

# Response to Submissions Report

Ash Recycling Facilities, Eraring Power Station

19-Nov-2021

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Ash Recycling Facilities, Eraring Power Station

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## Executive Summary

### Introduction

Origin Energy Eraring Pty Ltd (Origin) owns and operates the Eraring Power Station (EPS) and associated Eraring Ash Dam (ERAD) on Rocky Point Road within the Lake Macquarie local government area (LGA). The combustion of coal during electricity generation at the EPS produces a mixture of fly ash and bottom ash. Ash generated at the EPS is either deposited onsite in the ERAD located to the north-east of the EPS or recycled offsite (e.g. as a construction material resource).

Ash recycling on the EPS site is currently achieved through various activities approved under Project Approval 07\_0084 (Boral's bottom ash reclamation activities and Origin's unclassified fly ash storage facility which is hereafter referred to as EPS CCP Plant) and two separate local development consents for recycling activities carried out by Daracon and Flyash Australia. During the 2019-20 reporting period approximately 560,000 tonnes, or approximately 39% of ash produced at EPS, was recycled.

Condition 4A.1 of Project Approval 07\_0084, as modified on 23 December 2019 for expansion of the ERAD, established a mandatory goal of 80% reuse or recycling of ash from the EPS. Origin currently monitors progress towards achieving the 80% reuse or recycling goal by 31 December 2021 via its Long-Term Ash Management Strategy.

Origin proposes to increase current ash recycling rates above existing levels and towards the 80% reuse or recycling goal set out by Condition 4A.1 of Project Approval 07\_0084. The proposed modification would involve changes to the ash recycling activities currently carried out under Project Approval 07\_0084, plus changes to and integration of the Daracon activities into Project Approval 07\_0084.

The existing ash recycling facility operated by Daracon on the EPS site was approved by Lake Macquarie City Council (LMCC) (Development Consent DA/1937/2014/D). The proposed modification includes the integration of the existing Daracon facility into Origin's broader EPS Project Approval 07\_0084 and an increase to the approved throughput of the Daracon operation in addition to other physical modifications to this facility. Following approval of the proposed modification, Development Consent DA/1937/2014/D would be surrendered.

### Environmental Assessment and Exhibition

Origin is seeking to modify Project Approval 07\_0084 under section 4.55(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) as the proposed modification is substantially the same development as that authorised by Project Approval 07\_0084.

In accordance with the requirements of the EP&A Act, a Modification Report (AECOM, 2021) was prepared to describe the proposed modification, the statutory context and consultation undertaken and to assess the potential environmental impacts associated with the proposed modification.

The Modification Report was submitted to Department of Planning, Industry and Environment (DPIE) and placed on public exhibition from 28 September 2021 until 11 October 2021. The Modification Report was available for public viewing on the DPIE website ([www.planningportal.nsw.gov.au/majorprojects/projects/on-exhibition](http://www.planningportal.nsw.gov.au/majorprojects/projects/on-exhibition)).

### Potential Change to the Proposed Modification

As described in the Modification Report, the proposed modification included up to four additional 600t ash storage silos at modification area 2, to be operated and maintained by a third party up to approximately 150,000 tonnes per annum (tpa). Following the public exhibition of the proposed modification, the configuration of these silos may be amended to an alternate layout for modification area 2, for two 1000t silos.

The alternate configuration is not expected to significantly impact the scale of the operation or infrastructure at the site. The proposed throughput would not change and is still proposed to be up to approximately 150,000 tpa. The indicative dimensions of the 1000t silos would be approximately 25.5m

height and 10.9m diameter. These dimensions are relatively comparable to the indicative dimensions provided in the Modification Report (for silos from a similar reference site) of approximately 24.8m height and 6.5m diameter.

The key material difference would be the visual appearance of the two 1000t silos compared to the originally proposed four 600t silos. The height of the silos would be the key feature that would impact visual amenity. The Modification Report assessed new infrastructure to a maximum height of 25m. The relatively minor change in height (0.5m) is not expected to significantly change the assessed visual impact. As such, the amended silo configuration would result in a negligible change in assessed environmental impact.

## Response to Submissions Report

This Response to Submissions (RTS) report provides Origin's response to submissions received on the Modification Report during the public exhibition period. Origin has reviewed all the submissions received and has prepared responses to the items raised.

## Issues Raised in Submissions

There were 48 separate submissions received, including six from government agencies, three from special interest groups and 39 from individual community members (there were four duplicate submissions not counted in this total). A submissions register is provided at **Appendix A** and includes a list of all submissions received along with a reference to the section of the RTS report where each issue raised is addressed.

The key issues raised in the community and stakeholder submissions included:

- Traffic impacts;
- Air quality impacts as a result of increased traffic;
- Water quality impacts including pollution to Lake Macquarie;
- Noise impacts as a result of increased traffic;
- Ash recycling activities and other potential recycling opportunities;
- Effectiveness of consultation and public exhibition of the Modification Report; and
- Continued storage of ash within the ERAD.

A response to the issues raised in community submissions is provided within **Section 5.0** of this RTS report and a response to issues raised in government agency submissions is provided in **Section 6.0**. Additional information has been provided with regard to traffic and the safety of the intersection of Wilton Road and Wangi Road (**Section 6.2** and **Appendix B**).

## Revised Environmental Management Measures

The management measures provided in the Modification Report were reviewed in response to issues raised in the submissions. A final summary of the management measures that would be implemented for the Project is provided in **Section 7.0** of this RTS report.

## Conclusion

All submissions received during public exhibition of the Modification Report have been reviewed and responses provided within this RTS report. Where relevant, additional information has been provided and management measures have been revised.

Potential environmental impacts associated with the proposed modification have been assessed. With the implementation of the proposed environmental management measures, it is unlikely that significant adverse impacts would occur as a result of the proposed modification. It is therefore considered appropriate and in the public interest to approve the proposed modification.

## 1.0 Introduction

### 1.1 Background

Origin Energy Eraring Pty Ltd (Origin) owns and operates the Eraring Power Station (EPS) and associated Eraring Ash Dam (ERAD) on Rocky Point Road within the Lake Macquarie local government area (LGA). The combustion of coal during electricity generation at the EPS produces a mixture of fly ash and bottom ash. Ash generated at the EPS is either deposited onsite in the ERAD located to the north-east of the EPS or recycled offsite (e.g. as a construction material resource).

Ash recycling on the EPS site is currently achieved through various activities approved under Project Approval 07\_0084 (Boral's bottom ash reclamation activities and Origin's unclassified fly ash storage facility which is hereafter referred to as EPS CCP Plant) and two separate local development consents for recycling activities carried out by Daracon and Flyash Australia. During the 2020-21 reporting period approximately 485,000 tonnes, or approximately 36% of ash produced at EPS, was recycled. In Q1 2021-22 the ash recycling rate increased substantially to 77% as a result of the commencement of a mine rehabilitation project that is using ash from the ERAD.

Condition 4A.1 of Project Approval 07\_0084, as modified on 23 December 2019 for expansion of the ERAD, established a mandatory goal of 80% reuse or recycling of ash from the EPS. Origin currently monitors progress towards achieving the 80% reuse or recycling goal by 31 December 2021 via its Long-Term Ash Management Strategy.

Origin proposes to increase current ash recycling rates above pre-existing levels and towards the 80% reuse or recycling goal set out by Condition 4A.1 of Project Approval 07\_0084. The proposed modification would involve changes to the ash recycling activities currently carried out under Project Approval 07\_0084, plus changes to and integration of the Daracon activities into Project Approval 07\_0084.

The existing ash recycling facility operated by Daracon on the EPS site was approved by Lake Macquarie City Council (LMCC) (Development Consent DA/1937/2014/D). The proposed modification includes the integration of the existing Daracon facility into Origin's broader EPS Project Approval 07\_0084 and an increase to the approved throughput of the Daracon operation in addition to other physical modifications to this facility. Following approval of the proposed modification, Development Consent DA/1937/2014/D would be surrendered.

### 1.2 The Project

The proposed modification as described in the Modification Report includes the following key elements (refer to **Figure 1**, **Figure 2** and **Figure 3**):

- integration of works currently authorised under local development consent DA/1937/2014/D (the existing Daracon operations) into Origin's Project Approval 07\_0084, and upgrades to those works to increase throughput capacity to 300,000 tonnes per annum (tpa), including construction of three additional 450t ash storage silos (modification area 1);
- modifications to existing ash recycling infrastructure currently authorised under Project Approval 07\_0084 including construction of up to four additional 600t ash storage silos to provide additional ash storage capacity and enable export of up to 150,000 tpa of stored ash product (modification area 2);
- other supporting infrastructure including:
  - an internal road and weighbridge for delivery trucks at modification area 1 and 2;
  - crib room and amenities building within modification area 2;
  - water tanks within modification area 2; and
  - an option for a pneumatic fly ash pipeline (approximately 480m length) between the main power station and modification area 2.



The key environmental issue related to the proposed modification is potential traffic and transport impacts. The Modification Report included a traffic impact assessment to assess the potential impact associated with an increase in truck movements accessing and egressing the EPS site (an additional estimated maximum 233 daily truck movements compared to an estimated maximum 188 existing daily truck movements).

Heavy vehicle access routes from the north and south of the EPS site would be utilised for the proposed modification (shown on **Figure 4** to **Figure 6**). The traffic impact assessment concluded that the forecast impact on the surrounding road network based on a worst-case assessment would be insignificant, and network performance would continue to operate under good conditions.

### 1.3 Assessment, Approval Process and Exhibition

Origin is seeking to modify Project Approval 07\_0084 under section 4.55(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) as the proposed modification is substantially the same development as that authorised by Project Approval 07\_0084.

In accordance with the requirements of the EP&A Act, a Modification Report (AECOM, 2021) was prepared to describe the proposed modification, the statutory context and consultation undertaken and to assess the potential environmental impacts associated with the proposed modification.

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### 1.4 Purpose of this Report

The public exhibition of the Modification Report provided a formal opportunity for the community, stakeholders and agencies to share their opinions and provide input into the assessment by making written submissions on the proposed modification.

This Response to Submissions (RTS) report highlights the value of this public involvement and provides responses to the submissions received during the public exhibition of the Modification Report. The RTS report has been prepared in accordance with DPIE's *State significant development guidelines – preparing a submissions report* (SSD Guideline).

The purpose of this RTS report is to:

- Detail and provide responses to issues raised in the submissions received during the Modification Report exhibition period;
- Note any changes to the Project or additional management measures that have been recommended as a result of those submissions; and
- Enable the Minister for Planning or her / his delegate to determine the application.



