




# ANNUAL ENVIRONMENTAL MANAGEMENT REPORT

2020

MAXWELL INFRASTRUCTURE

# Annual Environmental Management Report 2020

Name of operation	Maxwell Infrastructure
Name of operator	Maxwell Ventures (Management) Pty Ltd
Development consent / project approvals	PA 06_0202, DA 106-04-00
Name of holder of development consent / project approval	Maxwell Ventures (Management) Pty Ltd
Mining leases	A173, CL229, CL395, ML1531
Name of holder of mining leases	Maxwell Ventures (Management) Pty Ltd
Water licences	20BL171953, 20BL171954, 20BL171955, 20BL171956, 20BL171957, 20BL174016, 20BL174017, 20BL174018, WAL 41559, WAL 41491*
Name of holder of water licences	Maxwell Ventures (Management) Pty Ltd *WAL 41491 is held by AGL Macquarie Pty Ltd
MOP start date	1 July 2015
MOP end date	30 June 2021
Annual Review start date	1 January 2020
Annual Review end date	31 December 2020
<p><b>I, Robert Hayes, certify that this audit report is a true and accurate record of the compliance status of Maxwell Infrastructure for the period 1 January 2020 to 31 December 2020 and that I am authorised to make this statement on behalf of Maxwell Ventures (Management) Pty Ltd.</b></p> <p><i>Note.</i></p> <p><i>a) The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000.</i></p> <p><i>b) The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or \$22,000, or both).</i></p>	
Name of authorised reporting officer	Robert Hayes
Title of authorised reporting officer	Mining Engineering Manager
Signature of authorised reporting officer	
Date	23 March 2021

# Table of Contents

---

<b>1</b>	<b>Statement of Compliance</b> .....	<b>6</b>
<b>2</b>	<b>Acronyms</b> .....	<b>7</b>
<b>3</b>	<b>Introduction</b> .....	<b>9</b>
<b>4</b>	<b>Approvals</b> .....	<b>12</b>
<b>5</b>	<b>Operations Summary</b> .....	<b>13</b>
5.1	Mining Operations .....	13
5.2	Other Operations.....	13
5.3	Next Reporting Period .....	14
<b>6</b>	<b>Actions Required from Previous Annual Review</b> .....	<b>14</b>
<b>7</b>	<b>Environmental Performance</b> .....	<b>18</b>
7.1	Meteorological Monitoring .....	19
7.2	Noise.....	21
7.3	Blasting .....	21
7.4	Air Quality.....	22
7.5	Aboriginal Cultural Heritage.....	25
7.6	Non-Aboriginal Heritage .....	26
7.7	Transport.....	26
7.8	Visual Impact.....	27
7.9	Greenhouse Gas and Energy Efficiency.....	27
7.10	Waste.....	28
7.11	Spontaneous Combustion .....	30
7.12	Biodiversity .....	32
<b>8</b>	<b>Water Management</b> .....	<b>34</b>
8.1	Water Take.....	34
8.2	Water Consumption.....	35
8.3	Groundwater .....	36
8.4	Surface Water .....	37
<b>9</b>	<b>Rehabilitation</b> .....	<b>38</b>
9.1	Management .....	38
9.2	Performance.....	39
9.3	Actions for the Next Reporting Period.....	44
<b>10</b>	<b>Community</b> .....	<b>44</b>
10.1	Complaints .....	44
10.2	Engagement.....	44
10.3	Contributions .....	45
<b>11</b>	<b>Incidents and Non-compliances</b> .....	<b>46</b>

11.1 Incidents.....	46
11.2 Exceedances.....	46
<b>12 Activities to be Completed in the Next Reporting Period.....</b>	<b>49</b>
<b>Appendix 1. Approval Conditions Relevant to the Annual Review.....</b>	<b>50</b>
<b>Appendix 2. Environmental Monitoring Locations.....</b>	<b>53</b>
<b>Appendix 3. Noise Monitoring Results .....</b>	<b>55</b>
<b>Appendix 4. Air Quality Monitoring Results .....</b>	<b>57</b>
<b>Appendix 5. Train Movements.....</b>	<b>61</b>
<b>Appendix 6. Visual Impact Results .....</b>	<b>70</b>
<b>Appendix 7. Biodiversity Monitoring results .....</b>	<b>72</b>
<b>Appendix 8. Water Accounting Framework Input – Output Statement.....</b>	<b>75</b>
<b>Appendix 9. Groundwater Quality Results .....</b>	<b>76</b>
<b>Appendix 10. Surface Water Quality Results .....</b>	<b>80</b>

## Figures

Figure 1. Regional context.....	10
Figure 2. Site boundaries.....	11
Figure 3. Temperature by month for the reporting period.....	19
Figure 4. Wind speed and direction for the reporting period .....	20
Figure 5. Rain by month for the reporting period with historic comparison.....	20
Figure 6. Long-term results for TSP.....	23
Figure 7. Long-term results for PM <sub>10</sub> .....	24
Figure 8. Long-term results for deposited dust .....	25
Figure 9. Long-term greenhouse gas emissions and energy consumption.....	28
Figure 10. Long-term waste stream quantities.....	29
Figure 11. Locations affected by spontaneous combustion .....	31
Figure 12. Long-term water consumption .....	35
Figure 13. Long-term groundwater levels.....	36
Figure 14. Location of rehabilitation activities .....	42
Figure 15. Long-term number of complaints .....	45
Figure 16. Community contributions in the reporting period.....	45
Figure 17. Environmental monitoring locations.....	53
Figure 18. Noise modelling locations (land ownership) .....	54
Figure 19. Long-term maximum project noise levels.....	56
Figure 20. EA photomontage from Thomas Mitchell Drive in year 10 .....	70
Figure 21. Current view from Thomas Mitchell Drive.....	70
Figure 22. EA photomontage from Hassall Rd in year 1 (final landform).....	70
Figure 23. Current view from Hassall Rd.....	70
Figure 24. EA photomontage from Lake Liddell in year 10 .....	70
Figure 25. Current view from Lake Liddell.....	71
Figure 26. EA photomontage from New England highway in year 10.....	71
Figure 27. Current view from New England Highway .....	71
Figure 28. Long-term groundwater bicarbonate .....	76
Figure 29. Long-term groundwater calcium .....	76
Figure 30. Long-term groundwater chloride.....	76
Figure 31. Long-term groundwater EC.....	76
Figure 32. Long-term groundwater magnesium.....	76
Figure 33. Long-term groundwater pH.....	76
Figure 34. Long-term groundwater potassium.....	77
Figure 35. Long-term groundwater sodium .....	77

Figure 36. Long-term groundwater sulfate .....	77
Figure 37. Long-term groundwater TDS .....	77
Figure 38. Long-term groundwater TSS.....	77
Figure 39. Long-term surface water bicarbonate .....	80
Figure 40. Long-term surface water calcium .....	80
Figure 41. Long-term surface water chloride .....	80
Figure 42. Long-term surface water electrical conductivity .....	80
Figure 43. Long-term surface water magnesium .....	81
Figure 44. Long-term surface water pH .....	81
Figure 45. Long-term surface water potassium .....	81
Figure 46. Long-term surface water sodium .....	81
Figure 47. Long-term surface water sulfate.....	82
Figure 48. Long-term surface water total dissolved solids .....	82
Figure 49. Long-term surface water total suspended solids.....	82

## Tables

Table 1. Statement of compliance .....	6
Table 2. Site contacts.....	9
Table 3. Statutory approvals.....	12
Table 4. Production summary (extraction) .....	13
Table 5. Actions required from previous Annual Review .....	14
Table 6. Monitoring summary – TSP ( $\mu\text{g}/\text{m}^3$ ) .....	22
Table 7. Monitoring summary – PM <sub>10</sub> matter ( $\mu\text{g}/\text{m}^3$ ) .....	23
Table 8. Monitoring summary – incremental deposited dust ( $\text{g}/\text{m}^2/\text{month}$ ) .....	24
Table 9. Monitoring summary - total deposited dust ( $\text{g}/\text{m}^2/\text{month}$ ).....	25
Table 10. Long-term area affected by spontaneous combustion.....	32
Table 11. Measures planned for offset areas in the next reporting period.....	34
Table 12. Water take July 2019–June 2020 (WAL reporting period) .....	35
Table 13. Rehabilitation status .....	41
Table 14. Monitoring result exceedances .....	47
Table 15. Improvement measures planned for next reporting period.....	49
Table 16. Modelled noise generated by the project alone .....	55
Table 17. Monitoring summary - cumulative noise .....	56
Table 18. PM <sub>10</sub> 24-hour average concentrations for the reporting period .....	57
Table 19. Performance of reference sites .....	72
Table 20. Performance of pasture rehabilitation sites .....	72
Table 21. Performance of woodland sites .....	73
Table 22. 2020 Dissolved and Total Metals Concentrations in Groundwater .....	78
Table 23. 2020 Average Nutrient Concentrations in Groundwater.....	79
Table 24. Average BTEX, PAH and TPHs Measured Concentrations at the OPC Dam ..	82

# 1 STATEMENT OF COMPLIANCE

A statement of compliance is provided in **Table 1**.

**Table 1. Statement of compliance**

Were all conditions of the relevant approvals complied with?	
PA 06_0202	Yes
DA 106-04-00	Yes
EPL1323	Yes
CL229	No
CL395	No
ML1531	No
A173	Yes
20BL171953	Yes
20BL171954	Yes
20BL171955	Yes
20BL171956	Yes
20BL171957	Yes
WAL 41559	Yes
WAL 41491	Yes

## 2 ACRONYMS

Acronym	Definition
A	Authorisation issued under the <i>Mining Act 1973</i>
AEMR	Annual Environmental Management Report
bcm	Bank cubic metres
CCC	Community Consultative Committee
CL	Coal Lease issued under the <i>Mining Act 1973</i> .
dB(A)	A-weighted decibels
DPIE	NSW Department of Planning, Industry and Environment
EA	Drayton Mine Expansion Environmental Assessment 2007
EIS	Environmental Impact Statement
EL	Exploration Licence
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPL	Environment Protection Licence
FY	Financial year
g/m <sup>2</sup> /month	Grams per square metre per month
GJ	Gigajoules
ha	Hectares
IEA	Independent Environmental Audit
L <sub>A1</sub> (1 min)	A-weighted sound pressure level that is exceeded for one per cent of the 1-minute measurement period
L <sub>Aeq</sub> (time period)	A-weighted equivalent continuous sound pressure level over the time period
Ltd	Limited
m <sup>2</sup>	Square metres
mAHD	Elevation in metres in respect to the Australian Height Datum
mg/L	Milligrams per litre
ML	Megalitres
ML	Mining Lease issued under the <i>Mining Act 1992</i>
MOP	Mining Operations Plan
m/s	Metres per second
mS/cm	Microsiemens per centimetre
MSC	Muswellbrook Shire Council
NGER	National GHG and Energy Reporting
NSW	New South Wales
OEH	NSW Office of Environment and Heritage
pH	Potential of hydrogen

Acronym	Definition
PM <sub>10</sub>	Particulate matter 10 micrometres or less in diameter
POEO Act	Protection of the Environment Operations Act 1997
Pty	Proprietary
REC	Recommendation
RCE	Rehabilitation Cost Estimate
ROM	Run of mine
sp.	Species
STP	Sewage treatment plant
t	Tonnes
tCO <sub>2</sub> -e	Tonnes of carbon dioxide equivalent
TDS	Total dissolved solids
TSP	Total suspended particulates
TSS	Total suspended solids
µg/m <sup>3</sup>	Micrograms per cubic metre
UHAQMN	Upper Hunter Air Quality Monitoring Network
WAL	Water Access Licence issued under the <i>Water Management Act 2000</i>



### 3 INTRODUCTION

Maxwell Ventures (Management) Pty Ltd, a wholly owned subsidiary of Malabar Resources (Malabar), owns and operates the Maxwell Infrastructure site (formerly Drayton Mine) located on Thomas Mitchell Drive, Muswellbrook. Malabar purchased 100 per cent of the site from Anglo American and Anglo American's joint venture partners and took control on 26 February 2018. The Maxwell Infrastructure site includes open cut workings, rehabilitation, coal handling and preparation facilities and the Antiene rail spur and loop.

Open cut coal extraction and mining activities commenced at the Maxwell Infrastructure site in 1983 and ceased in October 2016. The Maxwell Infrastructure site is currently in the rehabilitation phase of mine operations with some maintenance and ancillary activities (such as grading of roads) being undertaken.

The regional context of the site is shown in **Figure 1**. The Maxwell Infrastructure site is bordered by Mt Arthur Coal to the west and AGL Macquarie's Bayswater and Liddell Power Stations adjoining the eastern and southern boundaries. The Antiene rural residential area exists to the north of the site. The project approval (PA) boundary, lease boundaries and biodiversity offset areas for the site are shown in **Figure 2**. This figure also shows the current operational disturbance footprint.

This report details the compliance status of the Maxwell Infrastructure site with respect to development consents and mining leases from 1 January 2020 to 31 December 2020. It has been prepared in accordance with the Annual Review Guideline published by the Department of Planning, Industry and Environment (DPIE) in October 2015. It also fulfils the Annual Review requirements under the conditions of development consents PA 06\_0202 and DA 106-04-00 and Annual Environmental Management Report (AEMR) requirements under the conditions of mining leases CL229, CL395 and ML1531. These conditions and where they have been addressed in the report are listed in **Appendix 1**.

Names and contact details of the key personnel who are responsible for environmental management at the Maxwell Infrastructure site are provided in **Table 2**.

