



Mandalong Coal Mine Mod 6: Temporary Water Discharges

State Significant
Development
Modification Assessment
(SSD 5144 MOD 6)

April 2019

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Cover Photo

Morans Creek near Mandalong Mine (Source: Centennial Coal)

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Executive Summary

Centennial Mandalong Pty Ltd (Centennial) owns and operates the Mandalong underground coal mine near Morisset, approximately 35 kilometres south-west of Newcastle in the Central Coast and Lake Macquarie City local government areas.

In 2015, development consent was granted for the development of the Mandalong Southern Extension Project (MSEP). The MSEP involves the continuation and extension of existing underground mining operations into the Southern Extension Area. The Mandalong South Surface Site (MSSS) facility, which will service the Southern Extension Area, is currently under construction.

The sediment dam at the MSSS was designed to capture rainfall runoff from the MSSS facility. Under the existing consent, overflow from the dam was largely to be prevented by transferring water from the dam to the underground workings via a surface-to-seam borehole. This water was then to be managed in the mine's underground water management system, which transfers mine-water to the mine's existing Cooranbong Entry Site (CES).

As the surface-to-seam borehole and other water management facilities at the MSSS are yet to be constructed, Centennial is currently unable to dewater the sediment dam into the underground workings. On 17 October 2018, Centennial submitted its application to modify State significant development (SSD) 5144. Centennial is seeking short-term approval for the controlled release of water from the MSSS sediment dam, once it is of acceptable quality, into an unnamed creek that flows into the upper reaches of Morans Creek. This arrangement would cease by 1 July 2021, by which time the MSSS and the surface-to-seam borehole would be constructed. Centennial is also seeking approval to transport sediment and material collected at the MSSS by road to the CES. No changes were proposed to the approved mine life, approved mining areas, mining methods or extraction rate.

The Department of Planning and Environment (the Department) exhibited the application and accompanying Statement of Environmental Effects (SEE) from 2 to 16 November 2018. Nine submissions were received; six from government agencies, one from Lake Macquarie City Council and two from the public. None of the government agencies objected to the proposed modification. The key issues raised by agencies have been addressed through Centennial's provision of additional information and a Statement of Commitments, or through the recommended conditions of consent.

One objecting submission was received from an adjoining landowner. The unnamed creek crosses their land, and they are concerned about the impacts of the discharges, including potential environmental contamination of their land.

The proposed water discharges would be temporary and of relatively short duration (a little over two years). Appropriate limits for pH, oil & grease and sediment have been recommended by the Environment Protection Authority for the quality of the water proposed to be released. Any potential water quality impacts would be closely monitored, with appropriate remedial measures. The potential for scour or erosion impacts are expected to be minimal and would be monitored. The traffic impact of the proposed sediment transfer to the CES is expected to be negligible, and any road infrastructure impacts would be monitored and mitigated under existing conditions of consent.

The Department considers that the proposed modification is in the public interest and recommends that the proposed modification be approved, subject to the recommended conditions set out in the Notice of Modification.



1. Introduction

1.1 Background

Centennial Mandalong Pty Ltd (Centennial) owns and operates the Mandalong underground coal mine near Morisset, approximately 35 kilometres (km) south-west of Newcastle in the Central Coast and Lake Macquarie City local government areas (see **Figure 1**).

This report provides the Department of Planning and Environment's (the Department's) assessment of an application to modify the State significant development (SSD) consent for the Mandalong Southern Extension Project (MSEP) (SSD 5144), which involves the continuation and extension of Mandalong's existing underground mining operations into the Southern Extension Area. The consent permits the construction of the Mandalong South Surface Site (MSSS) to service the Southern Extension Area (see **Figure 1**). The MSSS is currently under construction.

The mine is located in heavily vegetated ridge country, with cleared land on the hillslopes and surrounding valleys supporting small-scale cattle grazing, hobby farms and rural-residential developments. The site also includes the floodplain of Morans Creek.

Mandalong Mine comprises underground mining domains and a range of surface infrastructure, including the:

- Mandalong Mine Access Site (MMAS), located close to the M1 Motorway, which serves as the mine's administrative centre and provides personnel and materials access to the mine;
- Cooranbong Entry Site (CES), located west of Eraring Power Station, which receives and handles run-of-mine (ROM) coal via an underground conveyor. The CES also hosts the mine's principal surface water management system - a borehole dam at the CES accepts water pumped from storage in the underground workings. This water is then piped to the main licensed discharge point LDP001, where it is discharged to Muddy Lake, a tidal waterbody that drains into Lake Macquarie; and
- MSSS, located off Mandalong Road, which has been under construction since February 2017. Once constructed, the MSSS will service and ventilate the mine's extended underground mining operations to the south. This will include service boreholes to transfer materials and mine water. The MSSS is located within the Morans Creek catchment. Morans Creek generally flows for relatively brief periods in the vicinity of the MSSS following rainfall events.

Centennial's application and accompanying Statement of Environmental Effects (SEE) (see **Appendix A**) was lodged on 17 October 2018 pursuant to section 4.55(1A) of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The modification application seeks approval for:

- the controlled release of stored water from the sediment dam at the MSSS into the unnamed creek that flows into the upper reaches of Morans Creek; and
- road transport of sediment and material collected at the MSSS to the CES.

No changes are proposed to the approved mine life, approved mining areas, mining methods or extraction rate.

1.2 Approval History

Mandalong Coal Mine was originally approved in 1998 under development consent DA 97/800. Centennial acquired the mine in 2002 and commenced longwall mining in 2005.

On 12 October 2015, development consent was granted by the Planning Assessment Commission (now, Independent Planning Commission) for the development of the MSEP under SSD 5144. The consent permits the following works:

- continuing previously-approved mining operations, including continued operation of the existing MMAS;

- extending underground mining operations through the development of an additional 40 longwall panels into the Southern Extension Area;
- extending the life of mine by 25 years from the grant of a mining lease over the Southern Extension Area;
- construction of the new MSSS facility to service the Southern Extension Area;
- transferring water inflows to and from the borehole dam at the CES; and
- rehabilitating the mine after mining has ceased.