**Figure 1 Site overview**





**Figure 2 Overview of the Proposed Modification Area 2**





**Figure 3 Overview of the Proposed Modification Area 2**



**Figure 4 Heavy vehicle access route from the north (post bridge construction)**



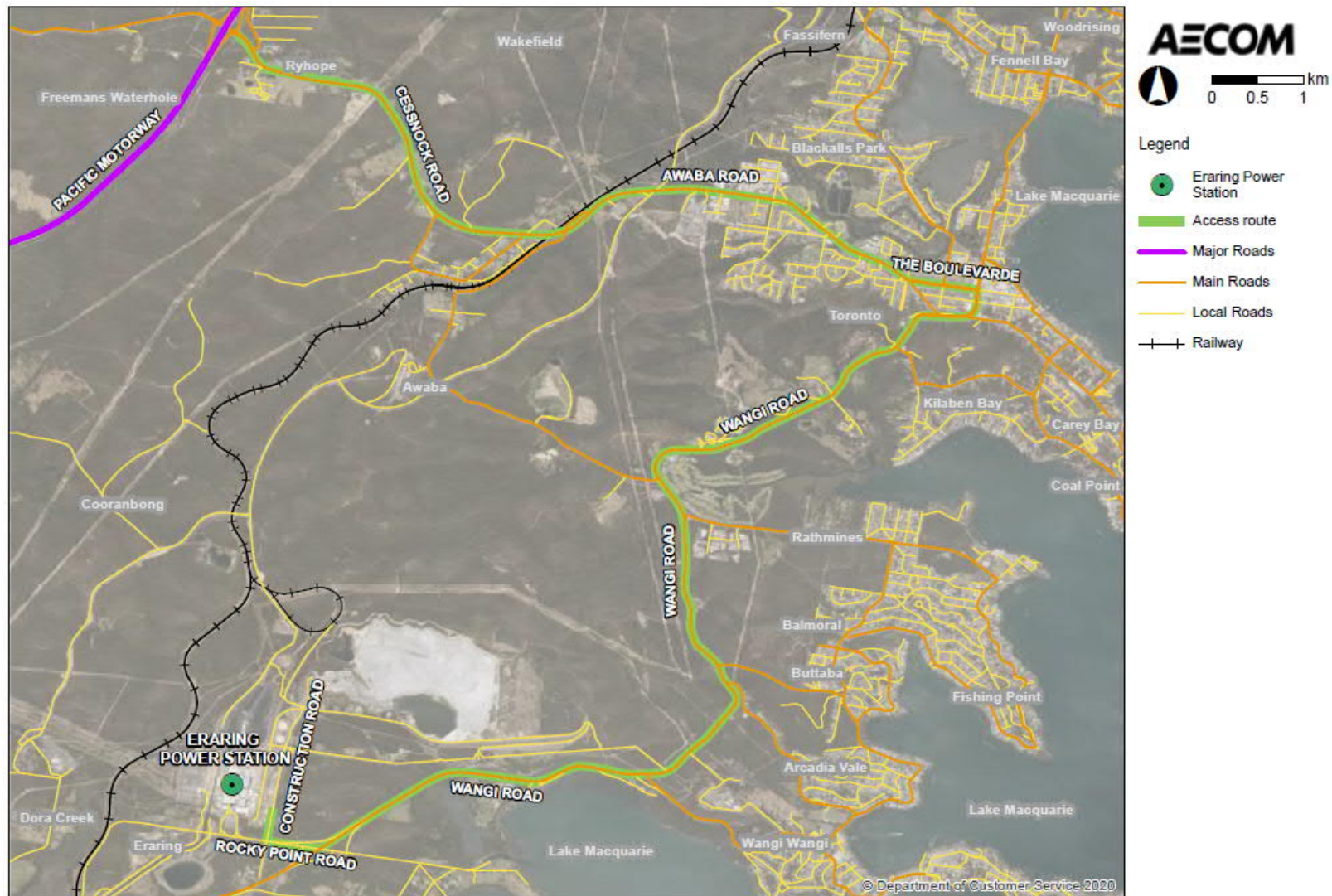


Figure 5 Alternative heavy vehicle access route from the north (pre bridge construction)

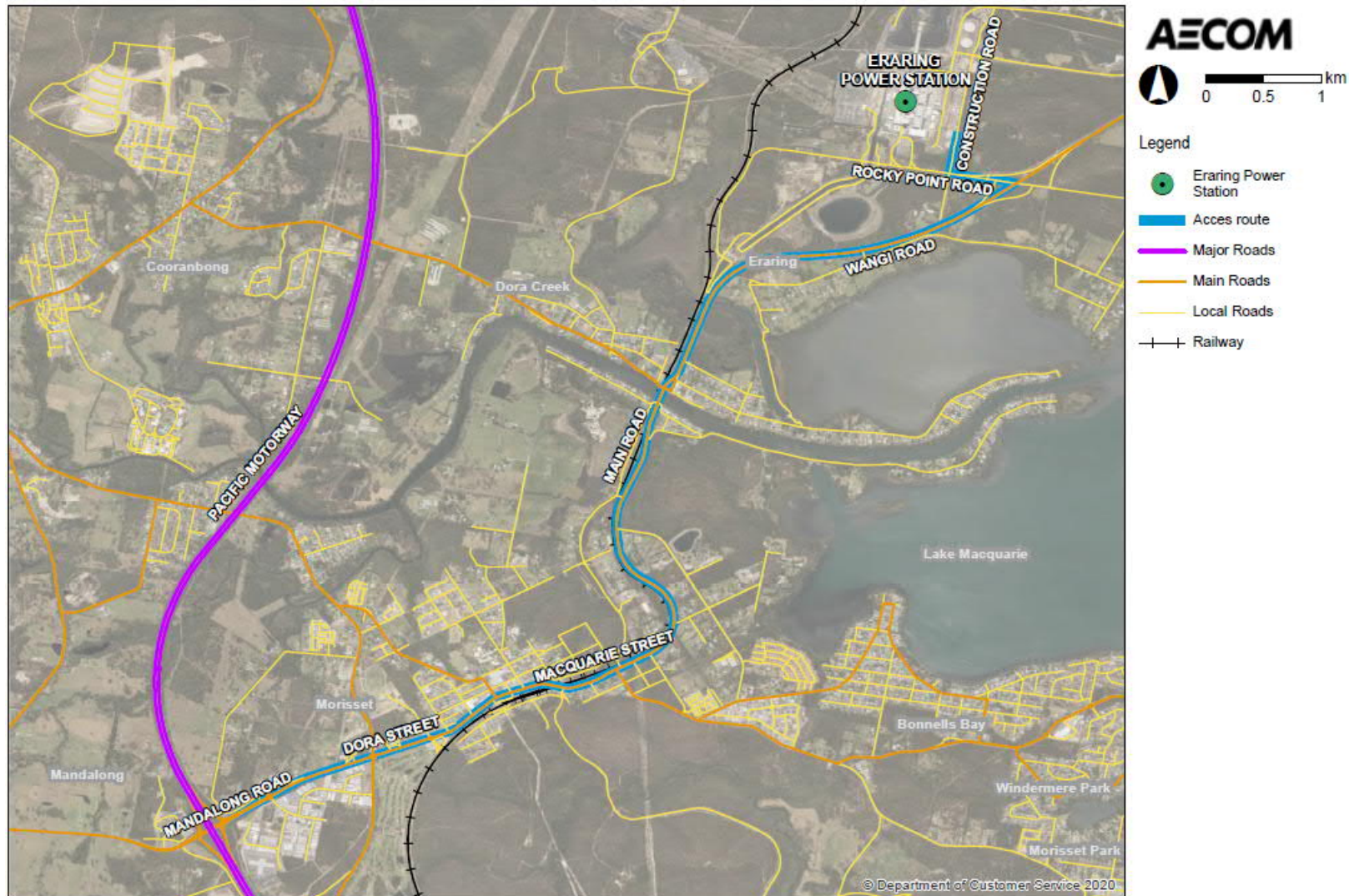


Figure 6 Heavy vehicle access route from the south



## 2.0 Changes to Proposed Modification

### 2.1 Alternate Configuration of Silos at Modification Area 2

As described in the Modification Report, the proposed modification included up to four additional 600t ash storage silos at modification area 2 (as shown on **Figure 3**) to be operated and maintained by a third party up to approximately 150,000 tpa.

The configuration of these silos may be amended with an alternative potential layout option for modification area 2, to include two 1000t silos. The proposed site layout and design drawings for the alternative silo configuration are shown in **Figure 7** to **Figure 9**.

The alternative configuration is not expected to significantly impact the scale of the operation or infrastructure at the site. The proposed throughput would not change and is still proposed to be up to approximately 150,000 tpa. The indicative dimensions of the 1000t silos (shown in **Figure 8**) would be approximately 25.5m height and approximately 10.9m diameter. These dimensions are relatively comparable to the indicative dimensions provided in Figure 10 of the Modification Report (for silos from a similar reference site) of approximately 24.8m height and approximately 6.5m diameter.

A summary of anticipated change to assessed environmental impact is provided in **Table 1**. The key material difference would be the on-site visual appearance of the two 1000t silos compared to the originally proposed four 600t silos. The height of the silos would be the key feature that would impact visual amenity. The Modification Report assessed new infrastructure to a maximum height of 25m. The relatively minor change in height (0.5m) is not expected to change the assessed visual impact, noting that this area of the site is not visible from off-site and any of the proposed silo options would not be visible either. As such, the alternative silo configuration option would result in a negligible change in assessed environmental impact.

**Table 1 Revised configuration and change in assessed environmental impact**

Element	Proposed Modification	Alternative Configuration
Silo configuration	4 x 600t silos	2 x 1000t silos
Silo dimensions (indicative)	24.8m height 6.5m diameter	25.5m height 10.9m width
Estimated throughput	150,000 tpa	No change
Visual Amenity	<p>Section 7.7 of the Modification Report included an assessment of the visual impact of the additional four silos at modification area 2. The assessment considered the installation of new infrastructure to a maximum height of 25m.</p> <p>It was noted that new infrastructure at modification area 2 would result in a more noticeable change, as the area currently consists of a carpark. However other structures in the immediate vicinity include buildings to the south, two large water reservoirs to the north and the main power station to the east. Existing structures associated with the main power station are of similar or greater heights, including the EPS CCP plant at approximately 27m, the main generating units at</p>	<p>The alternative silo configuration would include two silos with a similar height to the four silos originally proposed, but with wider diameters. The height of the silos would be the key feature that would impact visual amenity and given the terrain of the area and dense vegetation surrounding the power station none of the possible silo configurations would be visible from off-site vantage points.</p> <p>The alternative configuration includes silo dimensions with a maximum height of 25.5m. This would be 0.5m higher than that assessed in the Modification Report. Given the industrial context of the EPS site and the much greater heights of surrounding infrastructure, the increase of 0.5m</p>



Element	Proposed Modification	Alternative Configuration
	<p>approximately 35m and the two stacks at approximately 200m.</p> <p>Construction Road, which is adjacent to modification area 2, is a private EPS road and does not carry significant traffic volumes. Visual access to modification area 2 would be limited to contractors and EPS staff accessing the site.</p> <p>Given the industrial setting of the surrounding area and limited views into the site, the assessment concluded that visual amenity impacts would be negligible.</p>	<p>is not expected to result in a significant change to the assessed visual impact.</p> <p>Visual amenity impacts associated with the alternative silo configuration are expected to be negligible.</p>