**Table 2. Site contacts**

Name	Role	Contact details
James Johnson	General Manager	(02) 6542 0283 <a href="mailto:jjohnson@malabarresources.com.au">jjohnson@malabarresources.com.au</a>
Robert Hayes	Mining Engineering Manager	(02) 6542 0283 <a href="mailto:rhayes@malabarresources.com.au">rhayes@malabarresources.com.au</a>
Donna McLaughlin	Health, Safety, Environment and Community Manager	(02) 6542 0283 <a href="mailto:dmclaughlin@malabarresources.com.au">dmclaughlin@malabarresources.com.au</a>

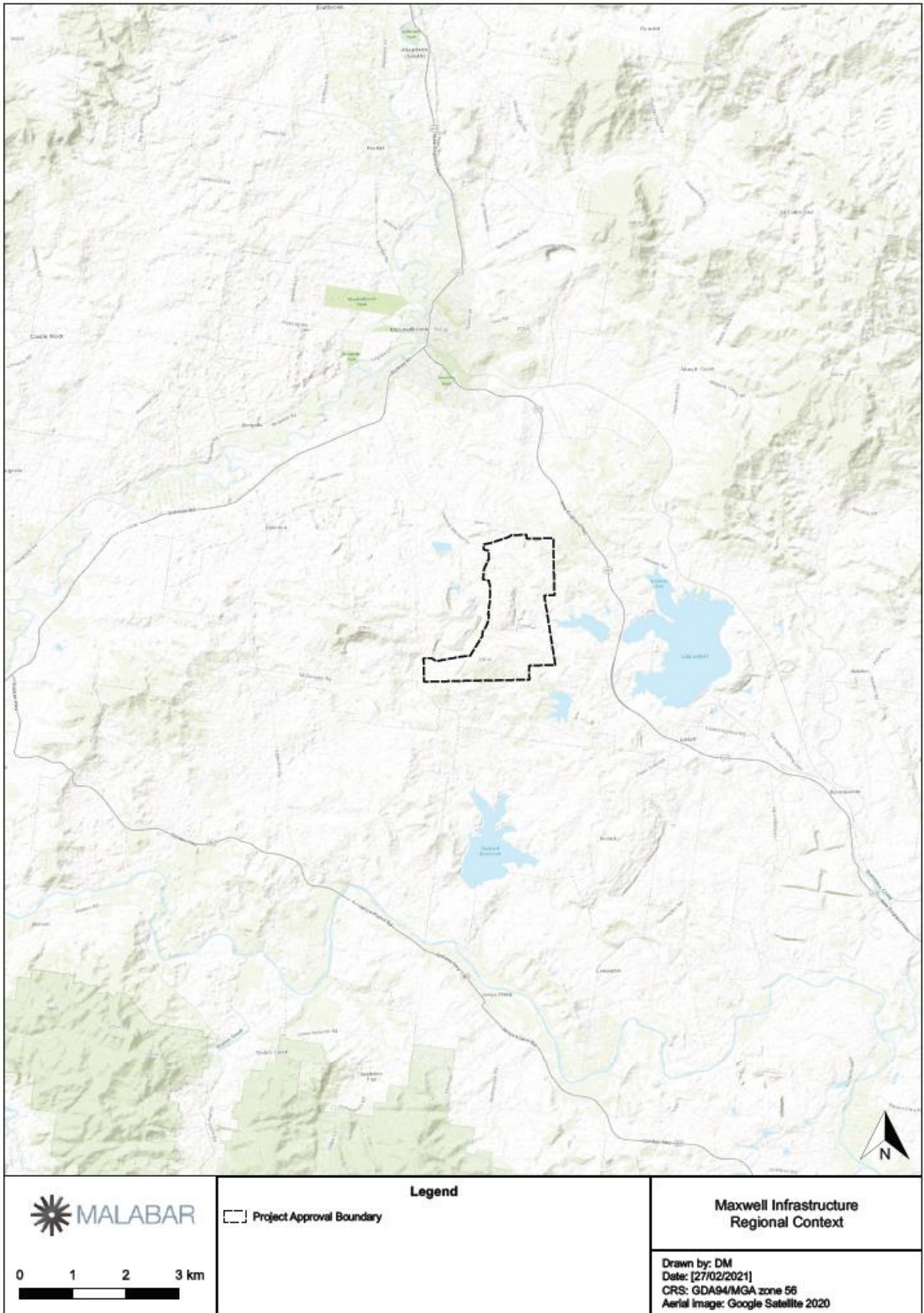


Figure 1. Regional context



Figure 2. Site boundaries

## 4 APPROVALS

Existing statutory approvals relevant to the Maxwell Infrastructure site are listed in **Table 3**.

On 22 December 2020, the NSW Independent Planning Commission approved the development application for State Significant Development (SSD) 9526 for the Maxwell Underground Coal Mine Project (Maxwell UG Project). The Maxwell UG Project involves the development of an underground coal mine and the utilisation of the substantial facilities that already exist at the Maxwell Infrastructure site. It also includes a transport and services corridor between the Maxwell UG Project mine entry area and the Maxwell Infrastructure site. The Development Consent for SSD 9526 incorporates the development authorised under the existing approval for the Maxwell Infrastructure site. The consent requires the surrendering of PA 06\_0202 within 12 months of the commencement of development under SSD 9526. Development under SSD 9526 shall commence during the next reporting period.

**Table 3. Statutory approvals**

Statutory Approval Reference	Description
SSD 9526	Development Consent issued in 2020 under Section 4.36 of the <i>Environmental Planning and Assessment Act 1979</i> (EP&A Act) for the Maxwell UG Project.
PA 06_0202	Project Approval issued in 2008 under Section 75J of the (now repealed) Part 3A of the <i>Environmental Planning and Assessment Act 1979</i> (EP&A Act) for the Drayton Mine Extension Project.
DA 106-04-00	Development Consent issued in 2000 under Section 76 (A), 9 and 80 of Part 4 of the EP&A Act for use of the existing Drayton Rail Loop and Antiene Rail Spur.
EPL1323	Environment Protection Licence issued in 2000 under Section 55 of the <i>Protection of the Environment Operations Act 1997</i> for mining for coal and coal works.
CL229	Coal Lease issued in 1992 under the <i>Mining Act 1973</i> .
CL395	Coal Lease issued in 1992 under the <i>Mining Act 1973</i> .
ML1531	Mining Lease issued in 2003 under the <i>Mining Act 1992</i> .
A173	Authorisation issued in 1998 under the <i>Mining Act 1973</i> .
20BL171953	Bore licence issued under the <i>Water Act 1912</i> for a test bore.
20BL171954	Bore licence issued under the <i>Water Act 1912</i> for a test bore.
20BL171955	Bore licence issued under the <i>Water Act 1912</i> for a test bore.
20BL171956	Bore licence issued under the <i>Water Act 1912</i> for a test bore.
20BL171957	Bore licence issued under the <i>Water Act 1912</i> for a test bore.

Statutory Approval Reference	Description
20BL174016	Bore licence issued under the <i>Water Act 1912</i> for a monitoring bore.
20BL174017	Bore licence issued under the <i>Water Act 1912</i> for a monitoring bore.
20BL174018	Bore licence issued under the <i>Water Act 1912</i> for a monitoring bore.
WAL 41559	Water Access Licence issued under the <i>Water Management Act 2000</i> for aquifer water extraction.
WAL 41491	Water Access Licence issued under the <i>Water Management Act 2000</i> for aquifer water extraction.

## 5 OPERATIONS SUMMARY

### 5.1 Mining Operations

Under Schedule 2, Condition 5 of development consent PA 06\_0202, no mining operations can take place at the Maxwell Infrastructure site after 31 December 2017. Mining operations includes coal extraction, processing and transportation activities. As such, approved limits for all materials associated with mining operations during the reporting period are zero, as are the actual and planned production figures. This is shown in the production summary for the reporting period presented in **Table 4**.

**Table 4. Production summary (extraction)**

Material	Approved limit	Previous reporting period (actual)	This reporting period (actual)	Next reporting period (forecast)
<b>Waste rock / overburden (bcm)</b>	0	0	0	0
<b>ROM coal / ore (t)</b>	0	0	0	0
<b>Coarse reject (t)</b>	0	0	0	0
<b>Fine reject (tailings) (t)</b>	0	0	0	0
<b>Saleable product (t)</b>	0	0	0	0

### 5.2 Other Operations

A geotechnical drilling program was undertaken for the Maxwell UG Project. The program consisted of a combination of drill holes and test pits for geotechnical investigations. All of the drill holes and the majority of test pits were undertaken on Exploration Licence (EL) 5460. Five test pits were undertaken within the proposed transport corridor inside CL229. All holes and test pits were rehabilitated in accordance with the Rehabilitation Management Plan that was prepared for the program.

Although mining operations have ceased at the Maxwell Infrastructure site, rehabilitation of the completed mining areas along with ancillary activities, including upkeep of roads and maintenance of equipment, is progressing.

During the reporting period, site activities occurred during daylight hours, typically on a five days per week basis. There were no coal processing or coal transport activities during the reporting period. The Maxwell Infrastructure rail loop was used on occasion for the temporary stowage of empty rolling stock by Aurizon Operations Ltd. Fixed site infrastructure continued to be preserved under a care and maintenance program.

A contractor was employed to assist with the rehabilitation activities. Typical equipment on site during the reporting period consisted of a 30 tonne and 42 tonne excavator, one ejector truck, three dozers ranging from D6 to D11, one water cart and two agricultural tractors. Other smaller ancillary equipment was brought in on an “as-needed” basis.

During the reporting period, works focused on final landform development and rehabilitation. These activities are discussed in more detail in **Section 9**.

**5.3 Next Reporting Period**

It is anticipated that during the next reporting period development under SSD 9526 for the Maxwell UG Project will commence. Further exploration activities will also be undertaken for the Maxwell UG Project.

**6 ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW**

DPIE provided a letter in April 2020 stating that they had reviewed the 2019 AEMR and considered the report to satisfy the reporting requirements of PA 06\_0202 and the Department’s Annual Review Guideline (October 2015). No response was provided by the Resources Regulator.

Improvement measures from the 2019 AEMR, actions required by regulatory notices and outstanding actions from the 2018 Independent Environmental Audit (IEA) are listed in **Table 5**. The next IEA will be undertaken during the next reporting period.

**Table 5. Actions required from previous Annual Review, improvement actions and IEA actions**

Action required	Requested by	Action taken
Undertake an assessment of the risks to the rehabilitation of the Site. The Rehabilitation Risk Assessment must identify and evaluate all potential risks to achieving the final land use and the specific measures to be implemented to mitigate those risks and have regard to the AS NZS ISO 31000:2009 Risk Management – Principles and Guidelines to support any rehabilitation risk assessment.	Resources Regulator	Completed - A Rehabilitation Risk Assessment was undertaken by Maxwell on 28 January 2020.

Action required	Requested by	Action taken
<p>Prepare a Draft Maxwell Infrastructure Rehabilitation Risk Assessment Report which encompasses the Rehabilitation Risk Assessment undertaken in Direction 1 and submit it to <a href="mailto:nswresourcesregulator@service-now.com">nswresourcesregulator@service-now.com</a>.</p>	<p>Resources Regulator</p>	<p>Completed - A draft Rehabilitation Risk Assessment Report was prepared and submitted to the Resources Regulator on 4 March 2020.</p>
<p>Prepare a Final Maxwell Infrastructure Rehabilitation Risk Assessment Report which encompasses the Draft Maxwell Infrastructure Rehabilitation Risk Assessment Report (as described in Direction 2) and its associated feedback from the Regulator. Submit the report to <a href="mailto:nswresourcesregulator@service-now.com">nswresourcesregulator@service-now.com</a>.</p>	<p>Resources Regulator</p>	<p>Completed - The Resources Regulator provided feedback on the draft Rehabilitation Risk Assessment Report on 9 April 2020. A final Rehabilitation Risk Assessment Report was prepared on 27 April 2020.</p>
<p>Revise the Rehabilitation Cost Estimate (RCE) for the Authorisations in accordance with ESG1: Rehabilitation Cost Estimate Guidelines (June 2017). To comply with this Direction, you must utilise the Regulator's Rehabilitation Cost Estimate Tool (May 2019). Submit the RCE electronically using a Form ESF2: Rehabilitation Completion and/or Review of Rehabilitation Cost Estimate to <a href="mailto:nswresourcesregulator@service-now.com">nswresourcesregulator@service-now.com</a>.</p>	<p>Resources Regulator</p>	<p>Completed - A revised Rehabilitation Cost Estimate was submitted to the Resources Regulator on 15 June 2020.</p>
<p>The Rehabilitation and Offset Management Plan is from 2013 and should be updated. If the current draft MOP amendment that is with DPIE - Planning and Assessment and DPIE - Resource Regulator is approved, the Rehabilitation and Offset Management Plan should be updated for consistency (Recommendation (REC) 5).</p>	<p>IEA</p>	<p>Ongoing - The MOP term was extended until 30 June 2021 and as such the Rehabilitation and Offset Management Plan has not been updated.</p>

Action required	Requested by	Action taken
Ensure for the next update of the Aboriginal Cultural Heritage Plan, that OEH are included in the consultation (REC 6).	IEA	Completed - Heritage NSW (previously OEH) were consulted during the preparation of a revised Aboriginal Cultural Heritage Management Plan. The plan is still under review by DPIE.
Liaison with DPIE - Resource Regulator and DPIE - Planning and Assessment regarding an agreement on the final landform for the site. Based on the information provided to SLR, the site will continue to complete rehabilitation as per the landform in the approved 2015 MOP unless directed otherwise from DPIE - Resource Regulator or DPIE - Planning and Assessment (REC 16a).	IEA	Completed - Maxwell received correspondence from DPIE in November 2020 stating that <i>"In its assessment of the Maxwell Underground Coal Mine Project (SSD 9526), the Department noted that the Maxwell Infrastructure site contains three open cut voids that are approved to be retained following the conclusion of mining operations under MP 06_0202. While the Environment Assessment for the Drayton Mine Extension Project identified opportunities for the backfilling of the North and East Voids, thereby resulting in the Conceptual Final Landform in Appendix 7, the backfilling of the voids was dependent upon future commercial agreements with third parties. Should these agreements not eventuate, MP 06_0202 allows for the retention of three final voids for water-storage purposes."</i>
The eastern face of the North tip is an area of rehabilitation that has failed. It is noted the area that has failed is one of the steeper rehabilitated slopes. Implement actions to attempt to rectify this problem including additional work on the landform, use of ameliorants, and a review of seed mix (REC 16e)	IEA	Completed - An area on the eastern face of the North tip (approximately 6.5 hectares in size) was remediated during the reporting period. Works included the re-engineering contours, application of soil ameliorants and re-seeding.
Update the Aboriginal Cultural Heritage Management Plan	2019 AEMR	Completed - An updated Aboriginal Cultural Heritage Management Plan was submitted to DPIE for review and approval on 6 July 2020. The plan is still under review by DPIE.
Implement a revised Spontaneous Combustion Management Plan (approved in February 2020)	2019 AEMR	Completed - The revised Spontaneous Combustion Management Plan was implemented during the reporting period.