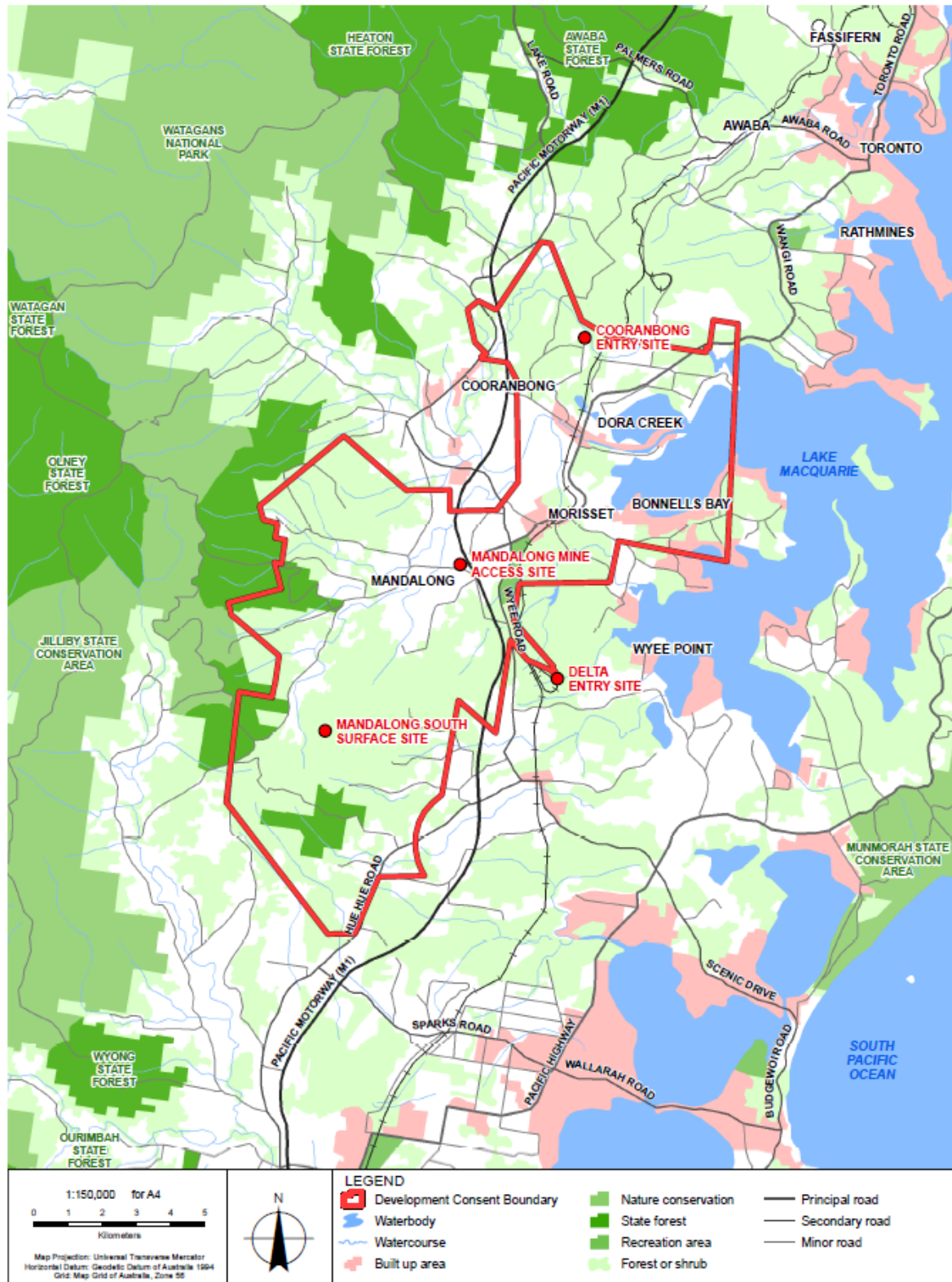


Figure 1 | Site Location

The development consent includes the approval of:

- mining operations until 31 December 2040;
- extraction of up to 6.5 million tonnes of ROM coal from the site; and
- operating hours of 24 hours a day, seven days per week.

The development consent has been modified on five previous occasions (see **Table 1**).

Table 1 | Previous Modifications

Mod No	Summary of Modification	Type	Approval Date
MOD 1	Relocation of an existing transmission line	s96(2)	14/06/2016
MOD 2	Extension of first workings associated with Longwalls 22 and 23	s96(1A)	22/09/2016
MOD 3	Increase to the annual production limit from 6.0 to 6.5 million tonnes of ROM coal per annum	s96(1A)	16/11/2016
MOD 4	Extension of Longwalls 22 and 23	s96(2)	24/03/2017
MOD 5	Extension of Longwall 24 and addition of a new Longwall 24A	s96(2)	01/08/2017



2. Proposed Modification

2.1 Controlled Discharge of Water from the Sediment Dam

The sediment dam at the MSSS (see **Figure 2**) is designed to capture rainfall runoff from the MSSS facilities area. Under the existing consent, the dam is to be dewatered by transferring water from the dam to the underground workings via a surface-to-seam borehole. This water would then be managed in the mine's underground water management system which transfers water to the CES, prior to reuse or discharge.

However, Centennial is currently unable to dewater the sediment dam into the underground workings. Centennial will only be able to do this once the:

- capacity of the underground pumping system is increased;
- storage capacity of the underground workings is increased (in the vicinity of the MSSS); and
- underground mine workings connect to the shafts and boreholes planned for the MSSS.

Centennial is currently managing water captured in the sediment dam by using evaporative sprayers and irrigating rehabilitation areas. These methods have limited efficiency during wet periods. Centennial is therefore seeking short-term approval to allow for the controlled release of water from the sediment dam into the nearby creek following rainfall events (see **Figure 3**).