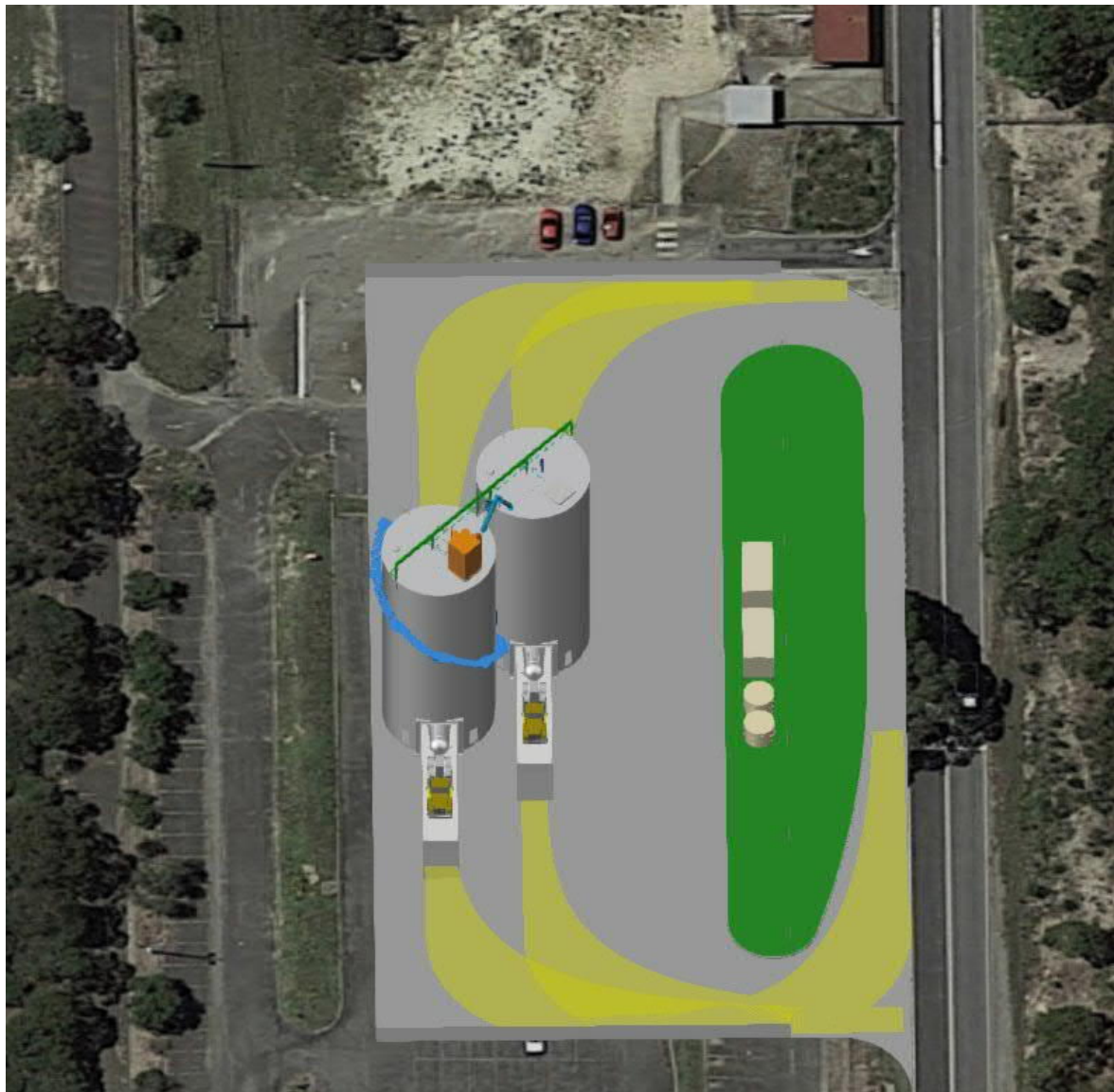
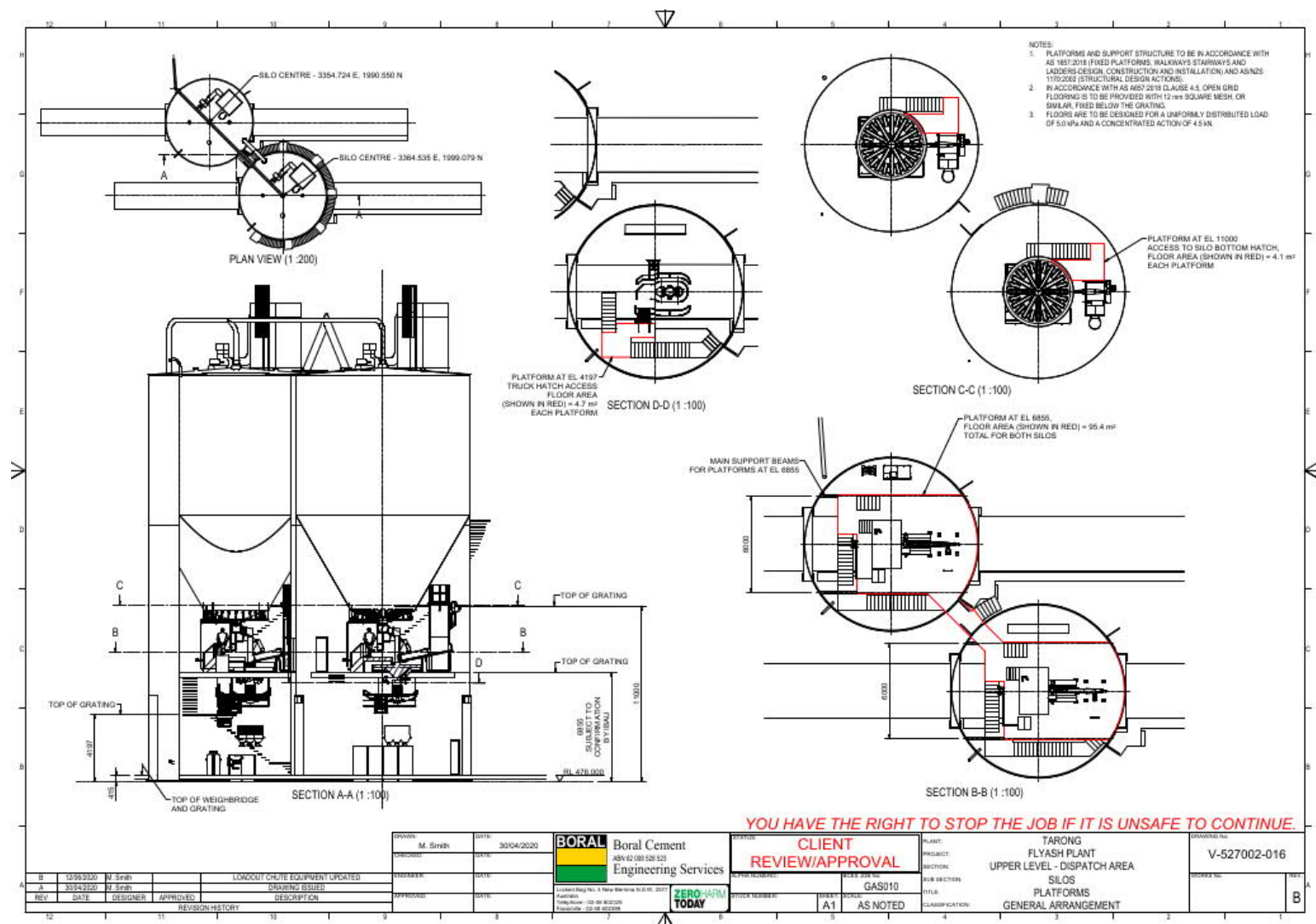


Figure 7 Proposed site layout for modification area 2

**Figure 8** Modification area 2 – indicative dimensions for 1000t ash storage silos



**Figure 9 Modification area 2 –general arrangement for additional two 1000t ash storage silos**

## 3.0 Actions Taken Following Public Exhibition

### 3.1 Engagement Activities

Following the public exhibition of the Modification Report, Origin has undertaken additional consultation with DPIE in the form of phone calls and email correspondence to discuss the potential changes to the proposed modification (as detailed in **Section 2.0** of this RTS report) and to clarify certain details related to the proposed modification and the submissions received. Clarifications relating to the pneumatic pipeline are discussed further in **Section 6.7**.

### 3.2 Safety Assessment of Wilton Road / Wangi Road Intersection

Transport for New South Wales (TfNSW) requested in its submission (refer to **Section 6.2**) that a safety assessment be carried out concerning the heavy vehicle movements turning right from Wilton Road onto Wangi Road. A safety assessment was undertaken for the intersection at Wilton Road / Wangi Road and is discussed further in **Section 6.2**.

## 4.0 Analysis of Submissions Received

### 4.1 Overview

During the exhibition period of the Modification Report, submissions were invited from the community and other stakeholders. DPIE also directly contacted a number of government agencies seeking input on the proposed modification. The receipt of submissions and agency advice was coordinated and managed by DPIE, with all submissions published on the Major Projects website.

A register of the submissions received by DPIE is provided in **Appendix A**. A breakdown of the submissions is provided in **Table 2**. Each submission has been individually examined with issues collated and categorised.

**Table 2 Summary of submissions received**

Submission group type	Number of separate submitters
State government agencies	5 (5 agency advice)
Local Councils	1 (1 comment)
Interest groups / organisations	3 (1 comment, 2 objections)
Individual public / community members	39* (2 comments, 37 objections)
<b>Total</b>	<b>48</b>

\* Multiple submissions from the same person have been counted as one submission, as per DPIE's SSD Guideline. There were 43 public submissions received, with four duplicate submissions not counted in the total of individual submitters.

### 4.2 Analysis

#### 4.2.1 Community Submissions

A total of 43 community submissions were received from 39 separate submitters. Three people submitted two identical submissions, while a fourth person submitted a second submission that was blank. These four duplicate submissions have not been included in the total count of separate submissions, in accordance with DPIE's SSD Guideline.

Of the 39 separate submitters, 28 people submitted a form letter with identical wording. Two submissions were registered as a comment and 37 submissions were registered as an objection.

A breakdown of community submissions by location (local, regional or broader community) is provided in **Table 3**.

**Table 3 Location of Submissions Received**

Area	Suburbs	No. of submissions
Local (<5km from EPS site)	Bonnells Bay, Dora Creek, Wangi Wangi	11
Regional (5-100km from EPS site)	Annandale, Blackalls Park, Bondi Beach, Booragul, Carey Bay, Cessnock, Charlestown, Fennell Bay, Lake Macquarie*, Mandalong, Morisset Park, Rathmines, Toronto	28
Broader community (>100km from EPS site)	Willoughby East	1

\* Four submissions listed a non-specific location of Lake Macquarie



#### 4.2.2 Special Interest Groups

Three submissions were received from special interest groups including:

- GEM Projects (Queensland);
- Australian Labor Party; and
- Coal-ash Community Alliance Inc.

Of the submissions received from special interest groups, one was registered as a comment and two were registered as an objection.

#### 4.2.3 Government Agencies

Six submissions were received from State and Local government agencies including:

- LMCC;
- TfNSW;
- Department of Regional NSW – Mining, Exploration and Geosciences (MEG);
- Biodiversity and Conservation Division (BCD);
- Subsidence Advisory NSW; and
- NSW Environment Protection Authority (EPA).

