resulting from mine closures, including using rehabilitated mined land, mine buffer lands, mine infrastructure and the skilled mine workforce to attract investment.

The 'Practical Guide' identifies a range of alternate mine land re-uses that could be suitable for mined lands, including (but not limited to):

- renewable energy generation;
- industry and infrastructure;
- woodland establishment;
- recreation areas; and
- intensive agriculture.

A brief commentary on how a range of these alternate mine land re-uses could potentially be developed at MAC is provided below.

BHP is investigating land capability opportunities to understand the suitability of MAC for a full range of potential land uses. Alternate mine land re-uses do not however form part of the Modification, and would be subject to separate approvals processes.

Alternate Mine Land Re-Uses Economic Opportunities

RENEWABLE ENERGY GENERATION

The energy sector has traditionally been dominated by large, centralised coal and gas-fired power stations, however NSW is undergoing a transition to renewable energy playing a critical role in helping reduce emissions. Renewable energy generation capacity has increased in NSW and includes generation from large scale solar (Plate 3) and hydro power stations.

MAC is located within the Hunter Central Coast Renewable Energy Zone and is surrounded by several proposed renewable energy projects including the proposed Muswellbrook Pumped Hydro and proposed Liddell Renewable Solar-Hydro Energy Hub (Figure 1).

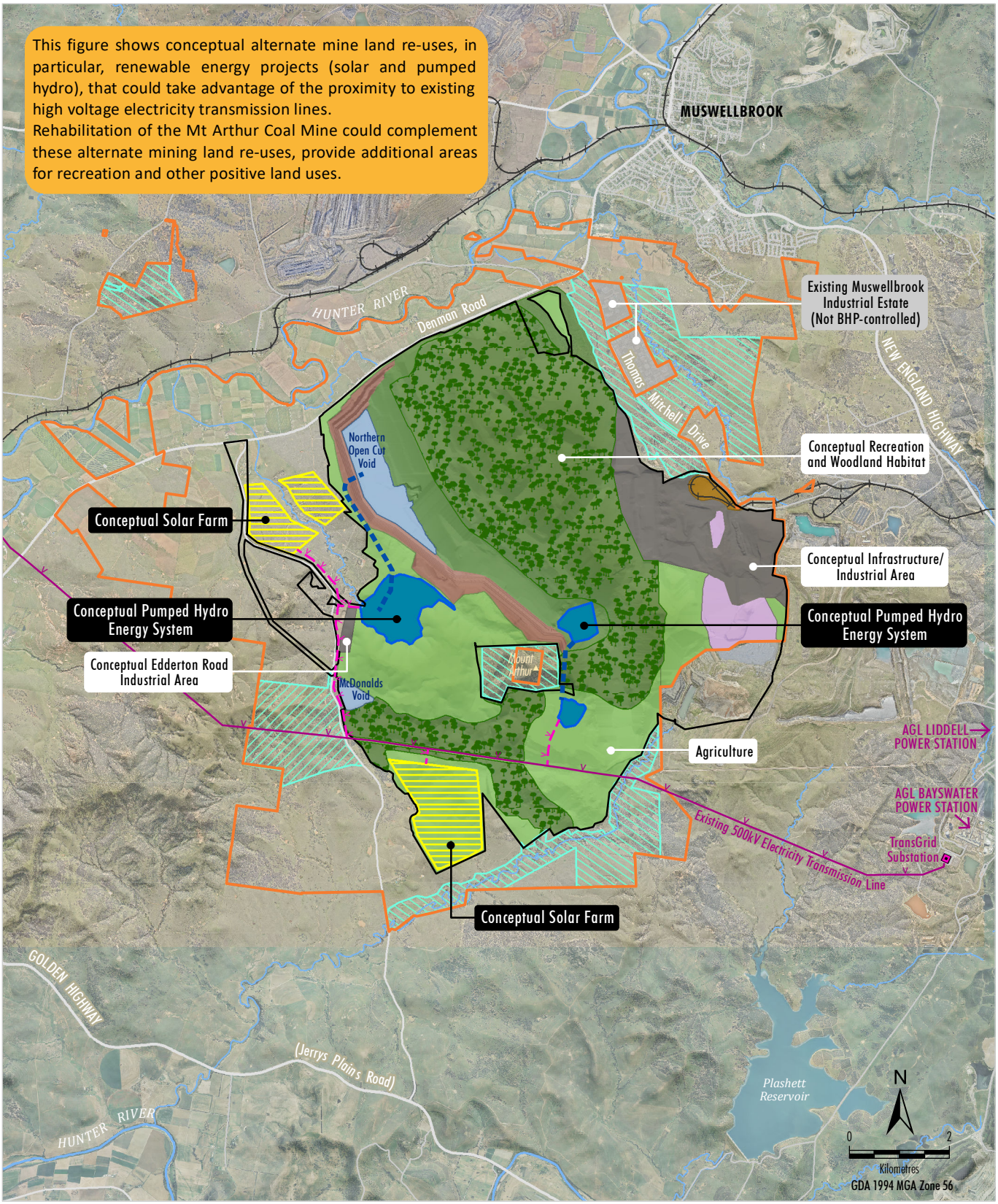
It is acknowledged by the Australian Government that large-scale energy storage and renewable solutions such as pumped hydro are critical to ensure the security and reliability of Australia's electricity grid (Australian Renewable Energy Agency, 2023). MAC post-closure could lend itself to potential renewable energy projects including pumped hydro energy[1] storage stations and solar generation and could make use of the following key attributes at MAC:

- proximity to the existing 500 kV electricity transmission line and TransGrid Substation (Figure 2);
- varying topography (Figure 3); and
- potential to be located within existing/approved disturbance areas.

Indicative locations of conceptual pumped hydro and solar land uses are shown on Figure 5.

Plate 3 Potential Solar Alternate Mine Land Re-Use

[1] Pumped Hydro energy generation uses the force of moving water to create electricity through taking excess water from dams and pumps it to a higher storage point where it is available to be sent through turbines for electricity generation (Climate and Energy Action, 2023).



HVE-19-09 MOD2_Prospectus_205C

Source: BHP (2023); NSW Spatial Services (2023)

LEGEND

- Approximate Extent of BHP-controlled Land
- Existing Conservation/Offset Area
- Edderton Road Revegetation Area
- Approximate Extent of Modified Surface Development
- Final Void Remnant Highwall
- Final Void Water Storage
- Rehabilitated Tailings Areas
- Infrastructure Area
- Rail Facility
- Agricultural Areas
- Recreation and Woodland Establishment Habitat
- Woodland Buffer Area
- Existing 500kV Electricity Transmission Line
- Potential Electricity Transmission Line Alignment
- Potential Tunnel Alignment
- Potential Pumped Hydro Energy system
- Potential Solar Farm Area

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Alternate Mine Land Re-use Plan - Conceptual Land Use Options

Figure 5

INDUSTRY AND INFRASTRUCTURE

Economic growth and social development are heavily dependent on investments in infrastructure, industrial and manufacturing land uses, particularly in promoting technologies, facilitating inter-state and international trade and enabling the efficient use of resources (NSW Department of Industry, 2020).

There are several potential land uses or industries that could benefit from large-scale infrastructure areas including (but not limited to):

- various manufacturing industries (Plate 4);
- food and fibre processing (agribusiness) (Plate 5);
- military defence activities;
- business parks;
- intensive agriculture; and
- carparks or retail centres.

The above potential land uses could make use of existing flat, hardstand infrastructure areas at MAC (including workshops stores and the rail loop) and are located in close proximity to regional population centres (Muswellbrook, Singleton and Newcastle) and transport networks (Golden Highway, New England and Main Northern Railway).

Plate 4 Manufacturing alternate mining land use area

Plate 5 Food and fibre processing

Indicative locations of potential industrial and infrastructure areas at MAC are shown on Figure 5.

WOODLAND HABITAT AND RECREATION

Woodland areas (and low-intensity agriculture uses) are common pre-mining land uses and there is often an objective to return the land to its pre-mining use. Whilst these pre-mining land uses are not typically land uses that support significant economic benefits when compared to benefits generated through mining activities, rehabilitation of disturbed areas can increase biodiversity value in regions and create high value in visual amenity.

Dense woodland habitat also has the potential to offer the ability to comply with rehabilitation obligations, while also supporting new economic opportunities through recreational purposes (without inhibiting or degrading woodland vegetation). Recreation activities that could be developed in unison with woodland vegetation include (but are not limited to):

- mountain biking (Plate 6);
- BMX;
- trail walking/running; and
- rock climbing.

Woodland habitat as an alternate mine land re-use at MAC would meet existing offset commitments (in terms of size and attributes) and connectivity between habitat areas.

MAC offers terrain suitable for adventure sports such as mountain biking and other recreational uses.

There are various attributes of MAC that may make it suited to tourism including the fact the site was a significant mining operation over many years. Aesthetic qualities of the revegetated landform may also lend itself to tourism activities including lookouts and walking trails.

Plate 6 Mountain Biking within woodland vegetation

INDIGENOUS CULTURAL PRACTICES

BHP would continue to partner with the local Indigenous community to identify potential opportunities to make rehabilitated land suitable for cultural practices. There are several potential parcels of land that would support the establishment of a cultural centre. Cultural activities that could be undertaken at the cultural centre include:

- Men's and Women's camps.
- Native Bush Tucker Gardens.
- Cultural Celebrations.
- Cultural Immersion.
- Community gatherings.