The sediment dam has a 1.7 megalitre (ML) capacity and is able to accommodate a 95th percentile five-day rainfall event. To maintain capacity in the sediment dam, up to 1.7 ML of water would be required to be released following rainfall events. These controlled discharges would be via a stabilised emergency spillway at Licensed Discharge Point (LDP) No. 004 into the unnamed creek that flows to the upper reaches of Morans Creek. Emergency discharges at LDP004 are licensed under Environment Protection Licence (EPL) No. 365, administered by the Environment Protection Authority (EPA) under section 43(b) of the *Protection of the Environment Operations Act 1997* (POEO Act).

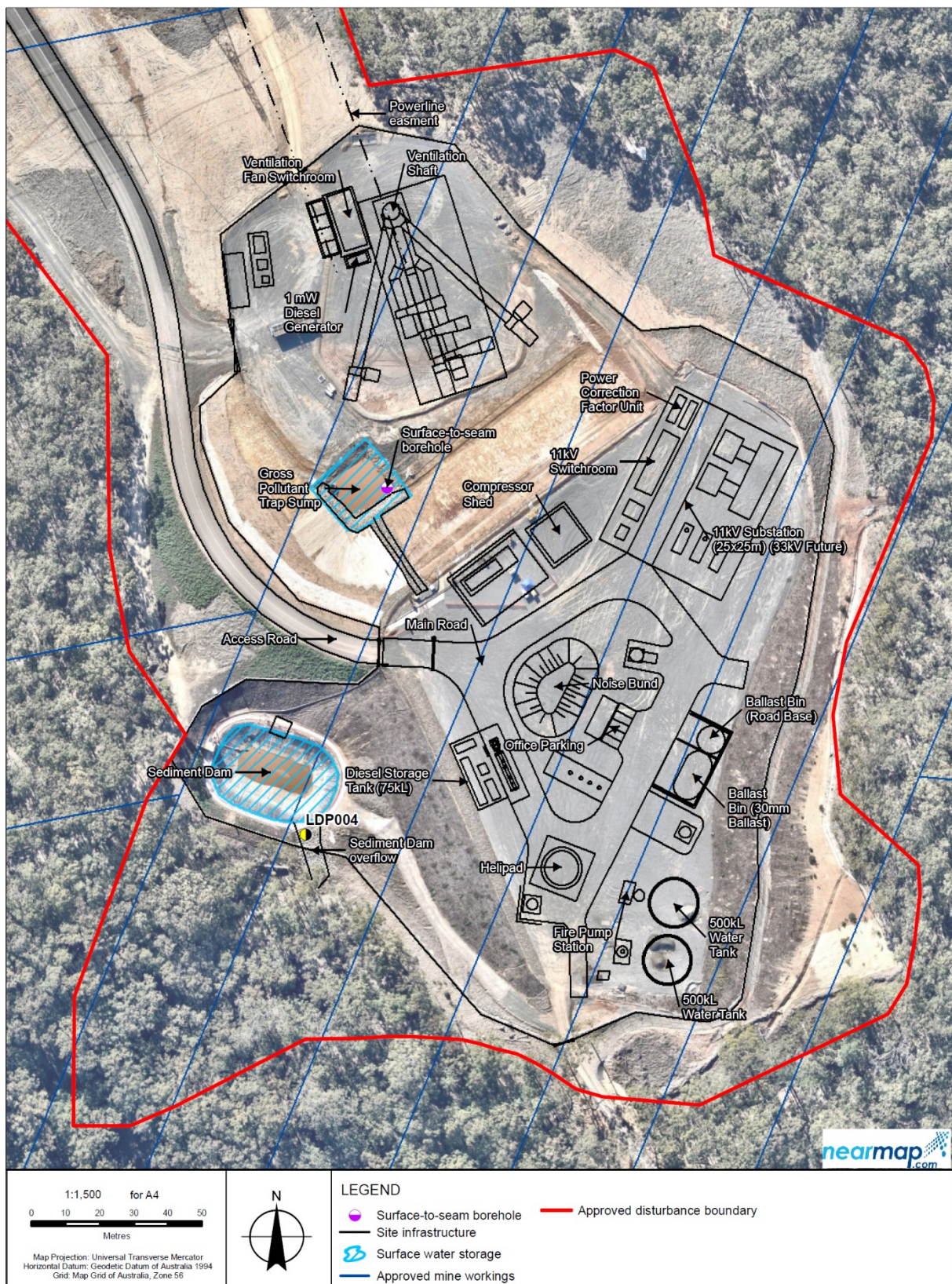


Figure 2 | MSSS site layout

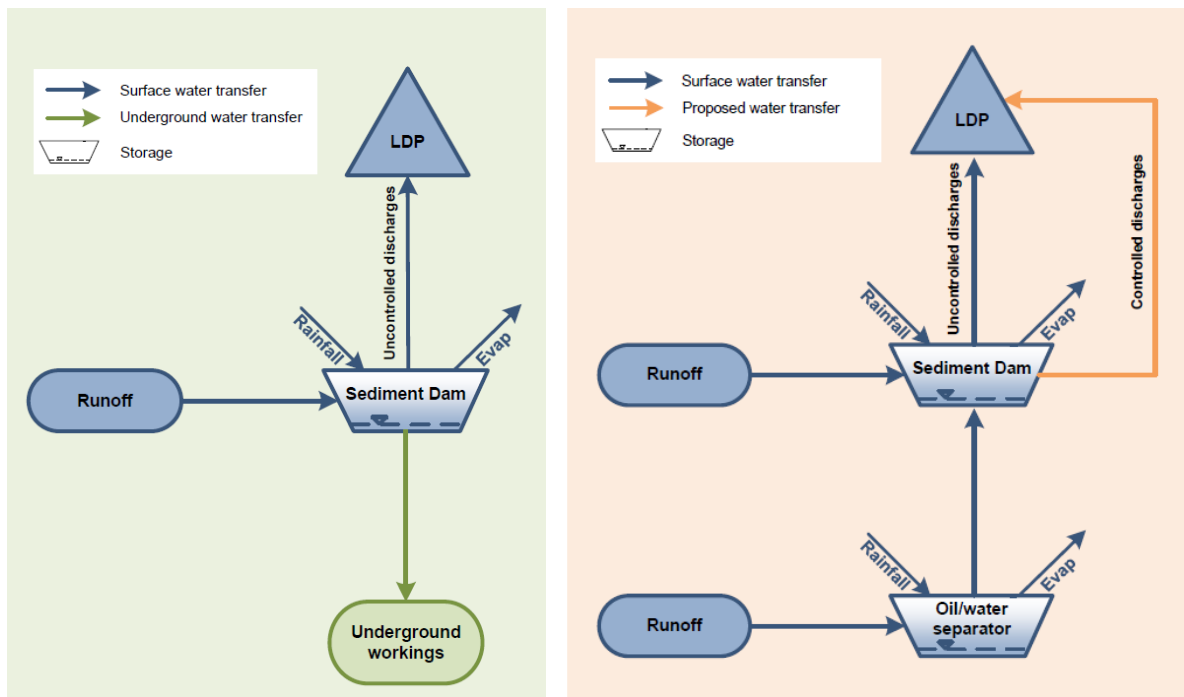


Figure 3 | Existing and proposed discharge arrangements at MSSS

2.2 Transporting Sediment and Material from the MSSS to the CES

Centennial is also seeking approval to transport sediment and material collected in the gross pollutant trap sump to the CES once per week using a vacuum tipper truck.

Additionally, Centennial is seeking approval to transport sediment collected in the sediment dam to the CES. Centennial plans to de-silt the sediment dam every six months and dry it on site. The dry sediment would be transported to the CES every six to 12 months in a covered tipper truck.



3. Statutory Context

3.1 Scope of Modification

The Department has reviewed the scope of the modification application and considers that the application can be characterised as a modification involving minimal environmental impacts as the proposal:

- would not significantly increase the environmental impacts of the project as approved;
- is substantially the same development as originally approved; and
- would not involve any disturbance outside the already approved disturbance areas for the project.

Therefore, the Department is satisfied the proposed modification is within the scope of section 4.55(1A) of the EP&A Act and does not constitute a new development application. Accordingly, the Department considers that the application should be assessed and determined under section 4.55(1A) of the EP&A Act, rather than requiring a new development application to be lodged.

3.2 Mandatory Matters for Consideration

The Department conducted a comprehensive assessment of the project against the mandatory matters for consideration as part of the original assessment of SSD 5144. The Department considers this modification application does not result in significant changes that would alter the mandatory matters for consideration under section 4.15 of the EP&A Act and conclusions made as part of the original assessment. The Department has considered all mandatory matters, including all relevant environmental planning instruments, as part of this assessment.

3.3 Consent Authority

The Minister for Planning and Public Spaces is the consent authority for the application under section 4.5(a) of the EP&A Act. The application does not require referral to the Independent Planning Commission (IPC) for determination because:

- neither Lake Macquarie City Council (LMCC) nor Central Coast Council (CCC) made an objection;
- Centennial has not made any political donations; and
- there were less than 25 public submissions by way of objection.

Under the Minister's delegation dated 11 October 2017, the Department's Executive Director - Resource Assessments and Compliance may determine the application.



4. Engagement

4.1 Department's Engagement