All six government agency submissions were registered as a comment or agency advice. No objections were received from any of the government agencies.

### 4.3 Categorisation of Issues Raised in Submissions

The analysis of public submissions involved identifying the issues raised and coding the issues into key issue categories and sub-categories. Key issues raised in the submissions are shown in **Table 4**.

**Table 4 Issue categorisation**

Issue category	Issues raised
<b>Environmental and social impacts</b>	
Traffic	<ul style="list-style-type: none"> <li>• Increased traffic volumes causing congestion along local roads</li> <li>• Safety issues associated with the proposed route and haulage of ash</li> <li>• Alternative road transport routes - objections were raised to the use of the southern route (Wangi Road and other roads through Dora Creek and Morisset), with potential alternative routes to the M1 Pacific Motorway being identified via roads to the north of EPS. Alternatives included in the submissions were the Newstan-Eraring Private Coal Road onto Wilton Road, Cessnock Road and the M1; or extending the Newstan-Eraring Private Coal Road all the way to Cessnock Road or the M1</li> <li>• Potential to use rail transport instead of road haulage</li> </ul>
Air Quality	<ul style="list-style-type: none"> <li>• Additional dust and emissions from trucks transporting ash</li> <li>• Health impacts associated with increase vehicle emissions</li> </ul>
Water quality	<ul style="list-style-type: none"> <li>• Pollution of Lake Macquarie from the road transport of ash and more specifically from the storage of ash within the ERAD</li> </ul>
Noise	<ul style="list-style-type: none"> <li>• Noise associated with increased traffic along the haulage route</li> </ul>
<b>Proposed modification - activities</b>	
Ash recycling activities	<ul style="list-style-type: none"> <li>• General support for ash recycling</li> <li>• Other fly ash uses available e.g. lightweight aggregate manufacturing or remediation of coal mines</li> <li>• Queries over the validity of ash recycling options</li> </ul>

Issue category	Issues raised
	<ul style="list-style-type: none"><li>• Recycling industries should be established on the site to reduce truck movements</li><li>• Only concrete grade fly ash volumes would be increased</li><li>• The proposed modification would not allow Origin to achieve the 80% reuse target</li></ul>
Procedural matters	
Consultation	<ul style="list-style-type: none"><li>• Effectiveness of community and stakeholder consultation</li><li>• Length of exhibition period</li></ul>
Broader issues beyond the scope of the project	
Continued storage of ash within the ERAD	<ul style="list-style-type: none"><li>• Storage of ash within the ERAD should cease</li><li>• Ash should be removed from the ERAD for recycling</li><li>• General objection to coal mining and coal-fired power stations</li></ul>

## 5.0 Response to Community and Special Interest Group Submissions

This section provides a response to the issues raised within community and special interest group submissions (as categorised in **Section 4.3**). The submissions register at **Appendix A** provides a list of all submissions received along with a reference to the section of the RTS report where each issue raised is addressed.

### 5.1 Traffic

#### 5.1.1 Issue Description

Traffic related issues raised in the community submissions included the following:

- Increased traffic volumes causing congestion along local roads;
- Safety issues associated with the proposed route and haulage of ash;
- Objections to the use of the southern route – that is, Wangi Road and other roads through Dora Creek and Morisset;
- Potential for alternative routes to the M1 via roads to the north of EPS - such as the Newstan-Eraring Private Coal Road onto Wilton Road, Cessnock Road and the M1; or extending the Newstan-Eraring Private Coal Road all the way to Cessnock Road or the M1; and
- Potential to use rail transport instead of road haulage.

#### 5.1.2 Response

The Modification Report included an assessment of potential impacts of additional traffic generated by the proposed modification on the local road network (Section 7.1 of the Modification Report).

The forecast peak hour traffic movements include an additional seven trucks accessing and egressing the EPS site from the north during the peak hour and an additional seven trucks accessing and egressing the EPS site from the south during the peak hour. This is the equivalent of approximately one truck every nine minutes. Modelling indicated that with the additional traffic generated by the proposed modification, network performance would continue to operate at an acceptable Level of Service (LoS), signifying that network operations would perform with minimal delay. Furthermore, Dora Street to the east of the M1 Pacific Motorway is a TfNSW approved B-Double truck route. Trucks would generally be expected to use these approved routes for access.

The traffic impact assessment concluded that the forecast impact on the surrounding road network based on a worst-case assessment would be insignificant, and network performance would continue to operate with an acceptable LoS.

A number of submissions referred to the *Myuna Coal Mine (Mod 2) -Road Transport* modification application submitted by Centennial Coal, which proposed the transport up to one million tpa of coal from Myuna Colliery to Cooranbong Entry Site. The proposed transport route would include Wangi Road, Wilton Road and private haul roads. The Modification Report considered the cumulative impact of this additional traffic as well as the proposed modification (Section 7.1.4 'Cumulative Impact') and concluded that cumulative impact would be minimal. Nonetheless, Centennial Coal has subsequently withdrawn its modification application.

Some submissions raised safety concerns related to the proposed haulage routes, including the bridge on Wilton Road and intersections along Wangi Road being dangerous as a result of high-speed zones, low visibility, and merging lanes. The proposed haulage routes are approved heavy vehicle routes suitable for use by B-double trucks. The Modification Report noted that bridge replacement works on Wilton Road were planned by LMCC and an alternative northern route to be used prior to and during bridge construction works was included in the assessment. A safety assessment was undertaken for the intersection of Wilton Road and Wangi Road and concluded that additional trucks turning right out of Wilton Road would not create any specific road safety concerns (further discussed in **Section 6.2**).



Origin has investigated alternative options for transporting ash material via the Newstan-Eraring Private Coal Road to the north of EPS. A potential option has been identified via Awaba Road (rather than Wilton Road, then Cessnock Road), which would require an intersection upgrade to facilitate access from the Newstan-Eraring Private Coal Road onto Awaba Road. This alternative route remains an option for the future dependent on further investigations.

The potential to extend the Newstan-Eraring Private Coal Road all the way to the M1 would require extensive vegetation clearing, property acquisitions and involve constructability constraints such as crossings of the railway line, waterways and easements. This option is not a preferable option compared to a future possible use of the haul road with connection to Awaba Road.

Origin has investigated the potential for rail transport of ash using the existing Eraring rail infrastructure that is currently used for coal delivery. This option would be dependent on the development of ash markets able to receive high volumes of ash at locations accessible by rail and the development of affordable technology to load, unload and transport ash by rail. Considering the current market, the distribution of high-volume end user locations would make transport by rail impractical. However, this remains an option for the future should suitable ash markets be identified.

## 5.2 Air Quality

### 5.2.1 Issue Description

Air quality related issues raised in the community submissions included the following:

- Additional dust and emissions from trucks transporting ash; and
- Health impacts associated with increase vehicle emissions.

### 5.2.2 Response

Section 7.5.2 of the Modification Report discussed potential impacts to air quality as a result of the proposed modification. It was concluded that indirect air quality impacts from vehicle exhaust emissions associated with the additional truck movements would be minor.

The proposed modification would operate as an enclosed system and the lower sections of the silos would be enclosed to prevent potential dispersal of material during loading. As such, there would be no direct emissions to air during the loading of vehicles. Fly ash would be transported in sealed vehicles and the potential for dispersal of ash material from trucks transporting ash would be low.

Origin undertakes ambient air quality monitoring for various parameters at various locations. Continuous monitoring is undertaken for sulfur dioxide, nitrogen oxides and deposited dust as well as various meteorological parameters. Continuous monitoring is performed at Dora Creek and Marks Point, with depositional dust monitored at four locations in the vicinity around the power station. The data are regularly reviewed and the results of the air quality monitoring are reported to the EPA as part of the Annual Return submitted in accordance with the conditions of Origin's Environment Protection Licence (EPL 1429). A further response to air quality issues is provided in **Section 6.1**.

Management measures that would be implemented to minimise potential air quality impacts were provided in the Modification Report. All vehicle loads would be covered when travelling off site and emission controls used on vehicles would comply with the standards listed in Schedule 4 of the *Protection of the Environment Operations (Clean Air) Regulation 2010*. These management measures would adequately address the potential for air quality impacts associated with the additional traffic movements.

## 5.3 Water Quality

### 5.3.1 Issue Description

Water quality related issues raised in the community submissions included the following:

- Pollution of Lake Macquarie from the road transport of ash and particularly from the storage of ash within the ERAD.

### 5.3.2 Response

Concerns relating to pollution of Lake Macquarie were primarily related to the potential for ash to seep from the ERAD resulting in groundwater contamination and pollution of receiving waters. These issues are beyond the scope of the proposed modification (refer to **Section 5.7**), which does not propose to increase the volume of ash being stored within the ERAD. Rather, the proposed modification aims to increase the recycling of ash, which would divert more ash away from the ERAD.

The potential for fly ash to be deposited on the ground and entering surface water runoff was assessed as being low (Section 7.6.2 of the Modification Report). During the truck loading process, the lower sections of the silos would be enclosed to prevent potential dispersal of material. A waste collection drain would be included around the weighbridge to capture accidental spills of fly ash. Wastewater would be directed to into the wastewater management system. Fly ash would be transported in sealed vehicles and the potential for dispersal of ash material from trucks transporting ash would be low. Therefore, the transport of ash is not expected to result in pollution of Lake Macquarie.

## 5.4 Noise

### 5.4.1 Issue Description

Noise related issues raised in the community submissions included the following:

- Noise associated with increased traffic along the haulage route.

### 5.4.2 Response

Potential noise impacts were assessed in Section 7.4 of the Modification Report and included consideration of the road traffic noise impacts associated with increased truck movements.

Assuming a 50% distribution of trucks from the northern and southern routes, the proposed modification would result in an additional seven trucks accessing and egressing the site from each direction during the peak hour. The additional truck movements are not expected to result in significant noise impacts along the haulage route, particularly given the context of existing traffic movements (approximately 7,000 vehicles per day along Wangi Road).

The assessment of potential noise impacts provided within the Modification Report is considered to adequately address this issue.

## 5.5 Ash Recycling Activities

### 5.5.1 Issue Description

Issues raised in the community submissions relating to the proposed modification activities included the following:

- General support for ash recycling;
- Other fly ash uses available e.g. lightweight aggregate manufacturing or remediation of coal mines;
- Queries over the validity of ash recycling options;
- Recycling industries should be established on the site to reduce truck movements;
- Only concrete grade fly ash volumes would be increased; and
- The proposed modification would not allow Origin to achieve the 80% reuse target.

### 5.5.2 Response

A number of submissions indicated general support for the recycling of ash and the employment of locals in new industries to recycle ash. Several submissions referred to the potential for other uses of fly ash available, such as lightweight aggregate manufacturing or remediation of coal mines. One submission queried the validity of fly ash recycling options such as road construction.

Origin has prepared a Long Term Ash Management Strategy (LTAMS) which undergoes regular review and includes a summary of Origin's program for investigation of alternative ash use. These alternative opportunities were summarised in Section 4.4.2 of the Modification Report. Each opportunity is carefully

assessed to ensure it meets the requirements of relevant specifications, guidelines and Australian Standards and that regulatory approvals are obtained.