BHP would continue to observe and protect culturally significant areas.

AGRICULTURE

Low-intensity agriculture is implemented in standard rehabilitation and final landform conditions for mine sites (MEG, 2023).

Various types of agriculture and equine industries are practiced across NSW, depending on the region, including cropping, grazing, horticulture, forestry and other farm land uses. Differences in agricultural enterprises ultimately reflect the diverse landscapes and soils of the region.

Beef cattle grazing occurs throughout the Upper Hunter region and is the most frequent agricultural land use (Department of Primary Industries, 2013). Irrigated cropping, particularly for lucerne hay is also an important development in the Upper Hunter and Muswellbrook Local Government Area.

MAC is located within lands that have been largely disturbed by previous agricultural activities, particularly cultivation and grazing (HVEC, 2013).

The Hunter River Floodplain (immediately north of MAC) also supports an array of agricultural enterprises including viticulture, grazing, dairying, lucerne hay production, horse studs and olive groves (Plate 7).

HVEC owns Edinglassie, a 200 ha property on the banks of the Hunter River located approximately 500 m from the boundary of MAC. The Edinglassie property has been licenced to a third party since 1998, operating as a thoroughbred stud farm and responsible for producing Group One horse racing winners (HVEC, 2013).

HVEC also owns Ogilvie View, a productive vineyard on a 485 ha property near Muswellbrook. Numerous third party Licence Agreements exist across the property, with 40 ha dedicated to predominately Chardonnay vines (HVEC, 2013) and the remaining land being utilised for cattle grazing and dry land cropping.

Agricultural and equine enterprises rely on good transport systems and access to airports. MAC has excellent access to transport routes including the Golden Highway and New England Highway, as well as the Main Northern Railway, with Newcastle located approximately 100 km south-east. MAC also has two major water storage dams.

Therefore, potential agricultural land uses could be suitable at MAC due to its compatibility with existing and historical land uses, and proximity to existing transport networks and water.

Plate 7 Equine Industry

LEGISLATIVE FRAMEWORKS

Alternate mine land re- uses such as woodland and agriculture are not land uses that typically support significant economic benefits. Typically common alternate mine land re- uses are usually captured by existing rehabilitation requirements under the *Environmental Planning and Assessment Act 1979* and the *Mining Act 1992*. The alternate mine land re-uses described in this Prospectus (e.g. renewable energy and infrastructure land uses) are unlikely to be 'substantially the same' as the approved mining development.

Alternate mine land re-uses that are not 'substantially the same' as the approved MAC could not be approved as a modification and would therefore require separate approval which may operate concurrently with the MAC approval.

SUMMARY

MAC has supported generations of people in the Muswellbrook Shire, and has contributed to ongoing prosperity in the Hunter Region.

BHP is proud of this legacy and considers that alternate mine land re-uses at MAC can continue to generate major social and economic benefits, both locally and regionally. Alternate mine land re-uses at MAC can also afford economic diversification aligned with the *Hunter Regional Plan 2041.*

BHP's very large property holding, stable rehabilitated landforms and long-term investments in on-site site infrastructure represent an opportunity for ongoing business and community use of the site.

Over the next few years, BHP will continue to work closely with key external stakeholders including the community and Government agencies to determine the most appropriate land uses after mining operations have ceased. Those land uses will be subject to separate approval processes and are not part of the Modification.

This Mt Arthur Alternate Mine Land Re-Use Prospectus provides an overview of the key physical and locational attributes of the site. It correlates these attributes with the needs of potential alternative mining land uses. These examples are provided to illustrate the value that the site could represent for business and communities, after mining is completed in 2030 (pending approval of the Modification).

Throughout the world (and particularly in NSW) there is an increasing focus on the potential social, environmental and economic benefits of repurposing mining and major industrial facilities to broader uses, and how repurposing can benefit society at-large.

The object of this Prospectus is to continue and aid these discussions, and highlight the opportunities that the MAC closure site represents for Muswellbrook and the broader Hunter Region communities.

Plate 8 Renewable Energy – Solar

Plate 9 MAC Workforce

Plate 10 Key Roads

Plate 11 Site Planning

REFERENCE LIST

Australian Renewable Energy Agency (2023) Hydropower/Pumped Hydro Energy Storage https://arena.gov.au/renewable-energy/pumped-hydro-energy-storage/

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ICMM (2019) *Integrated Mine Closure: Good Practice Guide*

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NSW Department of Industry (2020) *Making it Happen in the Regions: Regional Development Framework* https://www.nsw.gov.au/sites/default/files/2020-11/making-it-happen-in-the-regions-regional-development-framework.pdf