As the application was lodged as a s4.55(1A) modification it was not required to be notified or advertised. However, to ensure that the local community and previous submitters were informed of the proposed modification and given an opportunity to provide a submission, the Department exhibited the application and accompanying SEE from 2 to 16 November 2018:

- on the Department's website;
- at the offices of the Department;
- at the offices of CCC and LMCC; and
- at the Nature Conservation Council's office.

The modification application was advertised in the *Lakes Mail* and the *Central Coast Express Advocate*. Previous submitters and adjacent landholders were notified of the modification application and invited to make a submission. The modification application was also referred to the Department's Division of Resources and Geoscience (DRG), the Department of Industry's Crown Lands and Water Division (DoI – Water), the Office of Environment and Heritage (OEH), Roads and Maritime Services (RMS), Subsidence Advisory NSW (SANSW), the EPA, LMCC and CCC.

4.2 Summary of Submissions

During the exhibition period, the Department received nine submissions on the proposal. Six were received from government agencies, one from LMCC and two from members of the public. A summary of the submissions is provided below, and a full copy of the submissions is provided in **Appendix B**. Centennial prepared a Response to Submissions (RTS) report (see **Appendix C**) to address the issues raised (see **Section 4.5**).

4.3 Key Issues – Government Agencies

None of the government agencies objected to the proposed modification. The key issues raised by agencies have largely been addressed through Centennial's provision of additional information and a Statement of Commitments, or through the Department's recommended conditions of consent.

The EPA recommended the following conditions for controlled water discharges:

- discharged water to contain less than 50 milligrams per litre (mg/L) of total suspended solids (TSS), a pH between 6.5 and 8.5, and less than 10 mg/L of oil and grease;
- discharge to occur only over a five-day period following a rainfall event that exceeds 51 millimetres (mm) over any consecutive five-day period;
- controlled discharge of water at the MSSS to cease once the surface-to-seam borehole is commissioned; and
- controlled discharge of water at the MSSS to be prohibited after 1 July 2021. After that date, should the surface-to-seam borehole be unavailable, alternative methods must be used to dispose of excess water (such as transportation to a licensed waste disposal facility).

Centennial agreed with these proposed conditions, with the exception of the proposed rainfall threshold.

OEH recommended that:

- the Aboriginal cultural heritage constraints and obligations identified for the MSSS and the current modification be integrated into the *Centennial Coal Aboriginal Cultural Heritage Management Plan: Northern Region* (September 2016); and
- any harm to threatened biodiversity caused by sediment dam discharges must be offset in accordance with the *NSW Biodiversity Offset Policy for Major Projects*.

An existing condition of consent requires Centennial to review and revise any relevant management plans following approval of a modification. Centennial's Statement of Commitments includes a commitment to review and revise its Northern Region Aboriginal Cultural Heritage Management Plan.

Centennial considers that the proposed discharges would have no significant impacts to biodiversity. Nevertheless, OEH recommended a precautionary approach to ensure that any unexpected biodiversity impacts are offset. Centennial's Statement of Commitments includes a commitment to offset any biodiversity impacts.