Action required	Requested by	Action taken
Implement a weed control program targeted at Galenia, Prickly Pear, Creeping Pear and Golden Wreath Wattle. This will include targeting Creeping Pear in the Drayton Wildlife Refuge and Northern Offset area and Galenia and Prickly Pear in the Southern Offset area.	2019 AEMR	Completed - A weed control program targeting Galenia, Prickly Pear, Creeping Pear and Golden Wreath Wattle was implemented during the reporting period.
Relocate logs for habitat in the Southern Offset Area	2019 AEMR	Not required - No clearing activities were undertaken during the reporting period, as such there were no trees available to be relocated.
Install nest boxes in the Southern Offset Area	2019 AEMR	Completed - Nest boxes were installed within the Northern Rehabilitation area and Southern Offset area.
Infill plant in the Southern Offset Area	2019 AEMR	Ongoing - The Southern Offset Area is scheduled to be planted during the FY22 tree planting program.
Implement a revised Flora and Fauna Management Plan, once approved	2019 AEMR	Completed - An updated Flora and Fauna Management Plan was submitted to DPIE for review and approval on 7 February 2020. The plan is still under review by DPIE.
Implement a revised Water Management Plan (approved in February 2020)	2019 AEMR	Completed - The revised Water Management Plan was implemented during the reporting period.
Construct a new monitoring bore within the Permian sequence south of the open cut mining area, in consultation with DPIE – Water, and incorporate it into the groundwater monitoring program.	2019 AEMR	Ongoing - Works were originally scheduled to be completed during the reporting period. Maxwell requested an extension until August 2021. The extension was granted by Natural Resources Access Regulator.
Review the analyte suite routinely monitored in the groundwater monitoring program.	2019 AEMR	Completed - The analyte suite was internally reviewed during the reporting period.
Seed 30 hectares of additional rehabilitation.	2019 AEMR	Completed - Approximately 34 hectare of new rehabilitation was undertaken during the reporting period.

Action required	Requested by	Action taken
Undertake a tree planting program in existing mine rehabilitation within the conceptual woodland corridor.	2019 AEMR	Completed - Two tree planting programs were undertaken during the reporting period. The programs targeted a total of 49 hectares of existing mine rehabilitation within the conceptual woodland corridor.
Continue to install rock structures to assist in appropriate water management.	2019 AEMR	Completed - Five rock structures were installed in 2020.
Complete remedial works to address areas of poor performing rehabilitation.	2019 AEMR	Completed - An area on the eastern face of the North tip (approximately 6.5 hectares in size) was remediated during the reporting period. Works included the re-establishing of contours, application of soil ameliorants and re-seeding.
Complete and implement an approved MOP for FY21-FY22	2019 AEMR	Ongoing - The MOP term was extended until 30 June 2021. A new MOP will be submitted during the next reporting period.
Create and implement an approved, stand-alone Mine Closure Plan.	2019 AEMR	Ongoing - The Mine Closure Plan is contained within the approved MOP. The MOP term was extended until 30 June 2021.
Create and implement an approved, stand-alone Final Void Management Plan.	2019 AEMR	Ongoing - The Final Void Management Plan is contained within the approved MOP. The MOP term was extended until 30 June 2021.
Revise and update the Rehabilitation and Offset Management Plan	2019 AEMR	Ongoing - The MOP term was extended until 30 June 2021 and as such the Rehabilitation and Offset Management Plan has not been updated.
Revise and update the Offset Strategy	2019 AEMR	Ongoing - The MOP term was extended until 30 June 2021 and as such the Offset Strategy has not been updated.

## 7 ENVIRONMENTAL PERFORMANCE

Maxwell Infrastructure's Environmental Monitoring Program provides an overview of the site's environmental monitoring. Environmental monitoring is a significant indicator of the site's environmental performance. In April 2020, a revised Environmental Monitoring Program was approved by the Secretary of DPIE. This revision was undertaken to align the Environmental Monitoring Program with recent changes made to various environmental management plans.

The locations of all environmental monitoring sites are shown in **Appendix 2**.

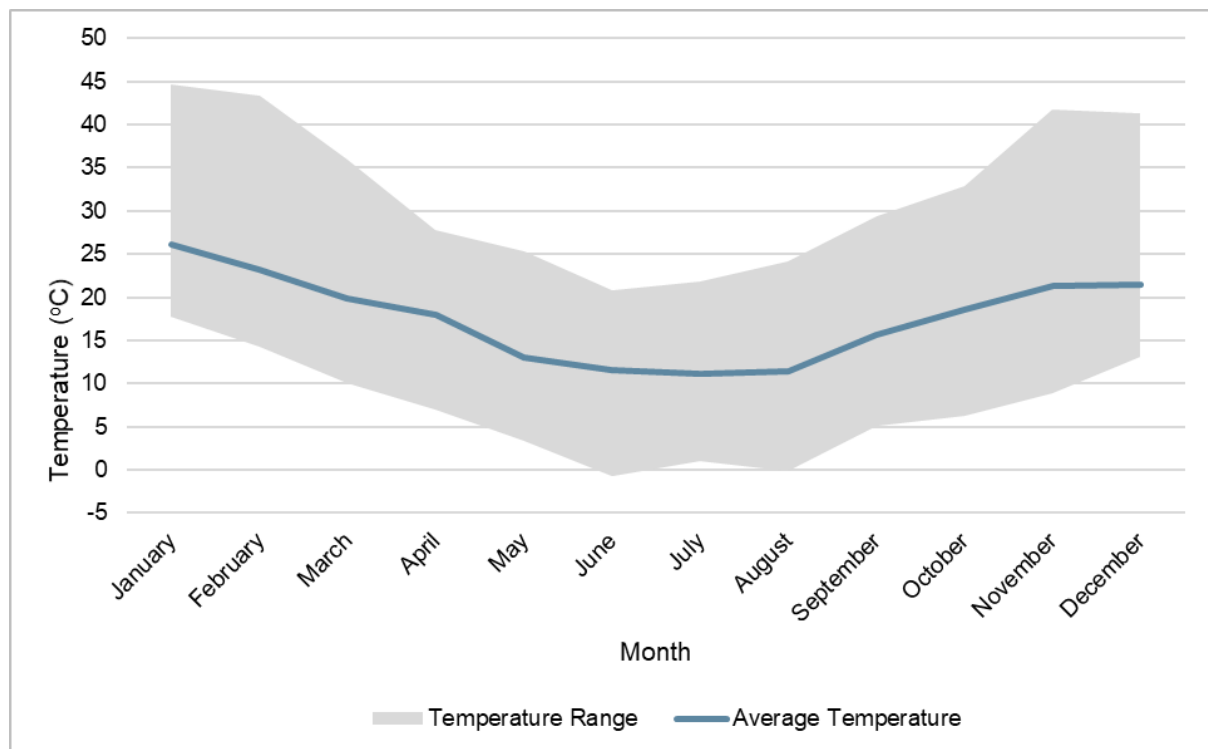
## 7.1 Meteorological Monitoring

### Management

Meteorological conditions such as wind speed, wind direction, temperature, rainfall, solar radiation and humidity are monitored at the Maxwell Infrastructure meteorological station (see **Appendix 2**).

### Performance

During the reporting period, temperature trends were similar to previous years with a peak in summer and trough in winter. This is shown in **Figure 3**. Average temperatures were similar to the previous five years, being within 1.3 degrees Celsius (°C) of the five-year average for all months. The exception to this was December which was 2.3°C cooler than the five-year average, reflecting the onset of La Niña conditions in late 2020.

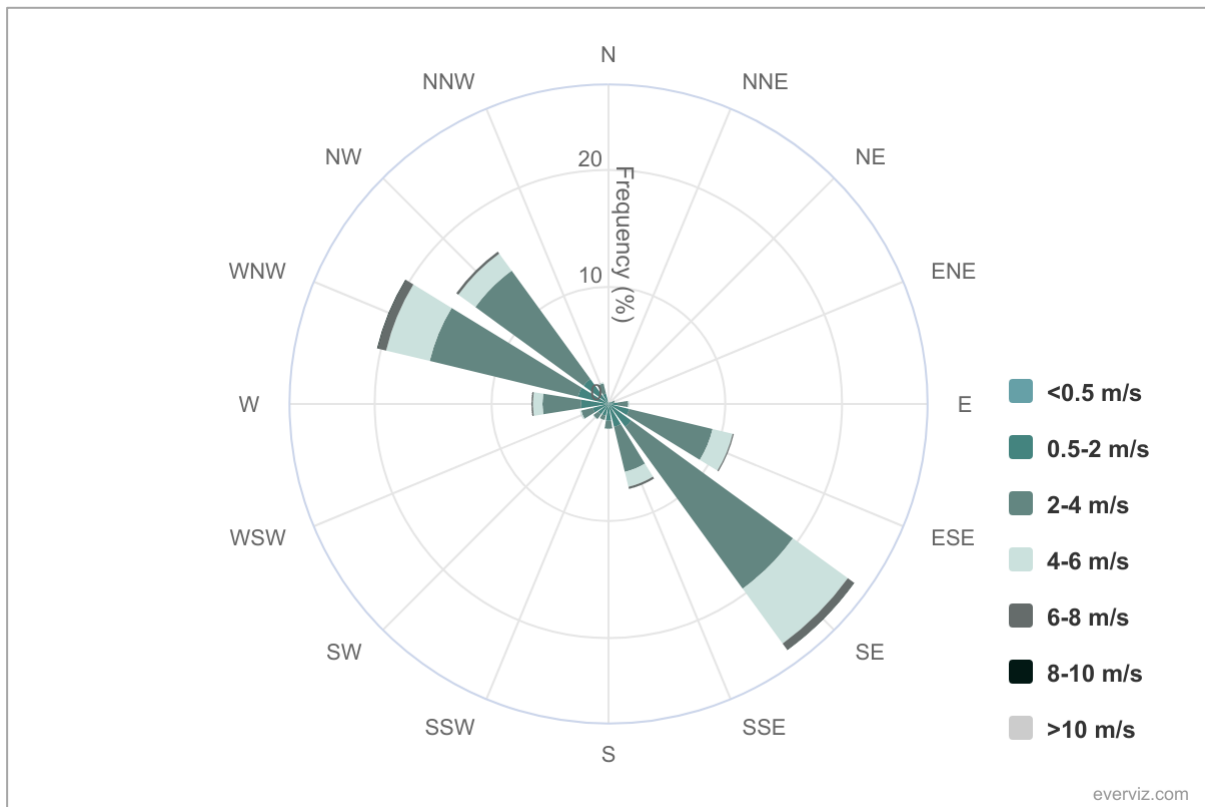


**Figure 3. Temperature by month for the reporting period**

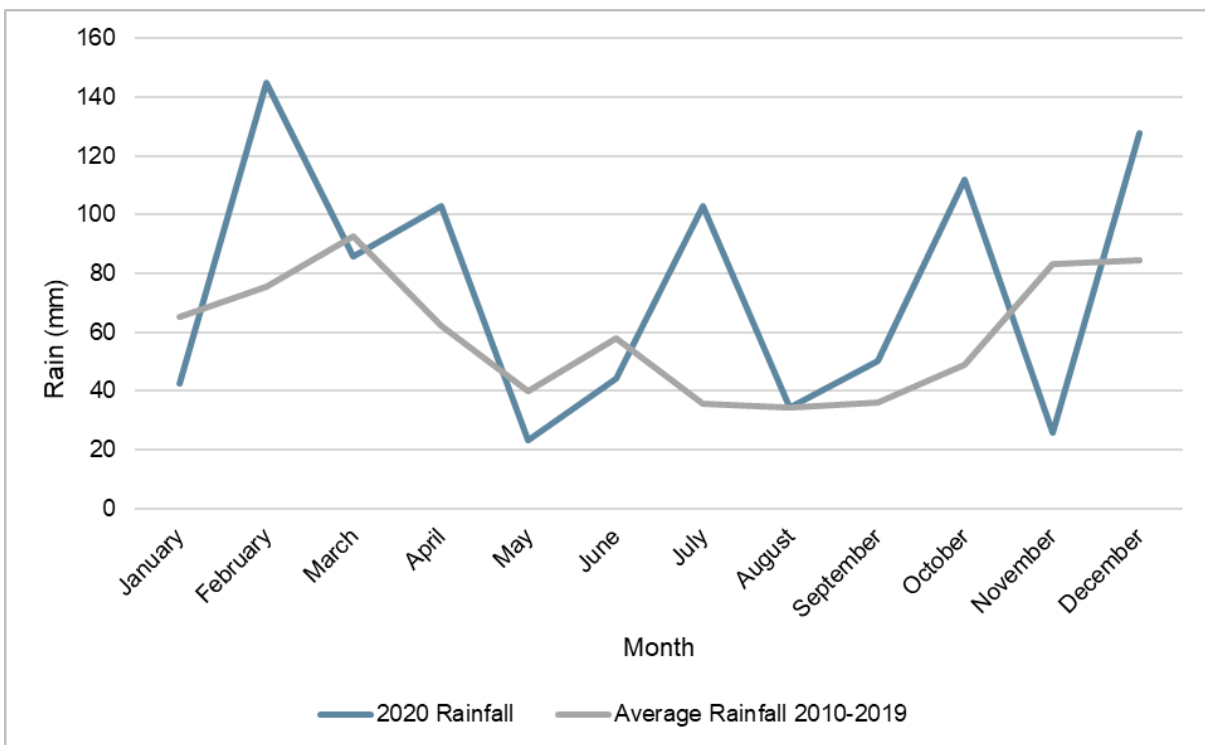
A summary of wind monitoring over the reporting period is presented in **Figure 4**. Consistent with previous years, and consistent with the geography of the Hunter Valley, the predominant winds were from the south-east and north-west to west-north-west. As in previous years, winds from the south-east generally dominated during the warmer months and winds from the north-west generally dominated during the cooler months. In total 82 per cent of wind speeds throughout the reporting period were in the range of 0.5 to 4 metres per second (m/s).

Rainfall recorded during the reporting period was above average. This can be seen in **Figure 5**, which shows monthly rainfall during the reporting period compared to the average monthly rainfall for the previous 10 years. The increase in rainfall was consistent with the [NSW State Seasonal Update for December 2020](#), published by the NSW Department of Primary Industries Climate Unit, which noted that the recovery as a result increased rainfall from the 2017 to 2020 drought event continued across most of NSW during December 2020. This reflects the influence of a La Niña event that typically increases the chance of higher than median rainfall across NSW, however high rainfall variability or irregularity can still be

common due to the influence of localised short-term synoptic weather patterns, such as can be seen for November in **Figure 5**.



