APPENDIX C UPDATED MITIGATION MEASURES

Updated Mitigation Measures

Water Management and Mitigation Measures

Groundwater monitoring will continue to utilise the existing groundwater and swamp monitoring network. The monitoring network and approach will be similar to that adopted for the current Springvale Mine, developed in consultation with the Springvale Mine Independent Monitoring Panel. Additional monitoring may be installed to collect data required for operational purposes.

Mine inflows may be managed underground as required to address short term spikes in inflow, or for routine or emergency maintenance of dewatering infrastructure. The planned dewatering of the 700 and 800 panel areas is also considered a mine water management issue and will not have any material impact outside of daily mine water management. Water from various parts of the mine will be managed and blended such that the water quality meets the contractual requirements of the Springvale Water Treatment Project.

A detailed mine closure plan will be developed and submitted for approval within five years prior to the completion of mining. Notionally, closure will include the placing of seals at all mine access ways, and internally within the mine workings, such that flow paths between Springvale Mine, Angus Place and the older Newcom workings are isolated.

Drawdowns resulting from mine dewatering and subsidence are predicted to impact on the THPSS. Given the predicted impacts to a high priority GDE, the APMEP does not meet the Level 1 Minimal Impacts Considerations of the NSW Aquifer Interference Policy and will be offset in accordance with the proposed Swamp Offset Strategy (RPS 2019).

All auxiliary infrastructure that may be required to be installed associated with additional dewatering bore facilities (including electrical easements, booster stations and pipeline connections) will be subject to a Construction and Environmental Management Plan (CEMP).

Surface water monitoring for the APMEP will continue to utilise the existing surface water and swamp monitoring network that is already in place. The monitoring network and approach will be similar to that adopted for the current Springvale Mine and would require the establishment of a flow and water quality monitoring sites at the bottom end of Trail Six/Japan Swamp, Birds Rock Swamp and Crocodile Swamp.

Annual stream condition monitoring will be implemented at key locations along water courses that overly or are within 600m of the proposed extraction area. Monitoring will comprise a combination of photographic monitoring and site observation to identify influences of sedimentation or scouring. Areas identified as potentially sensitive to subsidence and change in stream dynamics, such as the incised section of drainage in the upper reaches of Tri-Star Swamp southern tributary, may also be subject to monitoring of scarp heights and head cut height and progression.

Biodiversity Management and Mitigation Measures

A comprehensive monitoring program within the swamps will be implemented in accordance with a Swamp Monitoring Program. This will include a combination of intensive field survey and remote sensing methodologies.

A comprehensive monitoring program within terrestrial environments will be implemented in accordance with a Biodiversity Management Plan.

Research and monitoring programs for Blue Mountains Water Skink, Giant Dragonfly and *Boronia deanei* have been conducted for Springvale Mine and will be extended to include the amended APMEP Study Area to detect any potential mining related impacts to these species.

Impacts to swamps will be offset in accordance with the Swamp Offset Strategy. The strategy has been designed to satisfy the various State and Commonwealth offset policy requirements.

Updated Mitigation Measures

Where impacts cannot be avoided within the Impact Envelope, they will be offset in accordance with the BC Act within 12 months of impacts being realised. To accurately determine the impact of the amended APMEP, a liability report will be prepared, which details and calculates the actual Ecosystem and Species Credits required to offset any impacts. The offset requirements will be informed by extensive field surveys before construction (in accordance with the BAM) and will include use of high-resolution (7 cm pixel resolution) aerial photography before and after construction.

Cultural Heritage Management and Mitigation Measures

Aboriginal Cultural Heritage

All Aboriginal heritage in the amended Project Application Area will continued to be managed and monitored in consultation with the Registered Aboriginal Parties and in accordance with the Western Regions Aboriginal Cultural Heritage Management Plan (2017). Monitoring of all Aboriginal Heritage sites within 600m of the longwalls will be undertaken prior to, during and at the completion of mining. Any management actions required will be developed in consultation with the relevant Registered Aboriginal Parties and DPIE.

Only one site is at risk of being impacted by the APMEP. This site (#45-1-0084) was not ground-truthed during the 2014 survey due to access limitations and will require additional attempts to locate the site prior to the commencement of mining in the vicinity of the rock shelter to ensure that reliable baseline data is available to enable accurate monitoring and reporting of any subsidence related impacts.

Should this site be relocated, baseline recording must include the following:

- Detailed archival recording;
- Archival quality photos; and
- The designation of at least six survey control points for monitoring.

Historic Heritage

In the event that unexpected historical archaeological remains are identified within the amended Project Application Area, works should cease and an archaeologist engaged to assess the condition and significance of the find. Should the find be determined to be of heritage significance (local or State), the Heritage Council should be notified under s.146 of the NSW Heritage Act 1977. Depending on the nature of the site, additional assessment and possibly an excavation permit may be required prior to the recommencement of excavation in the affected area.