Dol-Water recommended that natural geomorphic conditions in the unnamed creek below the outlet are maintained. It suggested that, if bed scour was likely or occurring, then the stream bed should be protected (e.g. by installing rock rip-rap or vegetation downstream of the discharge outlet). Similarly, OEH recommended that, following discharge events, Centennial monitor the creek for scour downstream of the discharge point.

Centennial advised that there would be little change to the current flow regime of Morans Creek and expected no significant impacts to the hydrology or hydraulics of the downstream watercourses. Centennial has modelled peak flow and velocity for the proposed conditions to be less than prior to the construction of the MSSS. Centennial has committed to undertaking biannual visual and photographic inspections to assess evidence of scour and, if detected, it would then implement mitigation measures.

OEH agreed to these mitigation measures but advised that, if scour remediation works were required, an assessment of potential impacts to the Aboriginal grinding groove site RPS TBM28 located downstream of the discharge point must also be undertaken. This would be considered as part of the revision and update of Centennial's Northern Region Aboriginal Cultural Heritage Management Plan.

RMS advised that transporting sediment and material collected at the MSSS to the CES would generate a negligible traffic impact.

DRG and SANSW did not raise any objections or make other comments.

4.4 Key Issues – Council/Community/Special Interest Groups

4.4.1 Council Issues

LMCC commented that soils at the site are highly erodible, and therefore recommended that:

- the sediment load of water entering the basin be reduced through the use of chemicals and other sediment control methods;
- the sediment dam design be changed to operate as a continuous flow basin;
- a limit be set on the number of truck movements and maximum tonnage; and
- a time limit be set on the temporary discharge arrangements.

In response, Centennial advised that chemical dosing would occur prior to discharge, if the TSS concentration in the sediment dam was above the EPA's limit of 50 mg/L. Centennial also advised that a continuous flow basin would not allow it to confirm the water quality in the sediment dam prior to discharge.

Centennial also advised that the low number of additional vehicle movements would create a negligible traffic impact, making limits unnecessary. LMCC was generally satisfied with Centennial's responses, however suggested that, as a condition of consent, a road condition dilapidation report be prepared and that any damage to the road should be repaired (if not already a requirement). The Department considers that the existing conditions of consent are adequate in this respect, as they require Centennial to have a Construction Traffic Management Plan for the construction of the MSSS and that any damage to Mandalong Road is repaired.

A time limit of 30 June 2021 is provided in the recommended conditions of consent.

4.4.2 Community Issues

The Department received two submissions from members of the community; one in support and one objecting to the proposed modification.

The supporting submission highlighted that the mine:

- had a good track record with minimal impacts to the community, water resources or ecology;
- supplies coal to local energy generators that provide electricity to NSW; and
- supports local sporting and community groups.

The objecting submission was from an adjoining landowner to the MSSS who sells chemical-free produce. Their concerns were that:

- discharge of sediment and nutrient-laden pollutants would contaminate the natural environment and the creek that flows through their property;
- discharged water would pond and sit stagnant in parts of the creek, including stock watering areas;
- regrowth of endangered vegetation that the owner is undertaking on their property would be impacted;
- discharges would affect their ability to farm in an organic and chemical-free environment;
- the proposed discharges were not 'permitted' in the original Environmental Impact Statement (EIS), and that this arrangement should remain in place;
- the area contains endangered and threatened species, including a Jabiru, which should not be exposed to an altered environment; and
- overall, the proposed modification is an unnecessary disruption to the environment and adjoining property owners.

This objecting submission was not opposed to trucking collected sediment along Mandalong Road and recommended that the sediment-laden water also be trucked to a site where the water can be disposed of.

The objector's issues are considered in **Section 5** below.

4.5 Response to Submissions

On 21 November 2018, the Department requested that Centennial respond to the submissions received. The Department asked that a firm timeframe for 'temporary' discharges of water be provided. Centennial provided an RTS report (see **Appendix C**) on 1 March 2019. The RTS predicted that Centennial's proposed long-term site water management strategy would be implemented by 9 June 2021. The RTS was provided to agencies and LMCC for comment.

Following review of the RTS, further advice was provided by the EPA, OEH, LMCC, DRG and RMS. All agencies other than the EPA were satisfied that either the RTS had satisfactorily responded to the concerns they had raised or that appropriate conditions would be incorporated into the development consent.

The EPA confirmed its view that water discharges should only occur over a five-day period following a rainfall event that exceeds 51 mm over any consecutive five-day period (discussed in **Section 6**).

On 29 March 2019, Centennial provided a Statement of Commitments in relation to Modification 6, committing to undertake a number of actions in relation to water quality and aquatic ecology monitoring, water management, biodiversity and Aboriginal heritage. The Department proposes that the Statement of Commitments is appended to the conditions of consent.

4.6 Additional Community Comments

Following review of the RTS, the objecting community submitter contacted the Department and provided additional verbal and written comments, in summary that:

- they objected to any environmental impact on their property;
- Centennial had not addressed the option to dewater the sediment dam using a tanker, which they consider would be a minor impact to traffic, transport and emissions;
- the use of chemical dosing in the sediment dam (to reduce the sediment load via flocculation/coagulation) would expose their property to chemicals;
- that the Department should also consider contamination / pollutant exceedances at the licensed discharge point at the CES;
- that chemicals and /or oils could be released from the MSSS into natural areas; and
- that landholders who utilise flood waters to fill dams and water stock should be compensated.

The Department provided a direct response to the landowner, including a high-level review of the quality of water discharged at Centennial's CES. Centennial's 2018 Annual Environmental Management Report (AEMR) summarised environmental performance at Mandalong during the 2017 calendar year. This report showed that, based on 328 samples, Centennial had been compliant with water discharge limits specified in its EPL. The monitoring results showed that at the CES's main discharge point (LDP001):

- the average and maximum concentrations of oil & grease were 0.07 mg/L and 6 mg/L, respectively, in comparison with an EPL limit of 10 mg/L; and
- the average and maximum TSS concentrations were 1.5 mg/L and 24 mg/L, respectively, in comparison with an EPL limit of 50 mg/L.