The option for a lightweight aggregate manufacturing facility at the EPS site is currently being investigated and remains an option for the future.

Origin agrees that mine void remediation using fly ash is an appropriate use of ash when undertaken in accordance with the requirements of the EPA's *Coal Ash Order and Exemption, 2014*. Additionally, Origin holds the *Eraring ash dam coal ash order and exemption, 2020* which allows fly ash from the ERAD to be used for a specific mine site rehabilitation project. Origin has commenced a project involving the use of fly ash from the ERAD in coal mine rehabilitation.

One submission identified an opportunity for fly ash at Eraring to be used as a coal mine backfill grout and suggested a trial program to demonstrate the viability of pumping fly ash from the EPS into the underground coal workings that lie beneath the EPS site.

Origin works constructively with service providers, industry and the EPA to increase ash recycling and welcomes approaches from third parties to discuss ash recycling opportunities.

The potential for additional refining and processing of ash on site to create other marketable products is also being considered. It is noted, however that these ash processing operations would also require additional materials and additives to be transported to the EPS site, and products would still need to be transported to the end users, which are likely to be located off site. These options therefore do not remove the need for truck movements along the haulage routes.

One submission noted that the proposed modification would only increase concrete grade fly ash volumes. Origin agrees that the proposed modification is aimed at recycling more run-of-station fly ash, however as previously noted, Origin is also investigating a number of other ash recycling projects that target different markets, as summarised in the LTAMS.

It was also suggested that while the proposed modification would allow Daracon to increase its fly ash sales, it would do little to allow Origin to meet its EPA targets (it is assumed this refers to the 80% reuse target under Project Approval PA07\_0084). It is noted that Origin recently achieved more than 80% ash recycling during the month of September 2021, with a recycling rate of approximately 96%. This was largely due to the coal mine rehabilitation project currently underway, which is expected to continue for two years. The proposed modification would increase fly ash storage and recycling and would therefore contribute towards meeting the 80% reuse target.

## **5.6 Consultation**

### **5.6.1 Issue Description**

Consultation related issues raised in the community submissions included the following:

- Effectiveness of community and stakeholder consultation; and
- Length of exhibition period of Modification Report.

### **5.6.2 Response**

As described in Section 6.0 of the Modification Report, consultation was undertaken with DPIE and other government agencies during the preparation of the Modification Report to obtain their input on key requirements to be addressed. In addition, a Community Consultative Committee (CCC) has been established to enable Origin to consult with the community and stakeholder representatives about the MOD 1 expansion of the ERAD expansion project as well as other aspects of EPS operations.

Origin presented information to the CCC about the proposed modification during its meeting on 23 July 2020. The CCC were subsequently advised during its meeting on 5 August 2021 that the proposed modification was coming up for exhibition. Origin also followed up with the CCC community members on two further occasions (30 September and 6 October 2021) to advise them that the proposed modification was on public exhibition.

Consultation and public exhibition of the proposed modification has been undertaken in accordance with the *Environmental Planning and Assessment Regulation 2000*. It is DPIE's role to facilitate the exhibition of the Modification Application, which was placed on exhibition from 28 September until

11 October 2021. The Application was advertised in the *Newcastle Herald* at the start of the exhibition period on 28 September 2021. This provided the opportunity for individuals and community groups to make a submission and provide feedback or raise issues relating to the proposed modification.

## **5.7 Continued Storage of Ash within the ERAD**

### **5.7.1 Issue Description**

A number of the community submissions raised some broader issues that are beyond the scope of this proposed modification, including the following:

- Environmental concerns related to storage of ash within the ERAD (e.g. safety and potential contamination of groundwater);
- Storage of ash within the ERAD should cease;
- Ash should be removed from the ERAD for recycling; and
- General objection to coal mining and coal-fired power stations.

### **5.7.2 Response**

These wider issues are beyond the scope of the proposed modification, which does not seek to increase the throughput of coal for power generation, the volume of ash generated at the EPS or the quantity of ash being stored within the ERAD.

Origin's key objective for the proposed modification, which is one of a number of future ash recycling projects under consideration, is to increase run of station fly ash storage at EPS and divert more ash away from the ERAD which has limited remaining storage capacity.

Origin has commenced a large-scale ash recycling project that utilises fly ash from the ERAD for mine site rehabilitation. This project will recycle approximately one million tonnes of fly ash from the ERAD over two years. The mine rehabilitation project is detailed in the LTAMS along with other fly ash recycling projects under consideration.

## 6.0 Response to Government Agency Submissions

### 6.1 Lake Macquarie City Council

#### 6.1.1 Issue Description

LMCC reviewed the Modification Report and supports the proposed modification with respect to visual impact, biodiversity, heritage and noise and vibration. LMCC raised a number of issues to be considered in the RTS including:

- Vehicle routes – LMCC is reviewing proposals to replace the existing timber bridge on Wilton Road and until the bridge is replaced, no heavy vehicles will be permitted to utilise Wilton Road;
- Internal manoeuvring – vehicle paths within the new silo area are not clearly defined as the receiving vehicle is either turned on site or is allowed to exit on another access point where the plant is positioned against Construction Road. Clear detail is required on how internal site manoeuvres would be achieved;
- Haulage levy – a haulage levy should be applied for all additional heavy vehicle movements on local roads, created as part of the proposed modification;
- Air quality
  - include discussion of existing levels of compliance at the Daracon facility with both the *Protection of the Environment Operations Act 1997* (POEO Act) and Daracon's Air Quality Management Plan;
  - include a qualitative assessment to support the statement that the exhaust from the air filtration would be consistent with the *Protection of the Environment Operations (Clean Air) Regulation 2010* (Clean Air Regulation) and would not change the air emissions at EPS;
  - include details to address which existing management plan would be modified to incorporate the management measures for the proposed modification;
  - as the EPS operates under EPL 1429, the Modification Report should be forwarded to the EPA for review and comment; and
- Stormwater – provide further detail on the surface component or drainage of the new silo area. It is assumed this area will be concrete and drained accordingly with emergency procedures (bundling) put in place for spills or equipment failure.

#### 6.1.2 Response

##### **Vehicle Routes**

LMCC's comment on Wilton Road bridge replacement is noted. The planned bridge replacement is discussed in Section 7.1.1 of the Modification Report and accordingly an alternative route via Toronto for trucks heading north from Eraring was assessed.

The haulage route would be detailed in the Construction Environmental Management Plan (CEMP) and would include the requirement that heavy vehicles do not use Wilton Road until after the bridge replacement works have been completed and the heavy vehicle restrictions on the use of the bridge have been removed by LMCC. This has been included in the Updated mitigation measures summarised in **Section 7.0** of this RTS report.

##### **Internal Manoeuvring**

The proposed vehicle paths for the revised configuration of the additional silos at modification area 2 are shown in **Figure 7**. Trucks would enter the site from Construction Road via the existing entrance at the northern end of the site. Once trucks are loaded at the silos, they would exit onto Construction Road via a new access point at the southern end of the site. All traffic movements would follow a one-way counter-clockwise direction, with no trucks being turned on site.

### **Haulage Levy**

Development contributions can be levied under Section 7.11 or Section 7.12 of the EP&A Act or via a Planning Agreement under Section 7.4 of the EP&A Act.

Section 7.12 contributions aim to deliver contributions for local infrastructure via a fixed rate contribution based on development costs. LMCC has in place a *Section 7.12 Citywide Contribution Plan 2019* which applies to non-residential development. However, Section 1.3 of the *Section 7.12 Citywide Contribution Plan 2019* states that the Plan does not apply to non-residential development that in Council's opinion generates a Road Haulage Levy under the applicable Section 7.11 Plan.

Section 7.11 contributions aim to provide contributions towards improvement of amenities or services and may require a project-specific approach. The relevant LMCC Section 7.11 development contribution plan for the proposed modification would be the *Development Contributions Plan: Morisset Contributions Catchment: 2012 – Feb 2021 Report*. However, it is noted that this plan does not specify the requirement for road haulage contributions, unlike other LMCC development contributions plans for other catchments. The plan includes a general provision for contributions towards maintenance of local roads based on a peak vehicle trip which does not necessarily reflect the actual impact/cost related to the additional traffic on local roads generated by the proposed modification.

The third option would be a Planning Agreement made between Origin and LMCC to dedicate land, make monetary contributions or provide other material public benefit, to be used for a public purpose. A public purpose would include the provision of transport or other infrastructure relating to the development or the funding of recurrent expenditure relating to the provision of transport infrastructure.

Origin would liaise with LMCC and DPIE to determine an agreed strategy for the provision of a suitable development contribution.

### **Air Quality**

The existing Daracon facility complies with the POEO Act in that it operates under Origin's EPL 1429 as *general electricity works*. EPL 1429 requires Origin to comply with the general obligations of licensees as set out in the POEO Act and the Regulations made under the Act, including the Clean Air Regulation. Non-compliances with the conditions of EPL 1429 as reported to the EPA via Origin's Annual Returns over the past ten years were reviewed. No non compliances were attributed to the Daracon operations.

Origin undertakes ambient air quality monitoring for various parameters at various locations. Continuous monitoring is undertaken for sulfur dioxide, nitrogen oxides and deposited dust as well as various meteorological parameters. Continuous monitoring is performed at Dora Creek and Marks Point, with depositional dust monitored at four locations in the vicinity around the power station. The data are regularly reviewed and no exceedances of air quality standards have been attributed to the Daracon operations.

The Daracon Air Quality Management Plan required by Condition 19 of development consent (DA/1937/2014/D) is in place and has been reviewed. This Plan would be incorporated into Origin's existing Air Quality Management Plan required under condition 4.8 of PA07\_0084 MOD1 to include the relevant management measures for the proposed modification.

As outlined in the Modification Report the proposed silos would be fitted with modern air filtration (baghouses) that capture dust particles in air that is displaced from the silos as they are filled with ash. The bag filters pulse to release captured ash dust back into the silos. This is standard technology for any bulk product storage and handling and can achieve very low dust concentrations compliant with the Clean Air Regulations.

The EPA has reviewed the Modification Report and considers *that potential environmental impacts associated with the proposal have been adequately assessed and that the proposed environment management measures are appropriate*.

### **Stormwater**

The existing stormwater management system is discussed in Section 7.6 of the Modification Report. A new first flush pit has been installed east of the existing EPS CCP Plant / Daracon facility to provide spill containment control for the existing Daracon facility. A basic sedimentation pit with a high-level

discharge point is proposed at the downstream corner of modification area 2, to collect any fly ash spills prior to them reaching the Megalitre Pond, which is the major collection point for stormwater on-site.

The new silo areas would consist of gravity stormwater drainage which would be received by the EPS stormwater drainage system via the Megalitre Pond and then the Outlet Canal. The new silo areas would have concrete pavement with suitable bunding and emergency procedures in place for spills or equipment failure.

## 6.2 Transport for New South Wales

### 6.2.1 Issue Description

TfNSW has reviewed the Modification Report and provided the following comments with respect to the proposed modification:

- A safety assessment should be carried out concerning the additional heavy vehicle movements turning right from Wilton Road onto Wangi Road; and
- TfNSW recommended that inbound heavy traffic movements from the south be avoided during the PM peak times due to congestion being experienced through the Morisset town centre.