**Figure 4. Wind speed and direction for the reporting period**



**Figure 5. Rain by month for the reporting period with historic comparison**

**Proposed Improvements**

No changes to meteorological monitoring are planned for the next reporting period.

## 7.2 Noise

### Management

Potential noise impacts from the Maxwell Infrastructure site are managed in accordance with the Noise Management Plan. The purpose of the Noise Management Plan is to detail statutory requirements and outline the controls to be implemented for the management of noise aspects associated with the Maxwell Infrastructure site and the Antiene rail spur.

Operations at the Maxwell Infrastructure site were restricted to daylight hours during the reporting period and typically on a five days per week basis. This schedule limited potential noise impacts to the less sensitive times for potential receptors.

### Performance

Attended noise monitoring and modelling was conducted during the reporting period to assess noise impacts and determine compliance to approval criteria. Noise monitoring and modelling locations and are shown in **Appendix 2**. Noise impacts were assessed for the following periods:

- Day:
  - 7 am to 6 pm Monday to Saturday
  - 8 am to 6 pm Sundays and public holidays
- Evening:
  - 6 pm to 10 pm
- Night:
  - 10 pm to 7 am Monday to Saturday
  - 10 pm to 8 am Sundays and public holidays

Attended noise monitoring was conducted on a six-monthly basis during the reporting period in accordance with the Noise Management Plan. Attended noise monitoring results were used to model noise impacts and assess compliance to approval criteria at relevant locations. Results for the reporting period are summarised in **Table 16** and **Table 17** in **Appendix 3**.

Approval criteria was not exceeded for any noise monitoring parameter at any location during the reporting period. Noise generated by the Maxwell Infrastructure site alone was consistently inaudible and too low to be measured. This is below the EA predictions but was expected. Similarly, cumulative noise impacts were significantly below the approval criteria. Maximum noise levels from the Maxwell Infrastructure site are compared to maximum noise levels recorded over the previous six years in **Figure 19** in **Appendix 3**. Results show that there has been a reduction in noise levels since mining operations ceased in late 2016.

The noise model used for the noise assessment in the EA was validated for the reporting period by an acoustic consultant, as best as possible given the non-operational status of the mine, by comparing actual attended noise monitoring data in the reporting period with the predictions made in the noise model.

### Proposed Improvements

During the next reporting period, the hardware and software for the Maxwell Infrastructure real-time noise monitor will be upgraded.

## 7.3 Blasting

### Management

Potential blast impacts from the Maxwell Infrastructure site are managed in accordance with the Blast Management Plan. The purpose of the Blast Management Plan is to detail statutory

requirements and outline the controls to be implemented for the management of blasting related aspects associated with the Maxwell Infrastructure site.

Operational blasting is no longer required at the Maxwell Infrastructure site as mining operations ceased in 2016, however some blasting may still be required from time to time to assist with rehabilitation and landform shaping.

### Performance

No blasting was undertaken during the reporting period.

### Proposed Improvements

No changes to blast management are planned for the next reporting period.

## 7.4 Air Quality

### Management

Potential air quality impacts from the Maxwell Infrastructure site are managed in accordance with the Air Quality and Greenhouse Gas Management Plan. Areas of disturbance were revegetated during the reporting period to reduce the risk of wind-blown dust. Obsolete roads have been rehabilitated, haul road watering of remaining roads and hard stand areas and restriction of vehicle speeds has continued as required to maintain wheel generated dust to acceptable levels.

In accordance with the Air Quality and Greenhouse Gas Management Plan, a combination of depositional dust gauges and a tapered element oscillating microbalance (TEOM) monitor were used for the Maxwell Infrastructure site during the reporting period to:

- monitor air quality surrounding the Maxwell Infrastructure site;
- assist air quality management; and
- assess compliance to air quality impact limits specified by approval conditions.

These monitoring locations are shown in **Appendix 2**. On-site E-Samplers also provide an indication of air quality conditions and assist with the management of potential PM<sub>10</sub> (particulate matter 10 micrometres or less in diameter) emissions from operations.

### Performance

A summary of air quality monitoring results during the reporting period are presented below including an assessment of compliance to approval criteria, a comparison to predictions made in the EA and consideration of long-term trends.

#### Total Suspended Particulates (TSP)

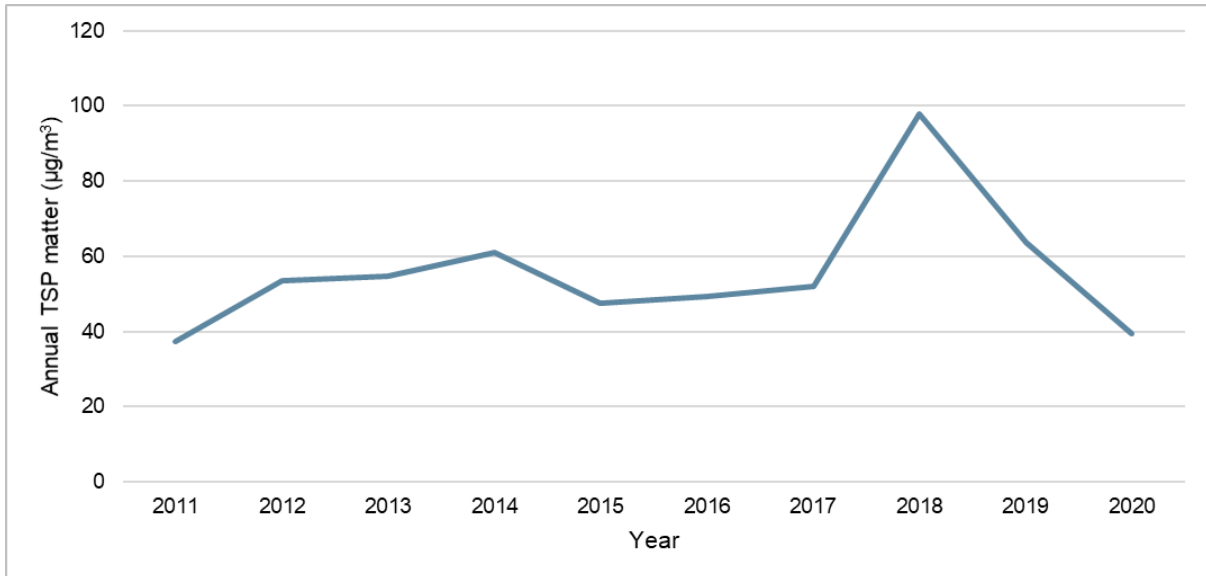
In accordance with the Air Quality and Greenhouse Gas Management Plan, TSP levels were calculated during the reporting period based on PM<sub>10</sub> results recorded at the TEOM monitor. As shown in **Table 6**, the annual TSP level was lower than the impact assessment criterion and the EA prediction for year 10 of operations.

**Table 6. Monitoring summary – TSP (µg/m<sup>3</sup>)**

Monitor	Averaging period	Approval criterion	EA year 10 prediction	Current reporting period result (2020)
TEOM	Annual	90	68.3	39.4

The long-term trend for the annual TSP level, over a 10-year period, is shown in **Figure 6**. The data shows a significant reduction from 2019 which is likely attributed to the higher-than-average rainfall received during 2020 across regional NSW.

The TSP result recorded in 2018 was particularly high. An investigation at the time into the 2018 result found the elevated levels were being influenced by a lessee feeding cattle in an exposed area immediately adjacent to the monitor and were not attributable to impacts from the Maxwell Infrastructure site nor indicative of regional conditions.



**Figure 6. Long-term results for TSP**

*Note: Following investigations, it was determined that the elevated 2018 result was not attributable to impacts from the Maxwell Infrastructure site.*

### PM<sub>10</sub>

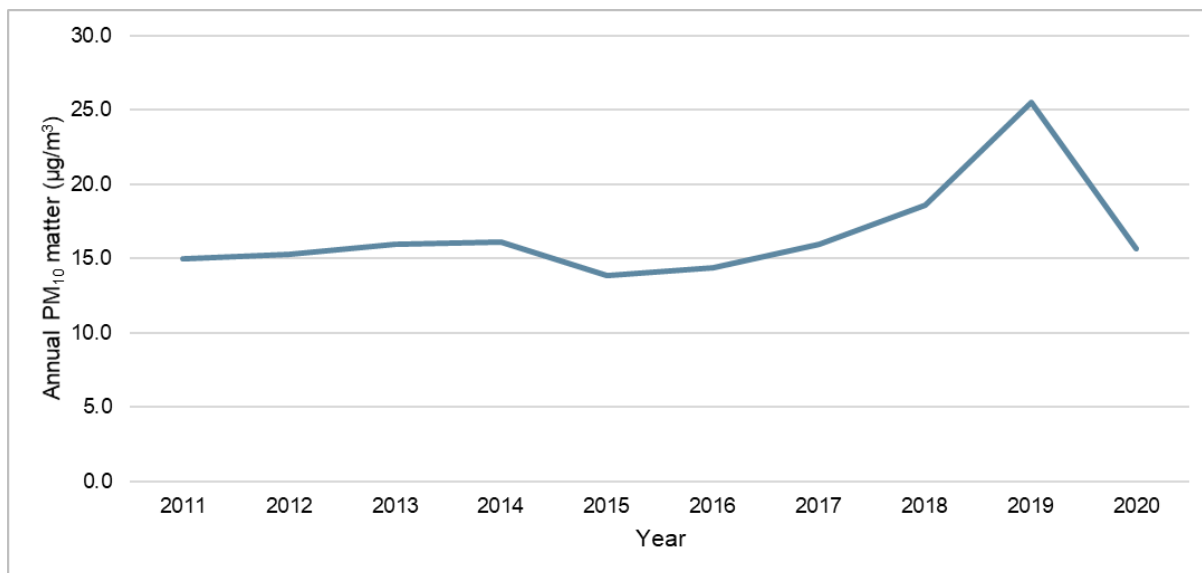
As shown in **Table 7**, the annual PM<sub>10</sub> level remained below the annual impact assessment criterion and the EA prediction for year 10 of operations.

With the exception of 2020, the long-term trend in annual PM<sub>10</sub> levels, shown in **Figure 7**, illustrates an upward trend since 2015. This trend is primarily associated with regional air quality, consistent with drought conditions and not attributable to impacts from the Maxwell Infrastructure site, where activities have decreased since mining ceased in October 2016. PM<sub>10</sub> levels monitored by the UHAQMN have shown a similar trend across the region since 2015.

Higher than average rainfall received during 2020 across regional NSW has resulted in a significant reduction in PM<sub>10</sub> results recorded during the reporting period at both the Maxwell Infrastructure TEOM and by the UHAQMN relative to the 2019 reporting year.

**Table 7. Monitoring summary – PM<sub>10</sub> matter (µg/m<sup>3</sup>)**

Monitor	Averaging period	Approval criterion	EA year 10 prediction	Current reporting period result (2020)
TEOM	Annual	30	21.4	15.7



**Figure 7. Long-term results for PM<sub>10</sub>**

All 24-hour PM<sub>10</sub> levels for the reporting period are presented in **Appendix 4**. The 24-hour criterion of 50 micrograms per cubic metre (µg/m<sup>3</sup>) was exceeded on eight days during the reporting period. Investigations into each of these exceedances determined that these results occurred on days when the monitor was not generally downwind of the operation. Rather, the exceedances were on days where there were regional dust events or impacts from bushfires and not attributable to operations at the Maxwell Infrastructure site. Details of these exceedances are provided in **Section 11.2**.

### Deposited Dust

Deposited dust results were significantly less than the impact assessment criteria for both the maximum increase in dust level and maximum total deposited dust. This can be seen in the summary of results presented in **Table 8** and **Table 9**.

However, **Table 9** shows that annual average deposited dust results were higher during the reporting period than EA predictions for year 10 of operations. Operational activity during the reporting period was significantly less than that modelled in the EA, which suggests that background levels of deposited dust are higher than was expected in the EA model.

The long-term trend in annual average deposited dust levels is shown in **Figure 8**. Like other air quality parameters, deposited dust results were previously trending upwards between 2015 and 2018. This trend was likely to be associated with regional air quality, consistent with drought conditions and not attributable to impacts from the Maxwell Infrastructure site, as activities have decreased significantly since mining ceased in October 2016. Results for 2019 and 2020 show a reduction in deposited dust levels.

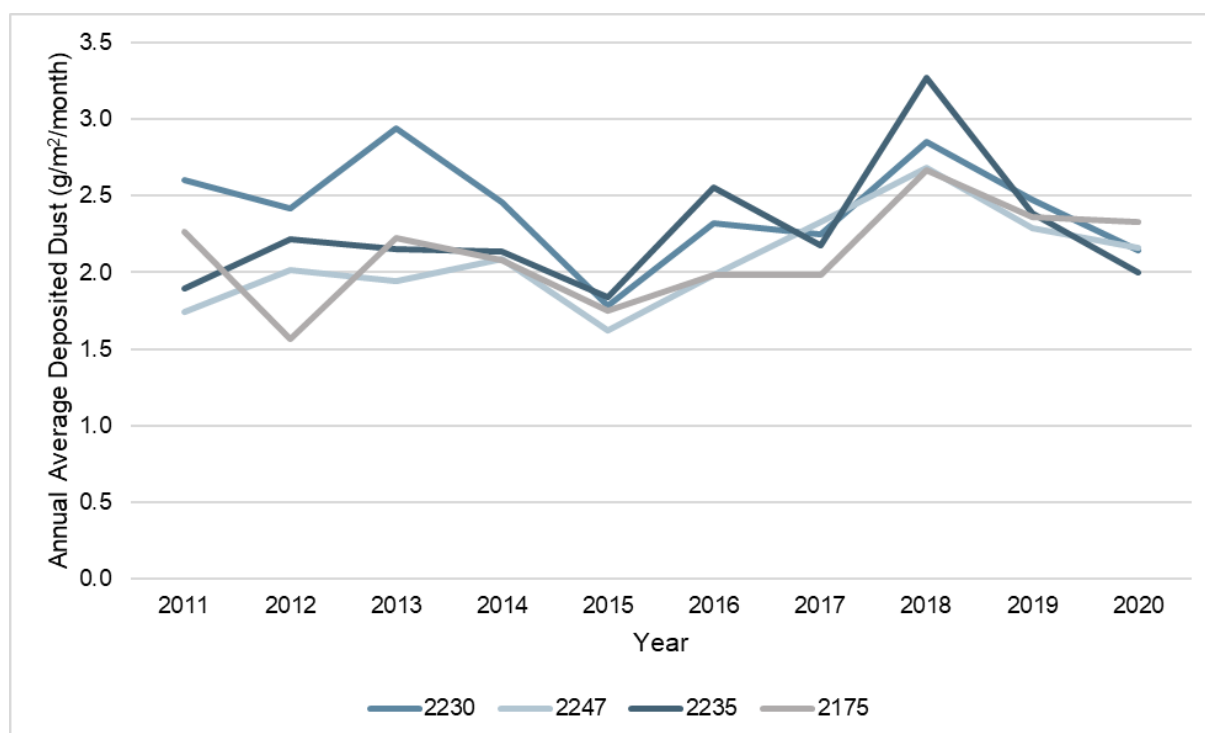
**Table 8. Monitoring summary – incremental deposited dust (g/m<sup>2</sup>/month)**

Monitor	Averaging period	Approval criterion	Previous reporting period result (2019)	Current reporting period result (2020)
2230	Annual	2	0.0	0.0
2247			0.1	-0.1
2235			-0.1	0.1
2175			0.1	-0.1



**Table 9. Monitoring summary - total deposited dust (g/m<sup>2</sup>/month)**

Monitor	Averaging period	Approval criterion	EA year 10 prediction	Current reporting period result (2020)
2230	Annual	4	1.5	2.1
2247			1.4	2.2
2235			1.3	2.0
2175			1.3	2.3



**Figure 8. Long-term results for deposited dust**

### Proposed Improvements

During the next reporting period, the Maxwell Infrastructure TEOM will be upgraded to include the measurement of particulate matter 2.5 micrometres or less in diameter (PM<sub>2.5</sub>).