The Department also informed the landowner that, under the *Mining Act 1992*, compensation can be pursued via the provisions for "compensable loss".



5. Assessment

5.1 Introduction

The Department considers that the main issues for consideration in the assessment of MOD 6 relate to the water quality, flow rates and duration of proposed discharges from the sediment dam. These include:

- whether the water quality impacts to the unnamed creek or Morans Creek would cause any significant aquatic ecology, irrigation or other social, health or environmental impacts;
- whether the volume of water discharged to the unnamed creek would cause any significant geomorphological, erosional, ecological, flooding or scour impacts (and subsequently whether any scour controls could have an impact to Aboriginal heritage in the unnamed creek);
- the nature and scale of any negative impacts to adjacent landholders (e.g. flooding, water quality, health, economic and social impacts);
- whether there are any viable alternatives to the temporary discharge of waters into the unnamed creek;
- whether the proposed timeframe for the temporary discharges is acceptable;
- whether trucking of sediment material from the MSSS to the CES would cause any significant traffic, noise, air quality, odour or other environmental impacts; and
- whether any potential impacts can be appropriately monitored and managed through conditions of consent, management plans and/or Trigger Action Response Plans (TARPs).

The Department has utilised the following sources of information to undertake its assessment:

- modification application and supporting SEE;
- MSEP Environmental Impact Statement (2013);
- The Department's Final Assessment Report for MSEP SSD 5144 (2015);
- existing conditions of the development consent (SSD 5144 MOD 5);
- advice from key Government agencies and LMCC;
- community submissions;
- RTS report provided by Centennial;
- Centennial Mandalong's 2018 AEMR Report;
- Managing Urban Stormwater: Soils and construction – Volume 2E, Mines and Quarries (2008) (the 'Blue Book');
- relevant environmental planning instruments, policies and guidelines; and
- relevant requirements of the EP&A Act.

The Department has considered the merits of the proposed modification from a social, economic, environmental, legal, health, safety and operational perspective in its assessment. The Department has taken into consideration the following aspects in its decision making:

- relevant strategic context;
- relevant statutory requirements;
- agency advice and community views;
- key studies and findings in the SEE, including key policies or guidelines relevant to the proposed modification
- baseline information;
- avoidance, mitigation and/or offsetting measures;
- predictions of impacts, including cumulative impacts and any uncertainties;
- criteria for evaluating impacts; and

- conditions to address residual impacts and any uncertainties.

5.2 Sediment Dam Water Discharges

5.2.1 Water Quality and Ecology

Runoff water captured at the sediment dam would likely contain suspended sediment, hydrocarbons and salt. Discharges are predicted to have an electrical conductivity (a measure of salinity) of around 800 $\mu\text{S}/\text{cm}$ for controlled releases and 750 $\mu\text{S}/\text{cm}$ for emergency releases. These discharge concentrations are within the historical range observed in Morans Creek (background salinity levels of up to 940 $\mu\text{S}/\text{cm}$), but moderately higher than typical background concentrations in Morans Creek (a median concentration of 517 $\mu\text{S}/\text{cm}$ at the closest monitoring point to LDP004). The discharges are within the range that is generally considered acceptable for agricultural irrigation purposes (up to 900 $\mu\text{S}/\text{cm}$). Metals and other contaminants are not expected to be in the runoff captured at the sediment dam.

Elevated levels of suspended sediment (and associated increases in turbidity) in the unnamed creek and Morans Creek have the potential to impact aquatic ecosystems (particularly the habitats of macroinvertebrates and other fauna) through potential increased growth of algae and macrophytes. However, discharges are not expected to increase the turbidity of Morans Creek compared to pre-development conditions.

The condition of existing macroinvertebrate communities in Morans Creek is already relatively poor, but is not expected to be further impacted by intermittent discharges that are close to existing background salinity concentrations.

The EPA has recommended that the existing water quality limits for emergency discharges imposed on discharges from the sediment dam for TSS (less than 50 mg/L), pH (between 6.5 and 8.5) and oils/grease (less than 10 mg/L) are also applied to the proposed controlled discharges, which it would include in its EPL. Centennial is also required to collect a daily grab sample of the discharging water for analysis.

Runoff water captured within the sediment dam would be treated prior to discharge. Treatment may be as simple as allowing a day or two for sediment to settle naturally from the water column. Centennial may need to use chemical flocculants to reduce sediment levels in discharged water. Centennial has confirmed that it does not intend to use these chemicals regularly, i.e. only if sediment concentrations in the sediment dam are above 50 mg/L (as per the EPL's discharge requirements). If dosing chemicals are used, there is a possibility that residual flocculants could be discharged into the unnamed creek. These are expected to be minimal in both quantity and effect, particularly if the correct dosage of flocculant is used, as Centennial has stipulated in its SEE. Once the water in the sediment dam meets the quality criteria set in the EPL, the water would be released.

As stated in **Section 4.5** above, the EPA confirmed its guidance that water discharges should only occur over a five-day period following a rainfall event that exceeds 51 mm over any consecutive five-day period. This criterion equates to the 90th percentile five-day rainfall event for Newcastle. The EPA proposes explicit and limited circumstances under which discharges are permitted.

Centennial responded to this proposed restriction and indicated that this would make effective operation of the sediment dam "unworkable". This restriction would not enable it to discharge water from the dam when large rainfall events occur that are less than 51mm. This retained water would also reduce the dam's available capacity, therefore limiting its ability to capture and hold runoff from the next rainfall event. Further, a succession of rainfall events below the 51mm criterion event would inevitably lead to the uncontrolled overflow of the dam, with an associated inability to control water quality parameters (particularly sediment). This is in contrast to the proposed controlled release of water meeting the EPL's water quality specifications.

The EPA's view remains that the 51 mm criterion should be applied and that Centennial should continue to use its current water disposal methods of water evaporators and irrigation of rehabilitation areas to manage water levels

within the dam. The EPA considers that Centennial applied for this modification in these terms, while Centennial states that it did not define any rainfall event to trigger a discharge, only that discharges would occur following significant rainfall events, and only once the water was of an acceptable quality to discharge.