General Heritage Commitments

All site workers and major contractors should complete a heritage induction so they are aware of their obligations under the *National Parks and Wildlife Act 1974.*

In the unlikely event that skeletal remains are identified, work must cease immediately in the vicinity of the remains and the area cordoned off. NSW Police are to be contacted in first instance. No further action is to be taken until the Police provide written advice to the proponent on how to progress. If determined to be Aboriginal, the proponent must contact the Enviro line (on 131 555), and a suitably qualified archaeologist and representatives of the local Aboriginal community stakeholders determine an action plan for the management of the skeletal remains, formulate management recommendations

Aquatic Ecology and Stygofauna Management and Mitigation Measures

A comprehensive monitoring plan to assess the potential impacts of mine subsidence on aquatic habitat and biota within watercourses of the Study Area will be implemented. The aims of the recommended monitoring plan are to determine the nature and extent of any subsidence-induced impacts on aquatic ecology and assess the response of aquatic ecosystems to any stream remediation and management works implemented;

Two types of monitoring sites should be incorporated into the monitoring plan: 'impact' sites that may be subject to mine subsidence impacts during and after longwall extraction and 'control' sites that would provide a measure of the background environmental variability within the catchments as distinct from any mine subsidence impacts;

Monitoring sites should be established in major watercourses (i.e. Wolgan River and Carne Creek) and in sections of the larger drainage lines predicted to experience impacts due to the proposed longwall mining. Although no more than minor reductions in surface flow are predicted for Carne Creek, it is recommend that this creek is monitored for potential impacts to aquatic habitat and biota as a precautionary approach;

Detailed methodologies and performance indicators are provided in Appendix I; and

Additional aquatic ecology studies should be triggered by events such as significant changes in water quality and availability of aquatic habitats. Appropriate aquatic ecology trigger values should be developed following collection of two-years of baseline data. These values may be revised in consultation with relevant stakeholders following analysis of natural variability within the pre-mining baseline data. Each trigger value would correspond to either a negligible or significant impact on the aquatic habitat and/or biota within the Study Area and management actions identified for consideration if thresholds are exceeded.

Air Quality Management and Mitigation Measures

Mitigation measures for the operational phase

In order to control dust emissions during the operation of the APMEP, dust mitigation measures are required. These measures include:

- enclosures at conveyor transfer points;
- water sprays at conveyor transfer points;
- enclosure of coal sizer; and
- watering at coal sizer.

These measures have been taken into account in the emissions estimation and modelling of the operational scenario outcomes (EMM, 2019).

Mitigation measures for the construction phase

Recommended mitigation measures are listed below and are routinely employed as 'good practice' on construction sites:

- carry out regular site inspections to monitor compliance with the existing Air Quality and Greenhouse Gas Management Plan, record inspection results, and make an inspection log available to the local authority when asked;
- increase the frequency of site inspections by the person accountable for air quality and dust issues on-site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions;
- keep site fencing, barriers and scaffolding clean using wet methods;
- remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on-site (if they are being re-used on-site cover as described below);
- cover, seed or fence stockpiles to prevent wind whipping;
- ensure all vehicles switch off engines when stationary - no idling vehicles;
- ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;
- minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; and

- ensure equipment is readily available on-site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Noise and Vibration Mitigation and Management Measures

The APMEP will continue to be managed in accordance with the existing *Noise Management Plan - Western Region* (NMP 2008). The NMP clearly outlines the noise mitigation and management measures common to all Centennial operations within the western region, where applicable, as well as those specific to the Angus Place Colliery.

The mitigation measures applicable to the Angus Place Colliery are summarised as follows (EMM, 2019):

- a combination of partial and fully enclosed conveyors and conveyor drives;
- regular inspection of conveyor idlers and prompt replacement of damaged or highly worn idlers during maintenance;
- regular maintenance of plant and equipment in accordance with the manufacturer's specifications to ensure optimal operating conditions;
- installation of frequency modulated reversing alarms or "quakers" on mobile plant;
- switching off vehicles and plant when not in use;
- operate mobile plant in a quiet, efficient manner and regular training for relevant personnel;
- selecting low noise plant for operation on-site;
- installing acoustic enclosures around processing plants and sealing all unnecessary openings; and
- speed limits on haul routes.

The NMP also describes the short-term and long-term monitoring program for the mine including both attended and real-time, unattended noise monitoring. The NMP will be updated upon approval of the APMEP.