## 7.5 Aboriginal Cultural Heritage

### Management

Aboriginal cultural heritage at the Maxwell Infrastructure site is managed in accordance with the Aboriginal Cultural Heritage Management Plan. As described in the management plan, 47 sites were salvaged at the Maxwell Infrastructure site prior to the reporting period. All salvaged artefacts remain stored on the premises in a secure location. Thirteen known sites remain fenced and conserved in-situ.

A revised Aboriginal Cultural Heritage Management Plan was submitted for review and approval by the Secretary of DPIE in July 2020. The revision includes amendments to reflect ownership and operational changes since the last review, change in roles and responsibilities and improvements to the salvage and recording of any new sites. The revised plan was

prepared in consultation with Registered Aboriginal Parties and Heritage NSW and is still under review by DPIE.

### **Performance**

A review of the existing fenced sites was undertaken during the reporting period by a qualified archaeologist and identified some minor discrepancy between the existing fenced locations and the Aboriginal Heritage Information Management System site locations. A site validation report was prepared and where discrepancies did exist, a precautionary approach was undertaken and both locations were fenced.

There was no disturbance of any existing or new Aboriginal cultural heritage sites or objects during the reporting period.

### **Proposed Improvements**

No improvements to the management of Aboriginal heritage are proposed for the next reporting period.

## **7.6 Non-Aboriginal Heritage**

### **Management**

No statutory-listed non-Aboriginal heritage sites have been identified within the Maxwell Infrastructure project area. However, one site, outside of the previously mined area, was noted in the EA as having high local significance and is fenced to protect it from disturbance.

### **Performance**

The locally significant heritage site was not impacted during the reporting period and remains fenced to protect it from disturbance.

### **Proposed Improvements**

No improvements to the management of non-Aboriginal heritage are proposed for the next reporting period.

## **7.7 Transport**

### **Management**

Coal transportation activities from the Maxwell Infrastructure site were not permissible during the reporting period under development consent PA 06\_0202. The rail loop remains under care and maintenance and relevant conditions of the approval remain in place. This includes:

- reporting requirements;
- communications with Mt Arthur Coal on the rail loop and Antiene rail spur; and
- the continuation of the Joint Community Consultative Committee (CCC) with Mt Arthur Coal.

### **Performance**

No coal transportation activities were undertaken from Maxwell Infrastructure during the reporting period however the Maxwell Infrastructure rail loop was used for the temporary stowage of empty rolling stock by Aurizon Operations Ltd. The number of train movements and the date and time of each train movement is provided in **Appendix 5**.

A number of activities associated with development consent DA 106-04-00 undertaken during the reporting period including:

- Crushing of a rail ballast stockpile and use of the materials from that stockpile to re-sheet unsealed roads on site. This work was conducted under *The Drayton Spur Line rail ballast and formation exemption 2020* and the conditions of that exemption.
- Various maintenance activities including re-railing, repair of erosion scouring at drainage inlets and outlets, culvert cleaning, track grinding, testing and inspections.

### **Proposed Improvements**

Preventative maintenance work on sections of the Antiene Rail Spur, including rail grinding, condition assessments, inspections and testing will be undertaken during the next reporting period.

No coal transportation activities are planned for the next reporting period.

## **7.8 Visual Impact**

### **Management**

A formalised annual visual inspection process is implemented at Maxwell Infrastructure. The inspection requires photographs to be taken towards the site from four designated vantage points and compared to EA predictions.

As predicted in the EA, the Maxwell Infrastructure site has minimal visual impact. Woodland remnants have been retained around and throughout the site and mature trees actively screen infrastructure and buildings.

### **Performance**

A comparison of photomontages of predicted views in year 10 of operations with the current views from the same or a similar vantage points indicates that visual impacts are low and consistent with EA predictions. These comparisons are provided in **Appendix 6**.

Favourable weather conditions during the reporting period have improved vegetation growth and coverage, therefore improving the visual screening of site from the four designated vantage points.

### **Proposed Improvements**

No improvements to the management of visual impacts are proposed for the next reporting period.

## **7.9 Greenhouse Gas and Energy Efficiency**

### **Management**

Maxwell Infrastructure manages greenhouse gas (GHG) and energy efficiency in accordance with the Air Quality and Greenhouse Gas management Plan. GHG emissions attributable to Maxwell Infrastructure operations, including emissions from fuel and energy consumption, are regularly quantified. This information is then used to manage GHG emissions and energy consumption to the minimum practicable level.

### **Performance**

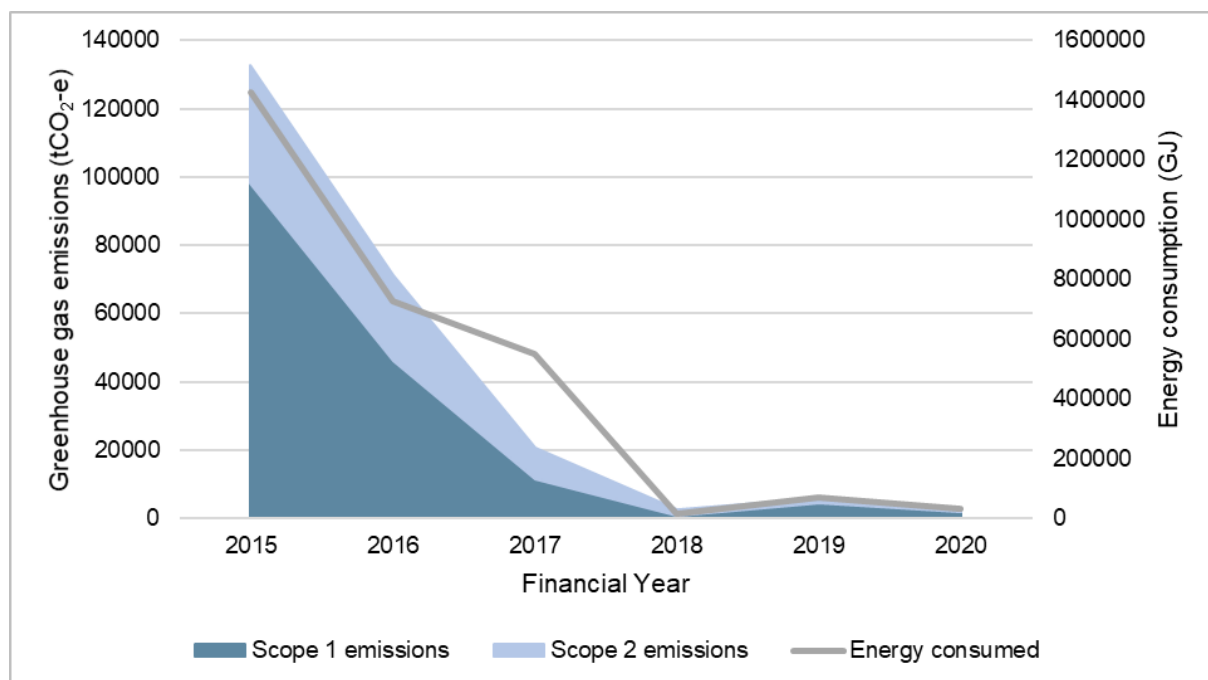
Annual estimations of GHG emissions and energy use at the Maxwell Infrastructure site are calculated over financial years (FY), in line with National GHG and Energy Reporting (NGER) obligations.

GHG emissions and energy consumption were below NGER thresholds for the FY20 period. Approximately 31,984 gigajoules (GJ) of energy was consumed during FY20 and approximately 2,761 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>-e) were emitted from site activities. Of this, 2,012 tCO<sub>2</sub>-e were scope one emissions and 749 tCO<sub>2</sub>-e were scope two emissions.

Scope one emissions are the emissions released to the atmosphere as a direct result of an activity, or series of activities at site. Scope two emissions are the emissions released to the atmosphere from the indirect consumption of an energy commodity.

GHG emissions in FY20 were significantly lower than the 82,533 tCO<sub>2</sub>-e predicted for year 10 of operations in the EA as this prediction was based on fuel and energy demands of an active mine and included fugitive emissions from coal mining.

As shown in **Figure 9**, GHG emissions and energy use decreased substantially following the cessation of mining during FY17. In FY20, GHG emissions and energy consumption were lower than FY19 reflecting lower diesel usage associated with a lower movement of material to achieve final landforms.



**Figure 9. Long-term greenhouse gas emissions and energy consumption**

### Proposed Improvements

No changes to greenhouse gas and energy management are planned for the next reporting period.

## 7.10 Waste

### Management

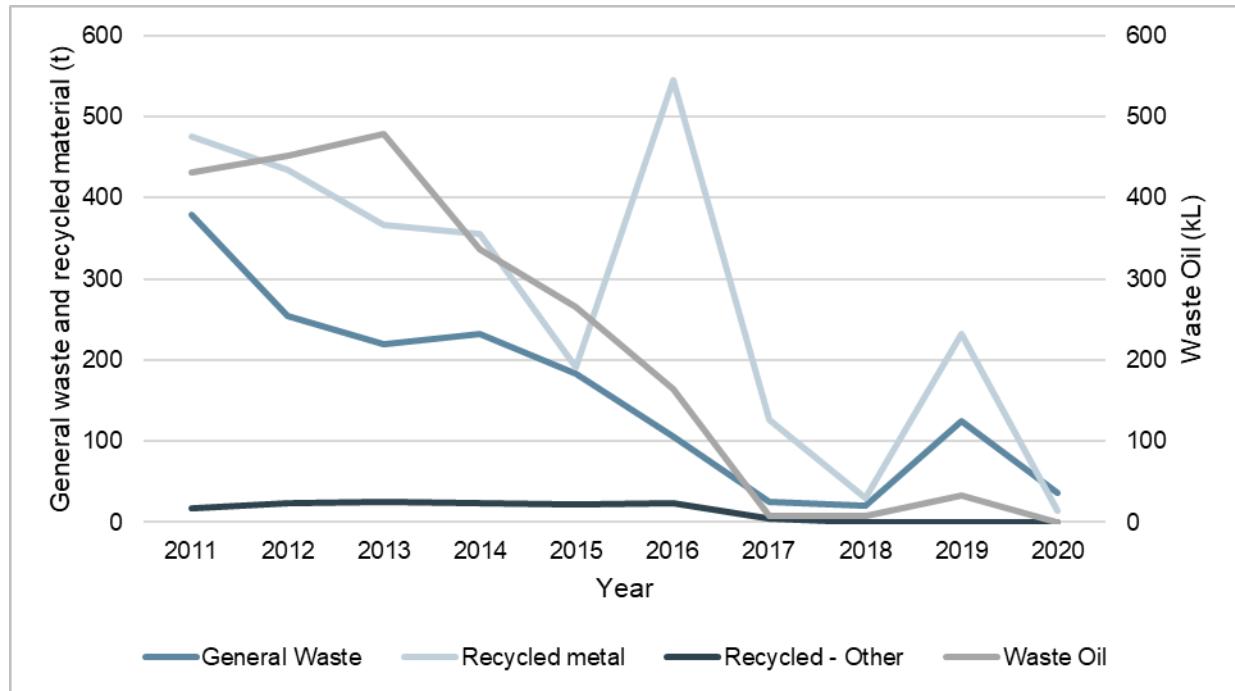
Waste is managed at the Maxwell Infrastructure site in accordance with the Waste Management Plan. Where appropriate, spent resources are reused or recycled in preference to being disposed of as waste.

During the reporting period, the focus for waste management was on removing unused resources, particularly around infrastructure areas and recycling materials where possible.

## Performance

Waste and recycling streams are monitored monthly at the Maxwell Infrastructure site. Quantities of the major waste and recycling streams over the past 10 years are shown in **Figure 10**. This comparison shows that waste significantly reduced with the cessation of mining in late 2016. This is commensurate with the reduction in resource use associated with the reduced operational activity at the site. During this reporting period, there was a decrease in waste disposed compared to the previous reporting period. This was due to a focus in FY19 on removing unused resources on site.

No predictions were made in the EA in relation to waste quantities.



**Figure 10. Long-term waste stream quantities**

Maxwell Infrastructure has a sewage treatment plant (STP) for effluent generated on-site. From the STP, treated effluent is pumped to settlement ponds. Previously, overflow from the ponds was applied to land. However, due to the low number of people on site and reduced volume of effluent, the treated effluent now evaporates from the first pond.

Maxwell Infrastructure also maintains a bioremediation area for the remediation of material contaminated by hydrocarbons. The bioremediation area was not used in the reporting period. No material was removed from the bioremediation area during the reporting period.

A small amount of Mixed Waste Organic Outputs (MWO) is stockpiled at the Maxwell Infrastructure site. MWO was previously used for rehabilitation activities until in October 2018, the NSW Environment Protection Authority (EPA) revoked all general and specific resource recovery orders and exemptions for the application of MWO to land. An amendment was made by the EPA to the *Protection of the Environment Operations (Waste) Regulation* in October 2020 to allow prescribed premises to dispose of (i.e. bury) MWO on site subject to conditions of the regulation. Maxwell Infrastructure is proposing to dispose of the stockpiled MWO during the next reporting period, once construction activities commence for the Maxwell UG Project.