Centennial considers that its existing use of water evaporators and irrigation is short-term and inefficient (especially during wet weather when dam capacity is most needed) and also noisy and energy intensive. It does not consider that water levels in the dam could be maintained at the desired low level, unless significant volumes of water were also trucked from the site. This would be costly, fuel intensive and introduce some level of unwanted traffic impact to local roads.

The Department's view is that all sediment dams, including the MSSS sediment dam, are most effective in their operation when their retained water levels are low. This means that, once captured runoff waters are of an acceptable quality and reuse options are exhausted, they are best released in a controlled manner. This provides the continuing capacity within the dam to capture the next sediment-laden runoff event.

The Department does not agree that there is an environmental benefit in restricting the timing of controlled releases of runoff water. By restricting releases to within five days of a 51 mm five-day rainfall event, it is almost certain that good quality water would be retained in the dam, only to be re-agitated by subsequent rainfall events. Ultimately, once the dam capacity is reached, there would be uncontrolled overflows of sediment-laden water.

The Department understands that this is not the EPA's intent and that the EPA believes that the use of evaporators and irrigation would be sufficient to manage water levels in the dam. However, the Department considers that these measures would fail during prolonged wet weather and also potentially during other adverse weather sequences that would not meet the proposed criterion to allow controlled discharges.

The Department considers that the most important environmental aspect in the management of this sediment dam is to ensure that any water discharged is of an acceptable quality. It is important that the sediment dam is operated as effectively as possible by allowing sediment to settle in the dam and not be discharged. The Department has recommended conditions of consent that strictly limit controlled discharges from the dam until 30 June 2021 and provide that all discharges must be in accordance with any relevant EPL, but without restricting the timing of controlled discharges in the manner sought by the EPA.

There are three threatened frog species that have a moderate, or greater, likelihood of occurring downstream of the MSSS sediment dam. OEH has also identified other threatened species and endangered ecological communities downstream of the site. Centennial does not expect the discharge of water would have a significant impact on biodiversity along Moran's Creek. In its Statement of Commitments, Centennial has committed to securing a biodiversity offset in accordance with the *NSW Biodiversity Offset Policy for Major Projects*, if the water discharges impact on any threatened flora or fauna.

The nearby landowner's objection raised a concern that an endangered Jabiru (Black-necked Stork) had been seen at their property, near the unnamed creek. The Department understands that Jabirus are infrequent visitors to the area and are not dependent upon the unnamed creek. The Department considers that changes to water flow and quality in the unnamed creek would be negligible, and therefore, any impacts to Jabirus would also be negligible.

Centennial has committed to monitor water quality and aquatic ecology in Morans Creek upstream and downstream of the confluence with the unnamed creek, to assess any downstream impacts from discharges. Any discharges, inspections, monitoring and potential remedial actions would need to be incorporated into the mine's Water Management Plan, which Centennial has committed to revising.

To minimise the discharge of water, the Department has recommended a condition that Centennial apply reasonable measures to reuse water held in the sediment dam (such as irrigation and/or evaporation) prior to

discharge. This would be undertaken as part of Centennial's review of its Water Management Plan, which it committed to in its Statement of Commitments.

Overall, the Department expects that any water quality and biodiversity impacts to be negligible, and that conditions of consent and monitoring requirements would ensure that any potentially adverse impacts would be avoided, minimised or appropriately mitigated.

5.2.2 Water Flow Impacts

The SEE estimates that total discharge volumes are likely to be approximately 21 ML/year over the two years of the proposal, with a potential range between 12 ML/year (10th percentile) and 32 ML/year (90th percentile). Controlled discharges would occur on a predicted 22 days per year, with a maximum flow rate of 1.7 ML/day modelled to occur less than 5 days per year. On this basis of controlled releases, emergency discharges are only predicted to occur on average 1 day every 5.5 years, with a maximum flow rate of 5.7 ML/day. Given that temporary discharge arrangements would be in place for little more than two years, there is a low likelihood of such high-flow emergency discharges to occur over the life of the proposed temporary controlled discharges.

LMCC, DoI – Water and OEH all expressed concerns relating to potential erosion and scour impacts downstream of the sediment dam outlet. However, no additional water would flow into the unnamed creek and Morans Creek catchment in comparison to pre-development conditions. Peak flows and velocities of water discharged from the sediment dam would be less than the pre-development 'natural flow' conditions. This is because the sediment dam would act as a retention basin, able to control the flow (and hence velocity) of the discharge. The Department therefore considers that the hydrological impacts of the discharges would be negligible. This is partly dependent on the sediment dam being operated in a way that maximises its freeboard by discharging following any rainfall event (that is, without a 51 mm rainfall threshold, as discussed in **Section 5.2.1**).

Nevertheless, in response to agency concerns, Centennial has committed to undertaking six-monthly visual and photographic inspections of the unnamed creek to assess evidence of scour, with appropriate mitigation measures to be implemented if observed. Sediment from the dam would also be excavated every six to 12 months before being disposed of at the CES. The Department considers these proposed management strategies to be appropriate to mitigate potential scour impacts. Centennial would be required to update the site's Water Management Plan to ensure these potential impacts are managed.

Increased flows and connectivity have the potential to increase the distribution of *Gambusia holbrooki*, an invasive fish species that can impact native aquatic fauna (e.g. fish and tadpoles) through predation or competition for resources. However, this species is already present in Morans Creek and peak flows from discharges would be lower than under pre-development conditions. Therefore, the spread of this pest species of fish would not be enhanced.

Overall, the Department expects that water use, erosion, scour or flooding impacts would be negligible, and that conditions of consent and monitoring requirements would ensure that any potentially adverse impacts would be avoided, minimised or appropriately mitigated.