Centennial Angus Place will undertake a noise monitoring program to validate the assumptions made in the Noise and Vibration Impact Assessment including the sound power level of on-site plant and equipment and off-site noise emissions. Operations of acoustically significant plant and equipment during the evening and night-time (not modelled to be operational) will be limited until it can be demonstrated that operation of the site can comply with the relevant noise limits at the nearest assessment locations (EMM, 2019)

Traffic and transport Management and Mitigation Measures

A road maintenance program be implemented for the affected unsealed rural roads within Newnes State Forest, namely Old Bells Line of Road, Glowworm Tunnel Road, Blackfellows Hand Trail and Sunnyside Ridge Road.

The road maintenance program should include measures such as regrading of the road surface to repair potholes and road corrugations at three monthly intervals during construction, and a commitment by Centennial to restore the road surface to its pre-construction condition at the completion of construction. Construction and speed management signage should also be implemented along the affected sections of the unsealed road network.

It is recommended that a CTMP and Driver Code of Conduct be prepared prior to commencement of construction and incorporate the road maintenance program and other traffic control measures to be implemented throughout the APMEP construction.

The APMEP workforce should also be made aware of a number of traffic-related safety matters prior to commencement of their employment, including:

- varying speed limits on sealed and unsealed roads;

- general road safety rules (e.g. do not drive under the influence of alcohol and medication);
- be aware of driving on dirt road in severe weather condition; and
- fatigue management measures.

Visual Impact Management and Mitigation Measures

- New infrastructure components will use non reflective and neutral toned cladding to reduce the visual impacts
- Lights at the pit top have been designed and installed to Australian Standard 4282-1997 to minimise light spill and direct shining towards receptors;
- The pit top rehabilitation plan provides for revegetation with native woodland and grasslands;
- Newnes Plateau pipelines and powerlines will be buried and the clearing corridor promptly revegetated; and
- Newnes Plateau infrastructure will be progressively dismantled and rehabilitated to an appropriate land use.

Social Impact Management and Mitigation Measures

Community Contribution Fund

- Centennial will continue to make financial contributions to the LCC in accordance with the existing agreement (Section 2.5). These contributions will assist LCC to respond to any increased demand for services and facilities generated by the project workforce, noting the likelihood of project induced impacts in these areas has been assessed as low and of minor consequence.

Stakeholder Engagement Plan (SEP)

- Angus Place Colliery will have its own SEP. Key stakeholders will be identified in the Angus Place Colliery SEP. The SEP will be prepared in accordance with the good practice approaches described in ECMS 04 – General Minimum Environmental Performance Standards for Stakeholder Contact ((Centennial Coal, ud) and the associated guidance notes. The SEP will describe the mechanisms for keeping key stakeholders and the broader the Lithgow community informed of the progress of operations. Any changes to the current consent and future modifications will be subject to standalone consultation in accordance with a new and separate SEP.

Social Baseline Review

- Centennial will undertake a social baseline review of all communities of interest for Centennial operations in the Lithgow LGA. Reviews will be aligned with the ABS census periods (i.e. every 5 years). These reviews will be informed through qualitative (consultation) and quantitative analysis (statistical data analysis).

Socio-economic Contribution Reporting

- Centennial has commenced annual longitudinal profiling of the social and economic contribution of the business to its host communities i.e. Lithgow LGA. This profiling will support the social baseline review described above.

Western Region Combined CCC

- The Western Region Combined CCC will continue to operate for the life of the project. The CCC's key role will be to foster dialogue between Centennial, the community and key stakeholders regarding the project and other Centennial operations and projects.

Updated Mitigation Measures

CCC Reporting

- Centennial has an established CCC reporting framework consistent across all Centennial operations in NSW. This reporting framework is used for every CCC meeting and mirrors the Centennial annual and quarterly environmental reporting. It covers a range of reporting elements including a summary of operations, environmental performance, environmental management, compliance, community engagement and complaints management as well as future activities.

Complaints and Grievances Procedure

- Centennial procedure ECMS 04 and the associated guidance notes establishes minimum standards for engaging with near neighbours, key stakeholders and the broader Lithgow community. It establishes protocols for the recording of complaints and responding to community queries, issues and concerns.
- All environmental incidents, including community complaints, are recorded in the Environment and Community Database (ECD), or its equivalent.

Mine Closure SIA and Management Plan

- Centennial will commence the preparation of a Mine Closure SIA and Management Plan at least five years prior to the potential Mine Closure.

Swamp Offsets

- Centennial will implement the Swamp offset Strategy that supports the potential realisation of Destination Pagoda for the GSA through:
  - Support for a transfer of land (currently owned and managed by Forestry Corporation NSW (FCNSW)) into a State Conservation Area on a staged basis; and
  - Payment into the BCT Fund in respect of subsidence related effects to THPSS and their associated threatened species associated with the project (if approved).