## Proposed Improvements

No changes to waste management are planned for the next reporting period.

## 7.11 Spontaneous Combustion

### Management

Spontaneous combustion at the Maxwell Infrastructure site is managed in accordance with the Spontaneous Combustion Management Plan. The management of spontaneous combustion is focused on the monitoring of previously capped areas along with the capping of any new outbreaks.

Along with regular inspections conducted as part of the general site activities, formal monthly spontaneous combustion inspections are conducted. A thermal imaging camera is utilised to assist the identification of areas where ground surface temperatures are above background levels. The surface area exhibiting smoke or steam emissions is estimated for each detected outbreak. In addition, an annual aerial survey using a fixed wing aircraft fitted with infrared detection is used to identify the presence of hot spots on a site-wide basis. This survey was conducted in June 2020.

Spontaneous combustion monitoring supports the planning of activities to prevent and remediate spontaneous combustion outbreaks. These management activities include reprofiling, track rolling and the application of inert capping.

A revised Spontaneous Combustion Management Plan was approved by the Secretary of DPIE on 19 February 2020. This revision included amendments to reflect ownership and operational changes since the last review, removal of requirements duplicated in other management plans, a separation from the Spontaneous Combustion Principal Hazard Management Plan and other improvements to the management of spontaneous combustion.

### Performance

Spontaneous combustion locations are categorised in accordance with the following intensity criteria:

- Minor - visible steam or smoke exists, however, the area affected is 200 m<sup>2</sup> or less.
- Moderate - exhibiting continuous visible smoke or steam and / or has an area of greater than 200 m<sup>2</sup>.
- Major - exhibiting naked flames, regardless of the area affected.

As shown in **Figure 11**, all spontaneous combustion outbreaks identified during the reporting period were inactive or of a minor intensity. Area 191 was subject to capping which was completed in May 2020 and continues to be monitored. Area 305 was subject to remedial works, including capping and seeding. This was completed at the end of the June 2020 and continues to be monitored.

As shown in **Table 10**, approximately 50 m<sup>2</sup> was estimated to be affected by spontaneous combustion outbreaks across the site at the end of the reporting period. This is less than previous years and reflects the extensive preventative and remedial works undertaken over the past number of years. The annual aerial infrared survey in June 2020 allowed confirmation of the success of mitigation works to date in addition to informing planning for future activity.



Figure 11. Locations affected by spontaneous combustion

**Table 10. Long-term area affected by spontaneous combustion**

Year	Area Affected (m <sup>2</sup> )
2010	1,170
2011	1,070
2012	1,160
2013	1,180
2014	810
2015	870
2016	810
2017	1,150
2018	1,170
2019	320
2020	50

**Proposed Improvements**

No improvements to the management of spontaneous combustion are proposed for the next reporting period.

**7.12 Biodiversity****Management**

Biodiversity at the Maxwell Infrastructure site and its offset areas is managed in accordance with the Flora and Fauna Management Plan and the Rehabilitation and Offset Management Plan. A revised Flora and Fauna Management Plan was submitted for review and approval by the Secretary of DPIE in February 2020. This revision includes amendments to reflect ownership and operational changes since the last review and the removal of requirements duplicated in other management plans. The revised plan is still under review by DPIE.

Routine ecological monitoring is conducted across Maxwell Infrastructure's offset areas and rehabilitated lands. The ecological monitoring program was streamlined in 2018 as some sites were replicates located in discrete locations and non-target vegetation types. The streamlined monitoring program maintains the spatial distribution required to provide representative data.

Monitoring sites are located within woodland rehabilitation, pasture rehabilitation and offset areas. Sites located in offset areas are used as a reference site for woodland rehabilitation to provide ecological targets for ecosystem integrity and species diversity. Monitoring is undertaken annually, with each site monitored every second year.

During the reporting period the following measures were implemented to improve biodiversity at the Maxwell Infrastructure site:

- regular walkover inspections of rehabilitation;
- tubestock infill planting within woodland vegetation communities;
- culling of kangaroos prior to infill planting to reduce grazing pressure on tubestock;
- continuation of the grazing trial on mine pasture rehabilitation;
- implementation of a targeted weed management program; and
- installation of nest boxes to improve fauna habitat in the woodland vegetation communities.



## Performance

Ecological monitoring was undertaken in October 2020 at sites shown in **Appendix 2**. Monitoring consisted of biometric vegetation sampling, assessment of pest animals and comparison against closure criteria.

There are no predictions in the EA to compare against performance during the reporting period. Instead, performance is compared to closure criteria and to performance since 2016, when these criteria were implemented. As the monitoring frequency of sites is 2-yearly, the most recent monitoring shown for comparison is from 2018. These results are detailed in **Table 19** to **Table 21** in **Appendix 7**.

### Biometric Vegetation Sampling

Biometric vegetation sampling was undertaken on eleven reference and woodland rehabilitation sites. Sites were representative of Ironbark-Spotted Gum-Grey Box Woodland, Narrow-leaved Ironbark Woodland, Forest Red Gum Woodland and Yellow Box-Grey Gum Woodland.

Results showed the reference sites were in good condition and naturally self-sustaining with no direct impact from past mining activities or recent site changes. General enhancement of these areas will likely continue to occur naturally with the additional application of weed control. There was no obvious evidence of erosion or the need for sediment control within or immediately surrounding the plots or transects of the reference sites or the rehabilitation sites.

The woodland rehabilitation sites showed varying results, as most sites are in early establishment phase. These sites recorded lower values in comparison to the reference sites when assessing the number of trees with hollows, total length of fallen logs, regeneration of canopy species and native overstorey, midstorey and ground covers. All of these units will increase in time as trees and other native vegetation mature with the application of required management actions such as weed control and enhancement plantings. Native ground cover species and midstorey will naturally show improvement as canopy species establish providing protection and resilience for successional lower stratum species. Of the 165 plant species that were recorded during surveys, 121 were local native species.

### Pest Animals

Two introduced fauna pest species, *Oryctolagus cuniculus* (European Rabbit) and *Lepus europaeus* (Hare) were observed and recorded. Although not extensive, diggings and scats (as well as direct observations) of both species were observed within and adjacent to nine of the monitoring sites. Control of both species will be considered during the next reporting period.

### Closure Criteria

As shown in **Table 19** in **Appendix 7** the regeneration of species from all structural layers was recorded at all reference sites monitored during the reporting period and species composition was generally similar to previous years. The total cover of invasive weeds remained below the closure criteria in the Northern Offset, with a reduction in weed coverage in the Wildlife Refuge area, predominately due to weed control implemented during the reporting period. Invasive weeds remain moderate to high in the Southern Offset Area and North and South rehabilitation areas, including woodland and pasture rehabilitation. An intensive weed control program was established in the offset areas and mine rehabilitation areas during the reporting period. Work will continue in these areas during the next reporting period.

Woodland rehabilitation sites (which includes the Southern Offset area) that were monitored during the reporting period are shown in **Table 21** in **Appendix 7**. Monitoring results indicate that the ground cover was generally trending towards the reference sites, however, the shrub and canopy layers require further management to assist with establishment.

The diversity of canopy and mid-storey species, particularly at the Southern Offset area were moderately representative of the reference sites, however foliage cover was low. Low foliage cover provides open areas for invasive groundcover species to establish. To remediate this issue, further development of a canopy and mid-storey cover through infill planting, and appropriate weed control will occur during the next reporting period.

Pasture rehabilitation sites monitored during the reporting period are shown in **Table 20** in **Appendix 7**. The overall groundcover has reduced significantly from the 2018 results, this is due to the long-term drought affects over previous years, attributing to loss of species richness. However, ecological monitoring identified a good cover of perennial grass species in the Southern rehabilitation areas, an improvement in previous years which may be due to the grazing trial being undertaken in these areas.

**Proposed Improvements**

**Table 11** identifies the management measures planned to be implemented in offset areas during the next reporting period. Measures planned for rehabilitation areas are discussed in **Section 9.3**.

**Table 11. Measures planned for offset areas in the next reporting period**

Location	Management measure
Drayton Wildlife Refuge	Weed control program targeting Prickly Pear
Southern Offset Area	Weed control program targeted at Galenia, Guinea Grass, Rhodes Grass, Castor Oil, Coolatai Grass and Golden Wreath Wattle
Southern Offset Area	Installation of nest boxes
Southern Offset Area	Infill planting

**8 WATER MANAGEMENT**

**8.1 Water Take**

Maxwell Infrastructure does not actively draw water from any ground or surface water sources. Consequently, it does not hold any water licences for this purpose. Maxwell Infrastructure holds Water Access Licences, WAL 41559 and WAL 41491 for the passive intake of aquifer water associated with the mine excavation.

Although mining has ceased, the EA predicts that ground water will continue to flow into the mine voids until it stabilises. **Table 12** shows the calculated passive water take in accordance with the conditions of WAL 41559 and WAL 41491. This estimated passive inflow was calculated by consultants specialising in water management and modelling. The inflow of 59 Megalitres (ML) estimated for the reporting period is less than the 985 ML per year (or 2.7 ML/day) that was predicted for year 10 of operations in the EA. It is also less than the total entitlement of 1,387 ML held under WAL 41559 and WAL 41491.

**Table 12. Water take July 2019 to June 2020 (WAL reporting period)**

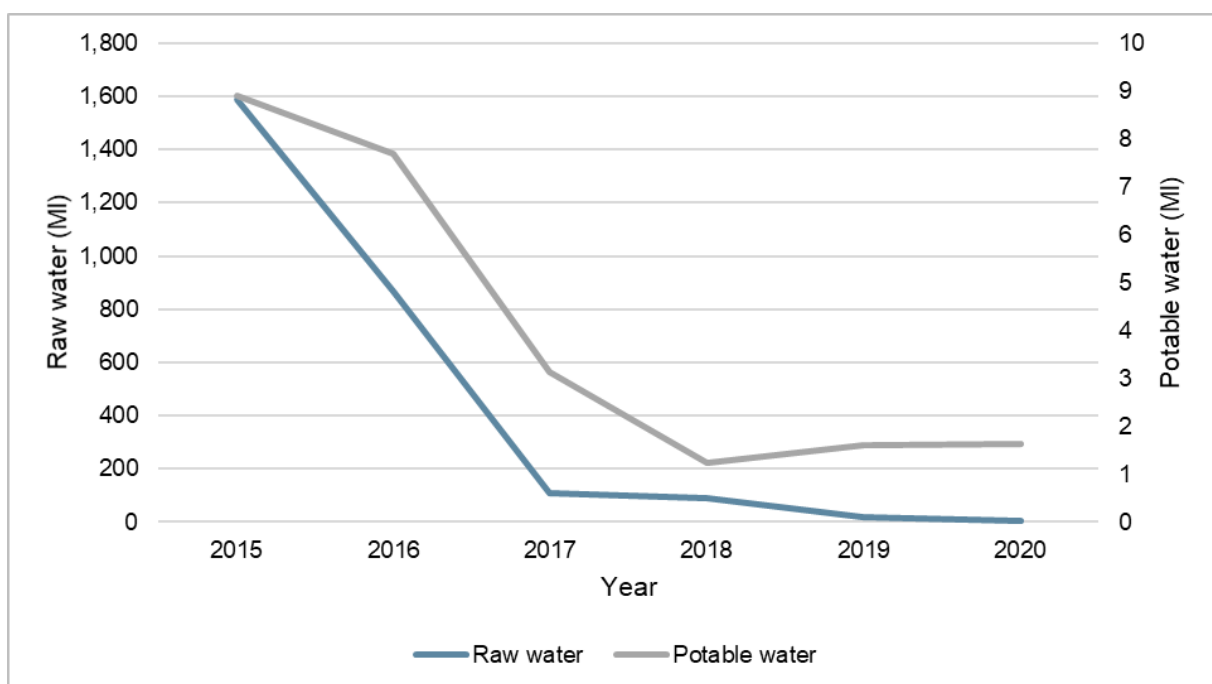
Water Licence #	Water sharing plan, source and management zone	Entitlement	Passive take inflows	Active pumping	TOTAL
<b>WAL 41559</b>	Sharing Plan: North Coast Fractured and Porous Rock Groundwater Sources	985 ML	59 ML	0 ML	59 ML
<b>WAL 41491</b>	Water Source: New England Fold Belt Coast Groundwater Source	402 ML			

## 8.2 Water Consumption

During the reporting period, the Maxwell Infrastructure site consumed approximately 4.2 ML of raw water from dams on site. This water was primarily used in the industrial area for vehicle and equipment wash-down. A total of 1.5 ML of potable water was also used in administration areas purposes such as toilets, washing and consumption. A small amount was also used to assist seedlings post-planting. In addition, approximately 0.1 ML of water was delivered to site during the reporting period to tanks supplying cattle troughs.

As **Figure 12** shows, water consumption has reduced substantially over the long-term, particularly since mining ceased in 2016. The associated reduction in operational activity has decreased raw water demand and the reduction in the number of people on site has decreased demand for potable water.

Water stored on site in storages increased from approximately 12,815 ML to 14,362 ML during the reporting period, indicating that water consumption was well within the limits required to maintain the site's closed raw water system, with no active intake or output of water. This is also demonstrated by the input-output statement of the water accounting framework in **Appendix 8**.



**Figure 12. Long-term water consumption**

## 8.3 Groundwater

### Management

Groundwater impacts at the Maxwell Infrastructure site are managed in accordance with the Water Management Plan. A revised version of the plan was approved by the Secretary of DPIE on 18 February 2020. Changes in the revised Water Management Plan, related to groundwater management, include the addition of metals and nutrients analysis to the monitoring program, a commitment to review the analyte suite routinely monitored, an increase in the frequency of water quality monitoring from 6-monthly to quarterly, and a decrease in water level monitoring from monthly to quarterly.

Non-functioning and inaccessible groundwater monitoring bores (F1024, F1163, F1167, F1168 and W1102) and incident-specific bores, DS2 and DS3, were also removed from the monitoring program. Four new bores (GW01D, GW01S, GW02D and GW02S) were added. A commitment was made to construct a new monitoring bore within the Permian sequence south of the former open cut mining area. This bore will be constructed during the next reporting period.