### 6.2.2 Response

#### **Safety Assessment**

Origin engaged SECA Solution (SECA) to conduct a safety assessment of the intersection of Wilton Road and Wangi Road. The safety assessment is provided at **Appendix B** of this RTS report.

SECA reviewed the layout of the Wilton Road/Wangi Road intersection, including the length of acceleration lanes and available sight lines, and reviewed accident data for the intersection over a five year reporting period.

The safety assessment considered the potential impacts of additional trucks turning right out of Wilton Road. The additional truck movements associated with the proposed modification would generate fewer than 10 additional trucks per hour turning right out of Wilton Road. This would have a minor impact upon the overall operation of this intersection. With regard to road safety associated with these right turning trucks from Wilton Road, the following points are made:

- The right turn acceleration lane allows the trucks to complete the right turn in two stages and be less dependent upon a suitable gap occurring simultaneously for the northbound and southbound traffic movements on Wangi Road. Whilst this right turn lane does not comply with the Austroads Guidelines for the length (140m acceleration lane compared to the recommended 210-250m), this lane allows for the trucks to accelerate to a reasonable speed prior to merging left into the through lane. The forward visibility for a driver southbound on Wangi Road also ensures that this driver can observe a truck accelerating in the acceleration lane and brake to reduce their vehicle speed as required to avoid a rear end type collision;
- The sight distance available for the truck driver to the left meets the requirements for the posted speed limit of 80 km/h (170 metres). However, when the intersection was upgraded by TfNSW in 2016 vegetation trimming was undertaken in the road reserve north of the intersection that could increase this distance to 200 metres; and
- The accident data does not show any safety concerns for this intersection, with a single accident occurring at this location over the five year reporting timeframe. The intersection currently carries a number of heavy vehicles associated with the Awaba Landfill and Waste Transfer Station as well as other general heavy vehicles.

The safety assessment concluded that the additional trucks turning right out of Wilton Road would have an acceptable impact upon overall operation of the intersection and would not create any specific road safety concerns. The safety assessment made the following recommendations:

- It is recommended that the vegetation within the road reserve to the north of the intersection on the eastern side of Wangi Road be trimmed and maintained in accordance with the previous vegetation works completed by TfNSW in 2016. This would improve the safe intersection sight distance to the benefit of all road users.

Origin does not have the authority to undertake vegetation trimming works in a road reserve. These works would need to be undertaken by the relevant roads authority (i.e. TfNSW or LMCC).

- The Drivers Code of Conduct for the proposed transport note that drivers are to avoid platooning and maintain an appropriate distance between each other.

Origin will include this requirement for the Drivers Code of Conduct in the updated mitigation measures provided in **Section 7.0** of this RTS report.

### **PM peak restriction**

Origin considers it unnecessary to implement a restriction on inbound heavy traffic vehicles movements from the south during the PM peak times. The traffic assessment (Section 7.1 of the Modification Report) included an assumption that 60% of truck movements would occur during a five-hour period in the morning. The remaining 40% of the expected daily truck movements would be spread throughout the day and this would result in lower expected peak hour movements compared to those assessed for the AM peak hour.

Table 5 shows the forecast PM peak trip generation, assuming the remaining 40% of daily truck movements occur during a five hour period in the afternoon, with a distribution of 50% of trucks using the southern route and 50% using the northern route.

**Table 5 Trip generation forecast (PM peak)**

Assumption	Truck movements	
Daily truck movements proposed	+223	
40% of daily truck movements occurring in a five hour period in the afternoon	+90	
PM peak hour truck movements	+18	
PM peak hour truck movements accessing / egressing the site	+9 inbound	+9 outbound
PM peak hour truck movements accessing/egressing the site via the north	+5 inbound	+5 outbound
PM peak hour truck movements accessing/egressing the site via the south	+5 inbound	+5 outbound

This is likely to be a conservative estimate, as the remaining 40% of daily truck movements would be spread throughout the day, rather than all during a five-hour period in the afternoon. However, the addition of five inbound truck movements per hour from the south in the afternoon peak period would not result in significant impacts to the operation of the local road network. Furthermore, placing a restriction on the additional truck movements would be difficult to enforce considering this is an approved B-Double route that is already used by trucks accessing the site.

As such, a restriction on the use of this approved B-double route during the afternoon period is not considered to be warranted.

## **6.3 Department of Regional NSW - Mining, Exploration and Geoscience**

### **6.3.1 Issue Description**

MEG's role is to provide strategic advice to ensure that proposals do not unnecessarily preclude access to known resources or exploration for future resource discovery and extraction. MEG has reviewed the Modification Report and raised no objections or issues with respect to resource sterilisation associated with the proposed modification.

### **6.3.2 Response**

Noted. No response required.



## **6.4 Department of Planning, Industry and Environment - Biodiversity Conservation Division**

### **6.4.1 Issue Description**

BCD has reviewed the information provided and raised no objections or issues with respect to biodiversity or flooding.

### **6.4.2 Response**

Noted. No response required.

## **6.5 Subsidence Advisory NSW**

### **6.5.1 Issue Description**

Subsidence Advisory NSW raised no objection to the proposed modification, however noted that Centennial Coal have made an application to carry out coal extraction within proximity of the EPS site which may have subsidence impacts. As such, Subsidence Advisory recommended that Origin consult with Subsidence Advisory prior to carrying out a detailed engineered design of the proposed modification.

### **6.5.2 Response**

Origin will consult with Subsidence Advisory prior to carrying out a detailed engineered design of the proposed modification elements outlined in the Modification Report.

## **6.6 NSW Environment Protection Authority**

### **6.6.1 Issue Description**

The EPA has reviewed the Modification Report and is satisfied that the potential environmental impacts associated with the proposed modification have been adequately addressed and the proposed environment management measures are appropriate. As such, the EPA raised no objection to the proposed modification.

The EPA noted that Origin holds EPL 1429 in respect of scheduled activities carried out at the EPS site under the POEO Act. The EPA considers that the existing conditions of EPL 1429 provide appropriate regulation of the environmental issues associated with the proposed modification under the POEO Act.

### **6.6.2 Response**

Noted. No response required.

## **6.7 Department of Planning and Environment – Planning and Assessment Division**

### **6.7.1 Issue Description**

DPIE requested additional clarification of the construction requirements and design of the proposed pneumatic pipeline (i.e. ground disturbance requirements and proposed elevation above ground).

### **6.7.2 Response**

The proposed modification includes a potential future option for a pneumatic pipeline to transport fly ash from the EPS CCP Plant to the storage silos at modification area 2 (as shown on **Figure 3**). Preliminary data on the characteristics of the pipeline are provided below, however it is noted that the pipeline design would be finalised during the detailed design phase.

The proposed dense phase fly ash pneumatic conveying system would consist of a steel pipeline with flanges. The pipe diameter would be approximately 0.3m to 0.5m. The pipeline would be above ground at an elevation of approximately 0.5m to 1.5m, with higher elevations where required for road crossings.

The pipeline would sit on pipe supports that would be concreted into the ground to a depth of approximately 0.5m. Excavation and construction of foundations would require a small disturbance

footprint (e.g. 1m x 1m) for each support along the pipeline route within areas of existing power station infrastructure.

Management measures described within the Modification Report (e.g. erosion and sediment control measures) would adequately manage potential impacts associated with construction of the pipeline.

## 7.0 Updated Mitigation Measures

The Modification Report included a summary of the management measures that would be incorporated into the construction and operation of the proposed modification. Following receipt and consideration of submissions these management measures were reviewed and the following management measures have subsequently been included:

- the haulage route would be detailed in the CEMP and would include the requirement that heavy vehicles do not use Wilton Road until after the bridge replacement works have been completed and the heavy vehicle restrictions on the use of the bridge have been removed by LMCC; and
- the Drivers Code of Conduct for the proposed transport would note that drivers are to avoid platooning and maintain an appropriate distance between each other.

The final summary of Project management measures is provided in **Table 6**.

**Table 6 Updated summary of management measures**

Environmental Aspect	Management Measure
General	<p>Construction works potentially audible at residential premises would only be undertaken during hours specified in Condition 2.3 to Project Approval 07_0084:</p> <ul style="list-style-type: none"> <li>7am to 6pm Monday to Friday</li> <li>8am to 1pm Saturdays</li> <li>At no time on Sundays and Public Holidays.</li> </ul> <p>A CEMP would be prepared and implemented during construction of the Project.</p>
Traffic and Transport	<p>The following measures would be implemented during construction and operation of the proposed modification to minimise potential traffic impacts:</p> <ul style="list-style-type: none"> <li>the haulage route would be detailed in the CEMP and would include the requirement that heavy vehicles do not use Wilton Road until after the bridge replacement works have been completed and the heavy vehicle restrictions on the use of the bridge have been removed by LMCC</li> <li>all truck drivers would be provided with route maps to ensure that they access the site from the proposed route (being via the Pacific Highway (M1), Mandalong Road and through Morisset onto Wangi Road and via Pacific Highway (M1), Cessnock Road, Awaba Road or Wilton Road onto Wangi Road)</li> <li>the Drivers Code of Conduct for the proposed transport would note that drivers are to avoid platooning and maintain an appropriate distance between each other</li> <li>yearly saleable fly ash product generated by the site would not exceed what is stated in this Modification Report. Where possible, maximum truck sizes would be used to minimise trips generated by the site</li> <li>all additional car and truck parking would be managed wholly within the site</li> <li>if the construction stages of Origin projects overlap, potential cumulative traffic impacts would be managed through implementation of a CEMP and careful planning of works.</li> </ul>
Biodiversity	<p>The following mitigation measures would be implemented as part of the CEMP for the proposed modification to minimise potential impacts to biodiversity:</p> <ul style="list-style-type: none"> <li>the CEMP would identify mitigation measures and procedures including: <ul style="list-style-type: none"> <li>ground disturbance and soil handling activities would be undertaken in accordance with existing procedures outlined in the Biodiversity and Land Management Plan (AECOM, 2020). The procedures would incorporate: <ul style="list-style-type: none"> <li>soil handling protocols and stockpiling procedures</li> <li>rehabilitation of disturbance areas</li> <li>weed management activities</li> </ul> </li> </ul> </li> </ul>