5.2.3 Duration of Discharges

Centennial has advised in its RTS that the mine's underground water management system is expected to be able to accept dirty surface water, as per its long-term water management strategy, by 9 June 2021. Therefore, temporary water discharge arrangements would be in place for just over two years, which the Department considers acceptable. To simplify reporting and compliance, the Department and the EPA have chosen to extend the timeframe for allowing controlled discharges, as a condition of consent, until 30 June 2021 (to align with the end of the reporting year).

5.2.4 Potential Alternatives

The EPA and the opposing community submission proposed an alternative to discharges from the dam that involved the transport of sediment dam waters in trucks (in the EPA's case, only if long-term water management strategies were not in place by 30 June 2021). Centennial did not support this alternative because of the *"impacts of truck movements on the surrounding local road network."*

The Department has undertaken its own high-level review of this alternative option. Dewatering a 1.7 ML dam, using water tankers (assumed to be sized at 20,000 L), would require 85 laden tankers, and 85 unladen tanker trips, totalling 170 truck movements. Based on Centennial's most likely prediction of 21 ML/year needing to be discharged or otherwise removed from the sediment dam, this would result in 2,100 truck movements per annum. The Department considers that these additional truck movements are not a suitable alternative, particularly on a regular basis, as it would create impacts to local traffic as well as noise impacts, air quality impacts and greenhouse gas emissions.

5.3 Traffic

Larger sediment particles would be collected in a gross pollutant trap sump before entering the sediment dam. This material would be transported from the MSSS to the CES, where it would be stockpiled and managed in accordance with the approved coal handling system as part of the Northern Coal Logistics Project. On a weekly basis, a vacuum truck (which is fully sealed) would be used to transport this wet material, via Mandalong Road, to the CES.

In addition, every six to 12 months, fine sediment from the sediment dam would be excavated and allowed to dry on site before being transported to the CES. The dry sediment would be transported in a covered tipper truck. The Department does not expect odour impacts from this excavated material.

Overall, the Department expects that any additional traffic impacts would be negligible, and that existing conditions of consent and monitoring requirements would ensure that any potentially adverse impacts would be avoided, minimised or appropriately mitigated.

5.4 Other Issues

The assessment of other issues is summarised in **Table 2**.

Table 2 | Summary of other issues raised

Issue	Findings	Recommended Condition
Aboriginal Cultural Heritage	- Centennial Coal's Aboriginal Cultural Heritage Management Plan: Northern Region (September 2016) does not currently reflect the approved construction footprint of the MSSS. The plan should be updated to reflect Aboriginal cultural heritage constraints and obligations at the MSSS. - Any scour remediation works downstream of the discharge site could potentially impact Aboriginal grinding groove site RPS TBM28.	- Centennial Coal's Aboriginal Cultural Heritage Management Plan must be reviewed and updated where necessary, as required by an existing condition of consent. - The Department expects that Centennial Coal's Aboriginal Cultural Heritage Management Plan would be updated to ensure that an assessment of potential impacts to the Aboriginal grinding groove site RPS TBM28 would be undertaken prior to any scour remediation works.

Issue	Findings	Recommended Condition
Economic and/or social impacts	Negligible water quality, water flow, biodiversity and traffic impacts over ~2 years are not expected to create any significant social or economic impacts for adjacent landholders, including the neighboring landowner who objected to the proposal.	No changes to existing conditions of consent required.



6. Evaluation

The Department has carefully assessed the potential environmental, social and economic impacts of the proposed modification in accordance with the requirements of the EP&A Act, and in consultation with LMCC and relevant Government agencies, including EPA, OEH, and DoI-Water.

The proposed water discharges from the sediment dam would be temporary (until 30 June 2021 at the latest). Appropriate limits would be set on the concentration of the most likely potential pollutants, being oil & grease and sediment. The ephemeral nature of the receiving creeks and the limited releases indicate that any related aquatic or biodiversity impacts would likely be minimal. Potential aquatic ecology or water quality impacts would be monitored, with appropriate remedial measures implemented under a revised Water Management Plan for the mine. The potential for scour or erosion impacts is expected to be minimal, but would be monitored.

The traffic impact of the proposed sediment transfer to the CES would be negligible, and any road condition impacts would be monitored and mitigated under existing conditions of consent.

The modification application presents an appropriate means for Centennial to temporarily manage excess water captured at the MSSS while more permanent water management infrastructure is being constructed and to minimise potential uncontrolled discharges to the environment. Any environmental impacts are expected to be negligible.

Consequently, the Department considers that the proposed modification is in the public interest and should be approved, subject to the recommended conditions set out in the Notice of Modification (see **Appendix E**) and Consolidated Consent (see **Appendix D**).



7. Recommendation

It is recommended that the Executive Director – Resource Assessments and Compliance, as delegate of the Minister for Planning and Public Spaces:

- **considers** the findings and recommendations of this report;
- **determines** that the application SSD 5144 MOD 6 falls within the scope of section 4.55(1A) of the EP&A Act;
- **accepts and adopts** all of the findings and recommendations in this report as the reasons for making the decision to grant consent to the application;
- **modify** the consent SSD 5144; and
- **signs** the attached approval of the modification (**Appendix E**).

Recommended by:

Andrew Rode

Senior Environmental Assessment Officer
Resource Assessments

12 April 2019

Recommended by:

Howard Reed

Director
Resource Assessments

12.4.19



8. Determination

The recommendation is: Adopted / Not adopted by:

15.4.19

Ben Harrison

Acting Executive Director
Resource Assessments and Compliance
as delegate of the Minister for Planning and Public Spaces



9. Appendices

Appendix A – Statement of Environmental Effects

See the Department's website at:

<https://www.planningportal.nsw.gov.au/major-projects/project/11401>

Appendix B – Agency Advice and Public Submissions

See the Department's website at:

<https://www.planningportal.nsw.gov.au/major-projects/project/11401>

Appendix C – Response to Submissions Report

See the Department's website at:

<https://www.planningportal.nsw.gov.au/major-projects/project/11401>

Appendix D – Consolidated Consent

See the Department's website at:

<https://www.planningportal.nsw.gov.au/major-projects/project/11401>

Appendix E – Notice of Modification

See the Department's website at:

<https://www.planningportal.nsw.gov.au/major-projects/project/11401>