### Performance

#### Groundwater Levels

Groundwater levels, measured monthly at Maxwell Infrastructure, have remained stable over the reporting period. The long-term groundwater levels at monitoring locations over the past 10 years is displayed in **Figure 13**. This shows that, consistent with the predicted “cone of depression” around the mine area, groundwater levels have lowered or remained stable at monitoring locations surrounding the mine over this time.

The elevation of groundwater levels has also remained above the elevation of the water surface in the voids, indicating that there is likely to be an inflow of aquifer water into the voids as predicted in the EA and supported by the site water balance model discussed in **Section 8.1**.

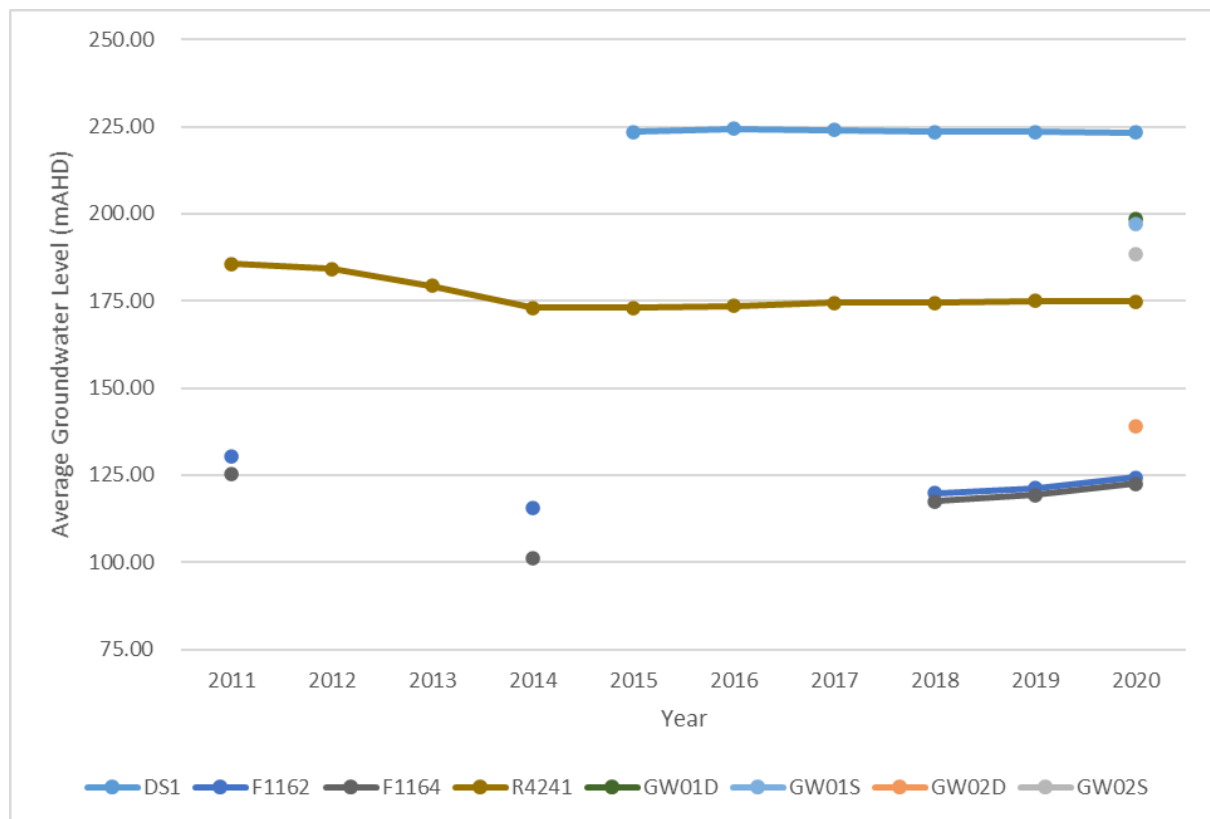


Figure 13. Long-term groundwater levels

## Groundwater Quality

The quality of groundwater at the Maxwell Infrastructure site is analysed at least quarterly. However, samples were unable to be obtained at this frequency from all monitoring locations in the reporting period as follows:

- F1162, F1164 and GW01S had insufficient water to collect a sample for water quality analysis for the entire year.
- COVID-19 restrictions prevented groundwater sampling from being undertaken in March 2020.
- Above average rainfall experienced in December 2020 and January 2021 prevented safe access to groundwater monitoring sites. Monitoring was undertaken at the next available opportunity on 1 February 2021 (and has been included in the averages presented for the reporting period).

Average groundwater quality results for the reporting period are provided in **Appendix 9** along with a comparison to average results recorded for the previous five years, where available. Results in the reporting period were generally consistent with those recorded previously. This supports the prediction in the EA that the project would not impact groundwater quality.

### Proposed Improvements

A new monitoring bore within the Permian sequence south of the open cut mining area will be installed during the next reporting period.

## 8.4 Surface Water

### Management

Surface water impacts at the Maxwell Infrastructure site are managed in accordance with the Water Management Plan. This includes monthly water quality monitoring at locations shown in **Appendix 2**.

Changes in the revised Water Management Plan (approved by the Secretary of DPIE on 18 February 2020) related to surface water management include aligning monitoring for both water quality and dam capacities to quarterly and the removal of monitoring sites that are inaccessible or not connected to the site's water management system. Specifically, these were sites 2221 (Antiene Dam), Site 1895 (Far East Tip), SW13 (SW13 Void) and 1609 (Savoy Dam). The ES Void was added to the surface water monitoring program.

### Performance

In accordance with the current Water Management Plan, the quality of surface water at Maxwell Infrastructure is analysed quarterly. Average surface water quality results for the reporting period are provided in **Appendix 10** along with a comparison to the average results recorded for the previous five years.

Results for all variables in the reporting period were lower than those recorded for 2019. This is likely due to increased rainfall during 2020 diluting water storages and monitored variables. The exception to this was an increase in total suspended solids (TSS) at site 2109 (DC2 Dam). This dam was desilted during the reporting period which has likely caused the increase in TSS. All water from this dam remained on site.

### Proposed Improvements

There are no proposed improvements for the next reporting period in relation to surface water management.

### 9.1 Management

Rehabilitation at the Maxwell Infrastructure site is managed in accordance with the Mining Operations Plan (MOP) and Rehabilitation and Offset Management Plan. The MOP has also been approved by the Secretary of DPIE as addressing the requirements of the Final Void Management Plan and Mine Closure Plan.

The key objectives for post rehabilitation land use are:

- To progressively rehabilitate disturbed areas with the aim of establishing as much of original floristic diversity as possible.
- To create a stable, free-draining post mining landform which is compatible with the surrounding landscape and which is capable of a productive land use that achieves a land capability to equal that of pre mining conditions.
- To create a post-mining landform which enhances the local and regional habitat corridor as presented in the *Synoptic Plan: Integrated Landscapes for Coal Mine rehabilitation in the Hunter Valley of New South Wales*.

#### Rehabilitation Risk Assessment

Maxwell was required by notice NTCE0004147 under the *Mining Act 1992* to prepare a Rehabilitation Risk Assessment Report. A risk assessment was undertaken during January 2020 and assessed the potential risks to achieving the rehabilitation objectives, completion criteria and the final land use for the site.

All risks were assessed pre-control (before any controls were in place) and post-control (after any existing or additional controls were put in place). During the pre-control assessment, 17 risks were identified as 'significant' meaning that a significant risk existed that management objectives may not be achieved. Of the 17 risks, only five risks were identified as 'significant' post control.

A draft Rehabilitation Risk Assessment Report was provided to the Resources Regulator for feedback in March 2020. The Resources Regulator provided feedback on 9 April 2020 and the report was finalised on 27 April 2020.

#### Mining Operations Plan

On the 17 April 2020, Maxwell submitted a new MOP for the period 1 July 2020 to 30 June 2022 to the Resources Regulator. The MOP was prepared in accordance with the requirements of the *ESG3: Mining Operating Plan (MOP) Guidelines* (September 2013).

On the 12 June 2020, the Resources Regulator provided feedback on the MOP. A further meeting to discuss the feedback was held between the Resources Regulator and Maxwell on 16 June 2020. Maxwell requested an extension to the existing MOP term until 31 March 2021, to allow adequate time to address the feedback provided. The extension was granted by the Resources Regulator. As part of the extension request, Maxwell committed to undertake the following rehabilitation activities during the extension period:

- remedial work of former rehabilitation undertaken by the previous owners including repairing of contours, soil amelioration and reseeded of an area of existing rehabilitation located on the eastern face of the North Tip;
- tree planting to improve connectivity in the existing woodland corridor. Species will target specific vegetation communities that have been identified in the Drayton Mine Extension Environmental Assessment;
- targeted weed management in woodland rehabilitation areas that are dominated by introduced species such as Rhodes Grass, Guinea Grass, Kikuyu and Galenia; and
- installation of nest boxes in appropriately sized canopy trees within the woodland corridor to assist with fauna husbandry across the Maxwell Infrastructure site.

In September 2020, the Resources Regulated granted a further extension to extend the MOP term until 30 June 2021. This was done to allow a determination to be made on the Maxwell UG Project which would provide clarity on the remaining rehabilitation schedule and final landform. A revised MOP will be submitted during the next reporting period.

### Rehabilitation Cost Estimate

A revised Rehabilitation Cost Estimate (RCE) was submitted to the Resources Regulator on 15 June 2020. The RCE took into consideration the MOP that had been submitted in April 2020 and the rehabilitation activities undertaken by Maxwell during 2018 and 2019. On 27 October 2020, the Resources Regulator “stopped the clock” on the processing of the application and requested further information and required that a revised RCE be submitted to the Resources Regulator by 12 November 2020. Maxwell requested the date be extended until 8 January 2021 and this was approved by the Resources Regulator. A revised RCE was submitted on 8 January 2021 (during the next reporting period).

## 9.2 Performance

Whilst the rehabilitation at Maxwell Infrastructure is progressing, no areas of rehabilitation have been formally signed off by DPIE as meeting the land use objectives and completion criteria. During the reporting period, final landform development, growth medium development and remedial works were the focus of operations at the Maxwell Infrastructure site.

### Buildings and Infrastructure

No buildings or infrastructure were decommissioned or demolished during the reporting period.

### Landform Design

During the reporting period, reshaping activities of overburden, redundant roads and exposed areas were undertaken by D11 dozers. Where possible, landform designs were modified to more natural landscapes, incorporating dams and natural drainage lines.

At least two metres of inert material was then placed on the reshaped areas that were assessed as being prone to spontaneous combustion. Inert material has been stockpiled around the site for use in the management of spontaneous combustion. Approximately 11 hectares of land was capped with inert material prior to the application of soil ameliorants and seeding.

### Drainage

Contour drains were installed on rehabilitated slopes. All drains had a longitudinal gradient of 1 to 1.5 per cent. Deep ripping across the contour was also undertaken on steeper slopes. Spoon drains were installed during rehabilitation works along the flatter sections of Hobbsy’s Highway and at the top of 1A to help convey water to the nearest drop structures. Five drop structures were installed during the reporting period.

### Soil Amelioration

Due to historic site practices, good quality topsoil for use during rehabilitation is minimal. Soil ameliorants were used during the reporting period to increase soil organic matter, improve soil nutrient levels and promote vegetation growth.

Biosolids, which are a by-product of the wastewater treatment process, were used as a soil ameliorant in pasture areas. Compost made up of garden organics and biosolids was used as a soil ameliorant in some woodland areas where topsoil was limited. Gypsum was applied to all areas at a rate of 5 tonnes per hectare using a mix of fine and coarse grade recycled gypsum product.

## Seeding

Both woodland and pasture seed mixes and rates were continually reviewed during the reporting period.

The pasture seed mix was consistent with that used during the previous reporting period. Cover crop rates were reduced to allow the establishment of perennial species. The pasture seed was blended with 200 kilograms per hectare of fertiliser and applied with a tractor and seeder combination.

The woodland seed mix was based on a Spotted Gum-Ironbark-Grey Box Woodland. The seed mix targeted species that were more likely to germinate and successfully grow using the methods and equipment available. There were some minor variations in seed quantities throughout the reporting period due to drought impacts on availability.

Native species that required heat treatment to break dormancy mechanisms were treated with either boiling or smoke water. Seed was chemically treated to limit ant predation and inoculated with mycorrhiza to promote faster establishment. All woodland areas were seeded by hand.

## Rehabilitation of Disturbed Land

Although there were no new areas of rehabilitation identified in the approved MOP for completion in 2020, Maxwell Infrastructure completed 34 hectares of new rehabilitation across seven areas of the site. Of the 34 hectares, 12 hectares were seeded to woodland rehabilitation and 22 hectares were seeded to pasture rehabilitation. The locations of rehabilitation activities are shown in **Figure 14**.

One outstanding action from the 2018 IEA was to remediate a section of rehabilitation on the eastern face of the North tip. The IEA noted the area had failed and recommended remedial work be undertaken on the landform including re-establishing the contours, application of ameliorants and re-seeding. This work was undertaken during the reporting period across an area of approximately 6.5 ha.

A summary of the rehabilitation status is provided in **Table 13**.



**Table 13. Rehabilitation status**

Mine Area Type	Previous reporting period (actual) Year 2019 (ha)	This reporting period (actual) Year 2020 (ha)	Next reporting period (forecast) Year 2021 (ha)
<b>A. Total mine footprint<sup>1</sup></b>	1,238	1,238	1,238
<b>B. Total active disturbance<sup>2</sup></b>	419	385	385
<b>C. Land being prepared for rehabilitation<sup>3</sup></b>	30	0	0
<b>D. Land under active rehabilitation<sup>4</sup></b>	819	853	853
<b>E. Completed rehabilitation<sup>5</sup></b>	0	0	0

<sup>1</sup> Total mine footprint includes all areas within the mining lease that either have at some point in time or continue to pose a rehabilitation liability due to mining and associated activities.

<sup>2</sup> Total active disturbance includes all areas ultimately requiring rehabilitation.

<sup>3</sup> Land being prepared for rehabilitation includes the sum of mine disturbed land that is under the following rehabilitation phases – decommissioning, landform establishment and growth medium development.

<sup>4</sup> Land under active rehabilitation includes areas under rehabilitation and being managed to achieve relinquishment.

<sup>5</sup> Completed rehabilitation requires formal sign-off by the Resource Regulator that the area has successfully met the rehabilitation land use objectives and completion criteria.