Environmental Aspect	Management Measure
	<ul style="list-style-type: none"> <li>exterior lighting would be designed and constructed in accordance with <i>Australian Standard 4282 – Control of Obtrusive Effects and Outdoor Lighting</i>.</li> </ul>
Heritage	<p>The following mitigation measures would be implemented as part of the CEMP during construction of the proposed modification</p> <ul style="list-style-type: none"> <li>workers and contractors involved in construction of the proposed modification would be made aware of the heritage significance of the EPS</li> <li>in the unlikely event that Aboriginal objects, including possible human skeletal remains, are identified at any point during construction of the proposed modification, the following procedure would be followed: <ul style="list-style-type: none"> <li><u>Aboriginal Sites</u> <ul style="list-style-type: none"> <li>immediately cease all works in the area to prevent further impacts to the site</li> <li>engage a suitably qualified heritage consultant to determine the nature, extent and significance of the find and provide appropriate management advice. Management action(s) will vary according to the type of evidence identified, its significance (both scientific and cultural) and the nature of potential impacts</li> <li>prepare and submit an AHIMS site card for the site.</li> </ul> </li> <li><u>Human Skeletal</u> <ul style="list-style-type: none"> <li>all work in the vicinity of the remains should cease immediately</li> <li>the location should be cordoned off and the NSW Police notified</li> <li>if the Police suspect the remains are Aboriginal, they will contact the DPIE and arrange for a forensic anthropologist or archaeological expert to inspect the site.</li> </ul> </li> </ul> <p>Subsequent management actions will be dependent on the findings of the inspection undertaken, including:</p> <ul style="list-style-type: none"> <li>if the remains are identified as modern and human, the area will become a crime scene under the jurisdiction of the NSW Police</li> <li>if the remains are identified as pre-contact or historic Aboriginal, DPIE and all Registered Aboriginal Parties (RAPs) are to be formally notified in writing. Where impacts to exposed Aboriginal skeletal remains cannot be avoided an appropriate management mitigation strategy will be developed in consultation with DPIE and RAPs</li> <li>if the remains are identified as historic non-Aboriginal, the site is to be secured and the Department of Premier and Cabinet contacted</li> <li>if the remains are identified as non-human, work can recommence immediately.</li> </ul> </li> </ul>
Noise	<p>The following measures would be implemented during construction and operation of the proposed modification to minimise potential noise impacts:</p> <ul style="list-style-type: none"> <li>the CEMP would consider potential sources of noise and would include mitigation measures to be implemented during construction to minimise potential noise impacts including <ul style="list-style-type: none"> <li>plant and machinery would be regularly maintained to ensure it is in good working condition</li> <li>noise generating machinery would be directed away from sensitive noise receivers</li> <li>use of movement alarms on vehicles and mobile plant would be minimised where possible.</li> </ul> </li> <li>construction works potentially audible at residential premises would only be undertaken during hours specified in Condition 2.3 to Project Approval 07_0084:</li> </ul>

Environmental Aspect	Management Measure
	<ul style="list-style-type: none"> <li>- 7am to 6pm Monday to Friday</li> <li>- 8am to 1pm Saturdays</li> <li>- At no time on Sundays and Public Holidays.</li> </ul> <p>all deliveries to the construction site would be undertaken during these standard working hours.</p> <ul style="list-style-type: none"> <li>• noise complaints would be managed in accordance with the Environmental Management Plan for EPS and recorded in the Incident Management System.</li> <li>• in the event of a noise complaint, an investigation would be undertaken. Where validated noise complaints are identified, mitigation measures would be implemented and follow up monitoring conducted.</li> </ul>
Air Quality	<p>The following mitigation measures would be implemented during construction of the proposed modification:</p> <ul style="list-style-type: none"> <li>• dust minimisation measures would be implemented where required for exposed stockpiles and unsealed construction areas, such as water spraying during windy weather and/or covering when stockpiling is required for long periods</li> <li>• emission controls used on vehicles and construction equipment would comply with standards listed in Schedule 4 of the <i>Protection of the Environment Operations (Clean Air) Regulation 2010</i></li> <li>• vehicle loads involving loose materials (e.g. during construction) would be covered when travelling offsite</li> <li>• air filtration systems would be installed, operated, and maintained as recommended in the relevant user manual and routine inspections of equipment would be carried out.</li> </ul>
Soil and Water	<p>The following mitigation measures would be implemented during construction and operation of the proposed modification:</p> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>• an Erosion and Sediment Control Plan (ESCP) would be prepared as part of the CEMP for the proposed modification in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004) and 'Blue Book' standards. The ESCP would include, at a minimum, the location of controls to be implemented, water flow paths, location of spill kits, concrete wash out facilities and chemical storage</li> <li>• appropriate erosion and sedimentation control measures would be installed such as sediment fences and straw bales to divert/limit sediment laden stormwater runoff from entering drainage lines and depressions</li> <li>• stormwater management measures would be developed such as surface flow diversions and management and disposal of contaminated or turbid stormwater that would collect in open cut trenches in a rainfall event</li> <li>• procedures would be prepared for the isolation and clean-up of any spills that may occur. Emergency spill kits would be accessible during construction</li> <li>• emergency procedures would be prepared for high rainfall events that could exacerbate soil erosion during construction. Works would not be undertaken during heavy rain or when heavy rain is forecast</li> <li>• a dedicated, fully contained, concrete wash-out area would be established that would be appropriately sign posted. All liquid and solid wastes would be disposed of or reused in accordance with relevant waste legislation and guidelines</li> <li>• the area to be disturbed by construction activities would be minimised as far as possible and areas subject to earthworks and construction disturbance would be stabilised as soon as practically possible</li> </ul>

Environmental Aspect	Management Measure
	<ul style="list-style-type: none"> <li>excavated soil that is suspected of being contaminated would be separated from clean excavated soil and treated by stockpiling on plastic sheeting, bunding and treating or disposing of appropriately as soon as practicable to reduce the risk of contaminating surrounding areas</li> <li>topsoil would be stockpiled separately and clearly signposted for reuse in restoration activities</li> <li>construction workers would be informed of the following general indicators of potential contamination:               <ul style="list-style-type: none"> <li>illegal or uncontrolled dumping of wastes adjacent to the construction site</li> <li>discolouration or staining of soil</li> <li>abnormal colouration of surface water or groundwater</li> <li>chemicals floating on the water table</li> <li>odours emanating from the water or soil</li> <li>dead vegetation within or adjacent to areas of otherwise normal growth</li> <li>liquid or solid chemicals or chemical wastes found on or in the soil (including abandoned drums or containers)</li> <li>inadvertent chemical spills during construction (hydraulic fluid, fuel etc)</li> <li>materials suspected of containing asbestos</li> </ul> </li> <li>refuelling of construction vehicles and machinery on site would not be allowed</li> <li>the release of dirty water from site would be prohibited. Surface water captured on site during construction would be filtered through sediment control devices such as sediment fences prior to release off site.</li> </ul> <p><b>Operation</b></p> <ul style="list-style-type: none"> <li>accidental leakage or spills of ash material would be managed in accordance with Origin's existing operating procedures</li> <li>site operating procedures would be updated to incorporate relevant elements of the proposed modification, including management measures and maintenance requirements of new plant and equipment where required.</li> </ul>
Hazards	<ul style="list-style-type: none"> <li>appropriate storage and handling procedures would be implemented to reduce the chance of accidental spills occurring and emergency response procedures would be developed as part of the CEMP.</li> <li>hazard management measures currently in place at EPS site would continue to be implemented during operation of the proposed modification.</li> </ul>
Waste Management	<ul style="list-style-type: none"> <li>waste materials generated during construction would be reused or recycled where possible</li> <li>waste materials would be classified in accordance with the <i>Waste Classification Guidelines Part 1: Classifying Waste</i> (EPA, 2014) prior to disposal offsite to an authorised receiver.</li> </ul>

## 8.0 Justification and Conclusion

Following public exhibition of the Modification Report, 48 submissions were received, including 39 from individual members of the community, three from special interest groups and six from government agencies.

Each submission has been reviewed and the issues raised have been addressed within this RTS report. Key issues raised by the community included additional trucks along the haulage routes causing congestion, dust, noise and pollution. Additional information has been provided where required in order to address the issues raised, including a safety assessing of the Wilton Road / Wangi Road intersection.

The proposed modification seeks to increase current ash recycling rates above existing levels and towards the 80% recycling goal set out by Condition 4A.1 of Project Approval 07\_0084. A number of submissions indicated support for the increased recycling of ash and potential for new recycling industries. The benefits of increased recycling of ash include a reduction in the volume of ash requiring disposal to storage facilities such as the ERAD, which was a concern raised within many of the community submissions.

The proposed modification is justified as it would provide the following economic and environmental benefits:

- promoting the recovery of resources and recycling of materials
- increasing the recycling of ash, which would result in a reduction in the volume of ash requiring disposal to the ERAD
- providing economic benefits through the increased sales of ash product
- being constructed and operated as part of an existing facility, complementing, and making efficient use of the site and resulting in minimal adverse environmental effects.

There is an alternative optional configuration proposed for the new ash storage silos at modification area 2. The alternative configuration is not expected to considerably impact the scale of the operation or infrastructure at the site. The relatively minor change in height is not expected to significantly change the assessed visual impact. As such, the amended silo configuration would result in a negligible change in assessed environmental impact.

Potential environmental impacts associated with the proposed modification have been assessed. With the implementation of environmental mitigation measures summarised in **Section 7.0** of this RTS report, it is unlikely that significant adverse impacts would occur as a result of the proposed modification. It is therefore considered appropriate and in the public interest to approve the proposed modification.

## 9.0 References

AECOM (2021) *Modification Report: Ash Recycling Facilities, Eraring Power Station*, prepared for Origin Energy Eraring Pty Ltd, AECOM, Newcastle, 20 August 2021.

DPIE (2021) *State significant development guidelines – preparing a submissions report*, Department of Planning, Industry and Environment, July 2021.

Origin (2020) *Eraring Power Station Long Term Ash Management Strategy (LTAMS)*, Origin Energy Eraring, 3 October 2020.



# Appendix A

## Submissions Register

## Appendix A Submissions Register

**Table A1 Submissions Register**

ID	Name	Section where issues addressed
<b>Individuals</b>		
01	Kimberley Crofts	Section 5.7
02	Thomas Lehmann	Section 5.3, 5.5, 5.7
03	Sandra Kirby	Section 5.7
04	Jo Smith	Section 5.1 – 5.4, 5.6
05	John Byrnes	Section 5.1, 5.5, 5.6, 6.1, 6.2
06	Ron McLaren	Section 5.5
Duplicate of 06	Ron McLaren	Blank – refer to Submission ID 06
07	Joseph Tamas	Section 5.1 - 5.5
08	Bruce Derkenne	Section 5.6
09	Kevin Thompson	Section 5.3, 5.5, 5.7
10	Name Withheld	Section 5.1, 5.5
11	Name Withheld	Section 5.1, 5.2, 5.4 - 5.7, 6.2
12	Toni Lorentzen	Section 5.1 – 5.4
13	Jessica Mayers	Section 5.1 – 5.4
14	Madeline Bishop	Section 5.1 – 5.4
15	John Pritchard	Section 5.1 – 5.4
Duplicate of 13	Jessica Mayers	Section 5.1 – 5.4
16	Toni Single	Section 5.1 – 5.4
17	David Kay	Section 5.1 – 5.4
18	Berenice Shelley	Section 5.1 – 5.4
19	Graham Boyd	Section 5.1 – 5.4
20	Michael Richards	Section 5.1 – 5.4
21	Henry Wellsmore	Section 5.1 – 5.4
22	David Hauser	Section 5.1 – 5.4
23	Christina Seccombe	Section 5.1 – 5.4
24	John Sharpin	Section 5.1 – 5.4
25	Stephen Dewar	Section 5.1 – 5.4
26	Kyrstwyn Hannaford	Section 5.1 – 5.4
27	Paul Loudon	Section 5.1 – 5.4
28	Kathleen Filmer	Section 5.1 – 5.4
29	Janice Martin	Section 5.1 – 5.4
30	Anthony Andrews	Section 5.1 – 5.4
31	Val Schaffer	Section 5.1 – 5.4
32	Mike Schaffer	Section 5.1 – 5.4

ID	Name	Section where issues addressed
33	Julie Christie	Section 5.1 – 5.4
34	Patricia Brennan	Section 5.1 – 5.4
35	Barbara Anwar	Section 5.1 – 5.4
36	Robert Mullane	Section 5.1 – 5.4
37	Wayne Ward	Section 5.1 – 5.4
38	Paul Weston	Section 5.1 – 5.4
39	Pam Pendergast	Section 5.1 – 5.4
Duplicate of 32	Mike Schaffer	Section 5.1 – 5.4
Duplicate of 14	Madeline Bishop	Section 5.1 – 5.4
<b>Special interest groups</b>		
40	GEM Projects	Section 5.5
41	Australian Labor Party	Section 5.1 - 5.7, 6.1, 6.2
42	Coal-ash Community Alliance Inc	Section 5.1, 5.5, 6.2
<b>Government agencies</b>		
43	Lake Macquarie City Council	Section 6.1
44	Transport for New South Wales	Section 6.2
45	Department of Regional NSW – Mining Exploration and Geoscience	Section 6.3
46	Department of Planning, Industry and Environment – Biodiversity Conservation Division	Section 6.4
47	Subsidence Advisory	Section 6.5
48	Environment Protection Authority	Section 6.6

# Appendix B

## Traffic Safety Assessment

## Appendix B Traffic Safety Assessment



18 November 2021

P2276 Origin safety review Wilton Rd assessment

Origin  
P O Box 5044  
NSW 2264

**Attn: Matt Davies**

Dear Matt,

## **Review of road safety, intersection of Wilton Road and Wangi Road**

Further to our discussions and email, we have now reviewed the layout of the intersection of Wilton Road and Wangi Road, south of Toronto on Tuesday 8<sup>th</sup> November 2021 and provide the following assessment. We have reviewed the submission by TfNSW and note the following requirements:

*TfNSW have provided a submission on ash recycling DA modification and it states a safety assessment needs to be carried out concerning the additional heavy vehicle movements turning right from Wilton Road onto Wangi Road.*

### Existing situation

Wangi Road forms part of the state road network (MR217) and runs predominately in a north-south direction. It provides a connection north towards Speers Point and Greater Newcastle and south to Morisset through to the M1 Pacific Motorway.

In the vicinity of the intersection with Wilton Road it provides a single lane of travel in both directions and operates under the posted speed limit of 80 km/h. For the south bound movement there is a 2 m wide sealed shoulder that can be used by cyclists whilst for the northbound movement there is a similar shoulder south of the intersection with Wilton Road while to the north the shoulder decreases to 1.0 metre.

The intersection of the two roads is a T intersection control, with Wangi Road being the priority road. The intersection provides the following:

- Sheltered right turn for traffic on Wangi Road tuning into Wilton Road. The length of this lane is 110 metres excluding the diverge taper.
- Left turn deceleration lane with Give Way control for the left turn from Wangi Road into Wilton Road, with a distance of 200 metres excluding the diverge taper.
- Right turn acceleration lane from Wilton Road into Wangi Road with a distance of 140 metres.

On Wilton Road, there is a separate left and right turn lane provided for a distance of 60 metres.



Table 5.7 of Austroads Guide to Road Design Part 4a: Unsignalised and Signalised Intersections provides advice on acceleration distances required for trucks. For the posted speed limit of 80 km/h, it recommends a truck should be able to accelerate to 60 km/h as part of the merge as a desirable design. Allowing for the truck to be accelerating from a stop on Wilton Road, the distance required to accelerate to 60 km/h would be 210-250 metres due to the down grade on Wangi Road.

There are streetlights provided over the intersection.

Sight lines have been observed on site and the following distances noted:

- Visibility to left for a driver exiting Wilton Road is approximately 170 metres.
- Visibility to the right for a driver exiting Wilton Road is approximately 340 metres.

Austroads Guidelines state that for the posted speed limit of 80 km/h the Safe Intersection Sight Distance is 170 metres desirable and 151 metres minimum. A review of Nearmap images shows that in October 2016 when TfNSW completed an upgrade at this intersection (to provide the right turn out of Wilton Road acceleration lane) there was significant vegetation trimming within the road reserve to the immediate north of the intersection. This would have allowed for increased forward visibility for drivers on Wangi Road as well as improved safe intersection sight distance for drivers exiting Wilton Road. Refer to the two images below.

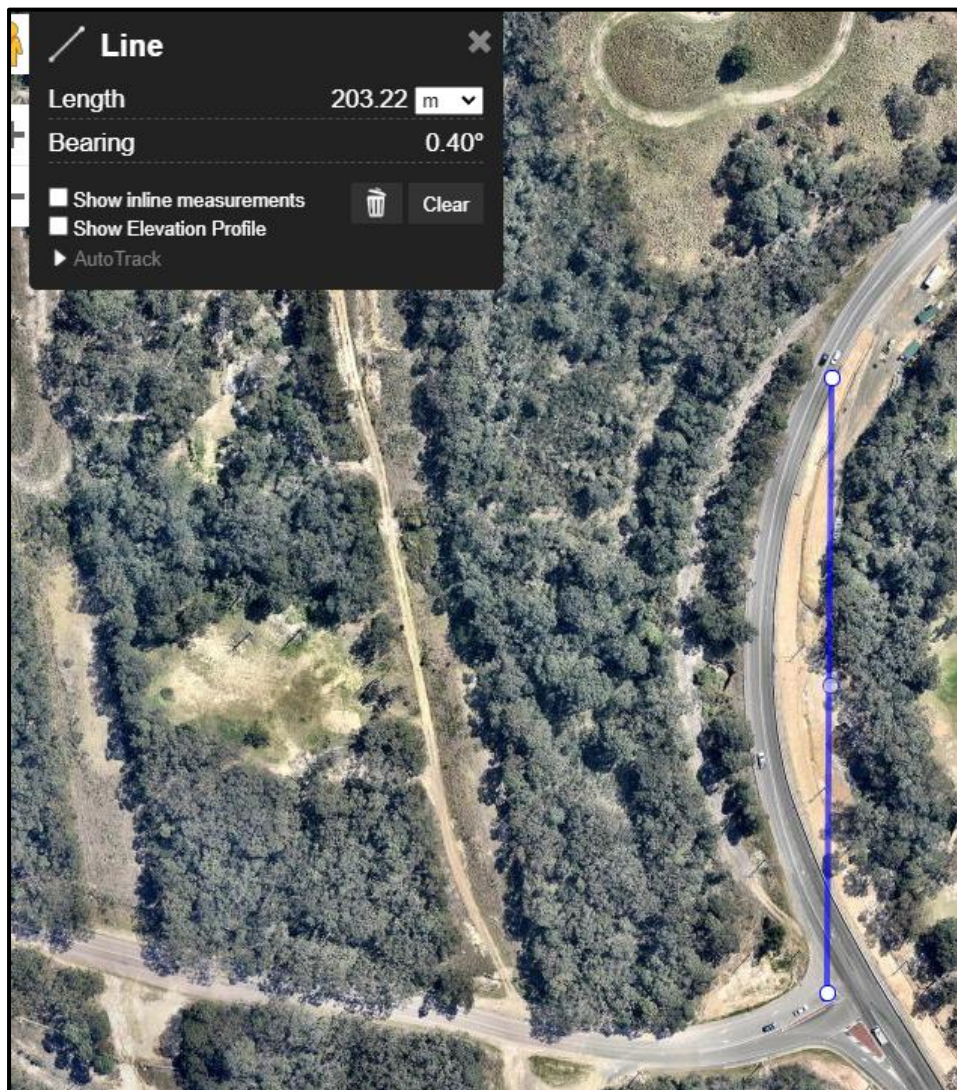


Figure 1 – Nearmap aerial from 6<sup>th</sup> October 2016 indicating 200 metres sight distance.





Figure 2 - Nearmap aerial from 1<sup>st</sup> August 2021 indicating 170 metres sight distance

The accident data for the location provided by Transport for NSW has been reviewed and this shows 3 accidents within the immediate locality of the subject site over the 5 year reporting timeframe:

- In 2019 a rear end type accident (rum code 30) occurred at the intersection. No casualty and tow away only
- The other 2 accidents occurred to the north of the intersection, with a vehicle running off the road to the left on a right hand bend, so involved a vehicle northbound on Wangi Road and north of the intersection.

For the first accident above, it cannot be determined if this involved a vehicle merging from the right turn acceleration lane with the through traffic lane. It could have involved a vehicle turning right into Wilton Road running into the rear of a vehicle in front or 2 vehicles approaching the intersection on Wilton Road colliding.

## Impacts of additional trucks turning right out of Wilton Road

The additional truck movements associated with the project shall generate less than 10 additional trucks per hour turning right out of Wilton Road. This shall have a minor impact upon the overall operation of this intersection. With regard to road safety associated with these right turning trucks from Wilton Road, the following points are made:

1. The right turn acceleration lane allows the trucks to complete the right turn in two stages and be less dependent upon a suitable gap occurring simultaneously for the northbound and southbound traffic movements on Wangi Road. Whilst this right turn lane does not comply with the Austroads Guidelines for the length, this lane allows for the trucks to accelerate to a reasonable speed prior to merging left into the through lane. The forward visibility for a driver southbound on Wangi Road also ensures that this driver can observe a truck accelerating in the acceleration lane and brake to reduce their vehicle speed as required to avoid a rear end type collision.
2. The sight distance available for the truck driver to the left meets the requirements for the posted speed limit of 80 km/h (170 metres). However, during the construction phase of the upgrade of this intersection there was vegetation trimming in the road reserve that could increase this distance to 200 metres.
3. The accident data does not show any safety concerns for this intersection, with a single accident occurring at this location over the 5 year reporting timeframe. This intersection currently carries a number of heavy vehicles associated with the Awaba Landfill and Waste Transfer Station as well as other general heavy vehicles.

## Recommendations

It is recommended that the vegetation within the road reserve to the north of the intersection on the eastern side of Wangi Road be trimmed and maintained in accordance with the previous vegetation works completed as part of the upgrade of this intersection. This will improve the safe intersection sight distance to the benefit of all road users. This improvement is suggested and required irrespective of the project.

The Drivers Code of Conduct for the proposed transport note that drivers are to avoid platooning and maintain an appropriate distance between each other.

## Conclusion

From the above work, it is considered that the additional trucks turning right out of Wilton Road shall have an acceptable impact upon overall operation of this intersection and will not create any specific road safety concerns.

The removal of vegetation within the road reserve to the north of the intersection would improve road safety further for all road users.

Yours sincerely,



**Sean Morgan**

*Director*

*(Lead road safety auditor RSA-02-0067)*



**Cathy Thomas,**

*Auditor (RSA-02- 1072)*