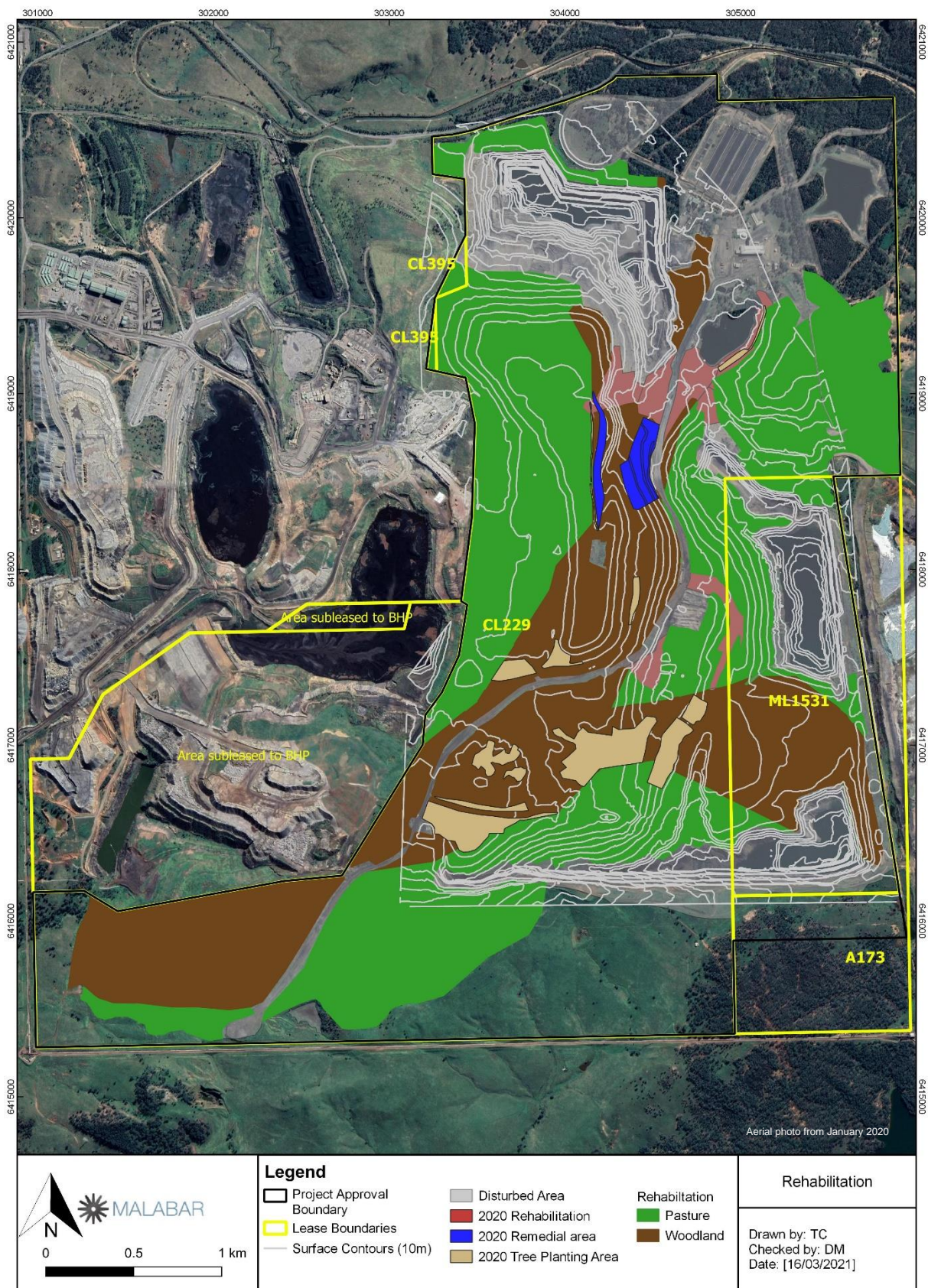


Figure 14. Location of rehabilitation activities

## Other Rehabilitation Activities

### Tree Planting

Two tree planting programs were undertaken during the reporting period. The programs targeted a total of 49 hectares of existing mine rehabilitation within the conceptual woodland corridor. Ground preparation works for optimal tree propagation were undertaken and included:

- slashing of grass to safely define the work area as well as improve the success of spraying activities to prevent competition to tree growth;
- single deep rip lines (minimum 500 mm deep) to break up the surface to allow tube stock to be planted and establish. The rip lines also help capture water, reduce erosion and improve soil moisture levels; and
- spraying of rip lines with glyphosate to reduce competition for growth from grass species.

Tree and shrub species consistent with the Spotted Gum Ironbark Woodland, Red Gum Woodland and White Box Woodland vegetation communities were planted. Approximately 48,000 plants were installed using a growth promoting compound and immediately watered in with a minimum of one litre per plant. Follow-up watering was undertaken for several months after installation due to dry conditions in Autumn, with the Spring planting campaign requiring less follow up water due to intermittent rainfall throughout the warmer months.

### Kangaroo Cull

The culling of kangaroos was undertaken during the reporting period to reduce grazing pressure and minimise the impact to native groundcover species from the digging of day beds under trees and shrubs in rehabilitation areas.

### Weed Management

Weed management activities were undertaken during the reporting period in spring, summer and autumn. Weed type, density, distribution and access were taken into account when planning weed management activities. Primary areas of focus were:

- offsets and conservation areas;
- areas adjacent to private land;
- tree planting areas;
- areas of high infestations of weeds of national significance; and
- areas identified in the Ecological Monitoring Report for 2019.

### Nest Boxes

Twenty nest boxes were installed in woodland rehabilitation during the reporting period. The nest boxes were installed within the Northern Rehabilitation area and Southern Offset area. Monitoring of nest boxes will occur as part of the ecological monitoring program which is planned for Spring 2021. Additional nest boxes will be installed during the next reporting period.

## Trials

### Cattle Grazing Trial

A grazing trial commenced on rehabilitation at the Southern Tip in 2018. The trial continued throughout the reporting period. Cattle were strategically rotated between three paddocks of which two were located on mine rehabilitation. The cattle will be sold to market during the next reporting period and the paddocks will be rested and monitored for new vegetation growth and diversity. Results so far are demonstrating that Maxwell can create a post mining landscape that is compatible with the surrounding landscape and capable of sustaining a productive land use.

## Native Grass Trial

A native grassland establishment trial was undertaken at Maxwell Infrastructure during 2013. The trial involved seeding a small area on the North Tip with locally collected grassland species from Dartbrook. The seed mix was dominated by Red Grass (*Bothriochloa macra*) and Queensland Blue Grass (*Dichanthium sericeum*). The trial was monitored in 2013 and determined to be unsuccessful due to poor germination. A follow-up inspection during 2018 showed the area to be dominated by native grasses, particularly Lobed Bluegrass (*Bothriochloa biloba*) and Queensland Bluegrass. Queensland Blue Grass was then included into the pasture mix as a trial on a 24 hectare parcel of land that was rehabilitated during 2018. Due to the dry conditions at the time, only a small number of Queensland Blue Grass was identified in the area. Further inspections of the area will be undertaken during the next reporting period.

## Geofluv Trial

During 2013, an area of 11.5 ha of mine rehabilitation was designed and built using the Geofluv™ natural landform software. The design included four main channels with six side channels to drain water from the slope. The area, which was seeded with native shrubs and a cover crop, has high erosional stability and now contains a dense cover of grass species. The area was part of the tree planting program undertaken during the reporting period.

The remaining areas of rehabilitation at the Maxwell Infrastructure site have not been designed or constructed using the Geofluv™ natural landform software. However, where possible, landform designs are modified to create more natural looking landscapes that are safe, stable and non-polluting.

### 9.3 Actions for the Next Reporting Period

The following activities will occur during the next reporting period:

- Two tree planting programs covering approximately 40 hectares of existing mine rehabilitation within the conceptual woodland corridor;
- A weed control program focussing on Galenia.
- Installation of nest boxes in appropriately sized canopy trees within the woodland corridor; and
- Submission of a new MOP and revised RCE to the Resources Regulator.

## 10 COMMUNITY

### 10.1 Complaints

The Maxwell Infrastructure site maintains a 24-hour community hotline (1800 653 960) for any issues or enquiries. The community hotline number is advertised in the local newspapers and on the [Malabar website](#). In addition to the community hotline, the Maxwell Infrastructure site can also be contacted by email ([info@malabarresources.com.au](mailto:info@malabarresources.com.au)). During the reporting period, there were no complaints received. The number of complaints received has continued to decrease since 2015 (as shown in **Figure 15**) in line with a decrease in activities since mining ceased in October 2016.

### 10.2 Engagement

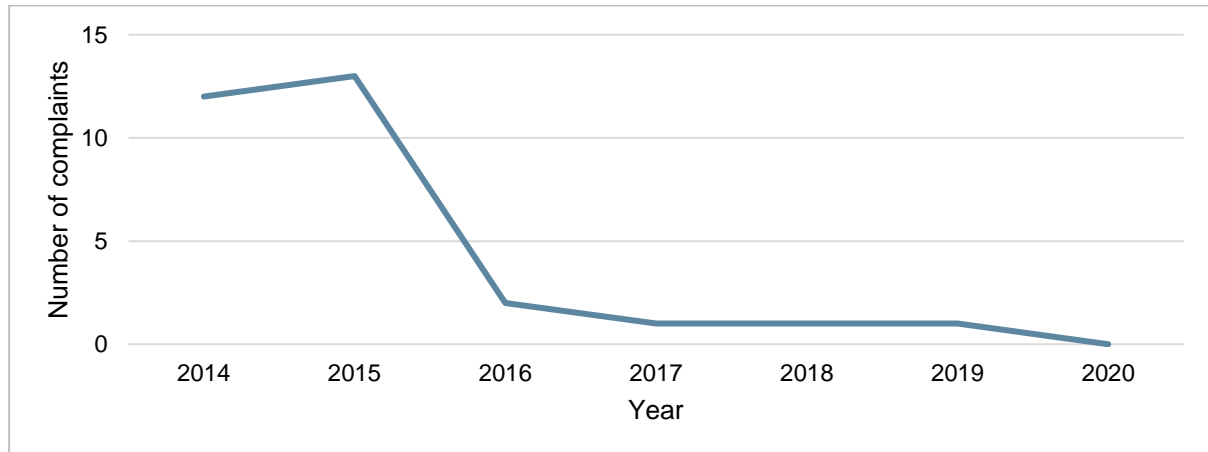
Community Consultative Committees (CCCs) provide a forum for discussion between Maxwell and representatives of the community, stakeholder groups and the local council on issues relating directly to Maxwell Infrastructure site. Although the CCC is not a decision-making or regulatory body, it performs an important advisory and consultative role.

The Maxwell Infrastructure CCC met on three occasions during the reporting period including the 18 March, 23 September and 2 December 2020. The meeting scheduled for the 10 June

2020 was cancelled due to site COVID-19 restrictions however the presentation material was distributed to all CCC members for review and comment. During the meetings the CCC reviewed the site's environmental performance and discussed community issues.

One meeting was also held for the Antiene Rail Spur, Joint CCC during the reporting period. This meeting was held on the 8 December 2020. The Joint CCC meeting scheduled for the 10 June 2020 was cancelled due to site COVID 19 restrictions however the presentation material was distributed to all CCC members for review and comment. These meetings were attended by CCC representatives from Maxwell Infrastructure and Mt Arthur Coal. During the meetings the CCC reviewed the environmental performance of the Antiene Rail Spur which is a shared asset between the two sites.

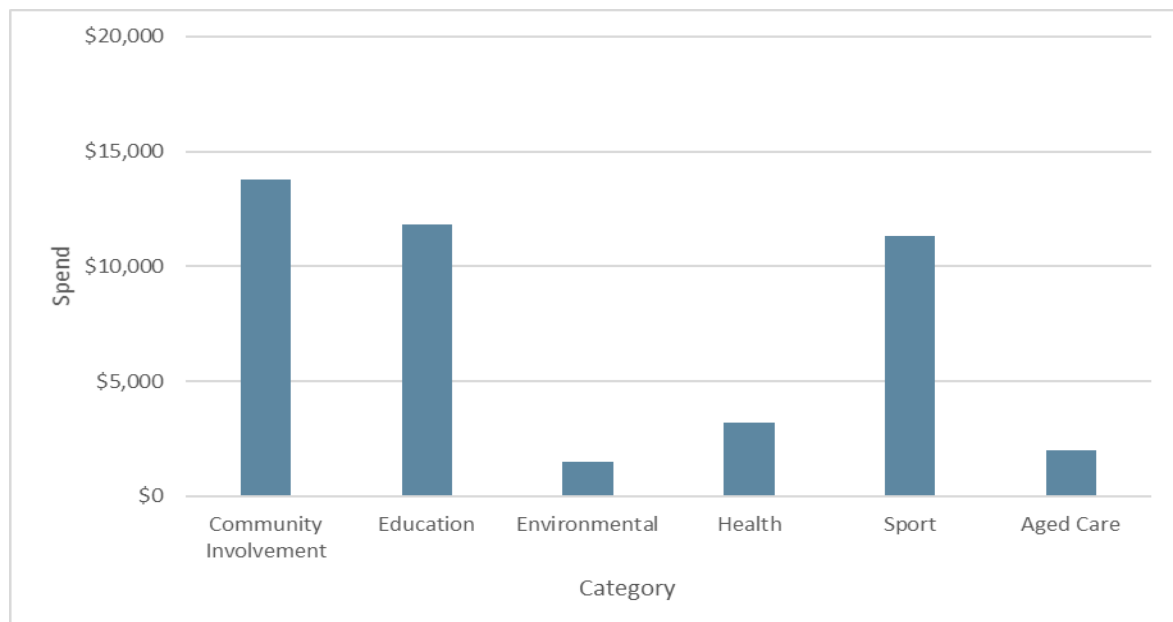
Information on environmental management and performance, as well as relevant approvals, can be accessed by the community through the [Malabar website](#).



**Figure 15. Long-term number of complaints**

### 10.3 Contributions

Malabar regularly donates to local community groups, charities, schools, scholarships and sporting teams within Muswellbrook, Denman, Scone, Singleton and the surrounding areas. During the reporting period, over \$43,000 was donated to the local community. Categories of the contributions are detailed below in **Figure 16**.



**Figure 16. Community contributions in the reporting period**

## 11 INCIDENTS AND NON-COMPLIANCES

### 11.1 Incidents

On 17 April 2020, Maxwell received an Official Caution under the *Mining Act 1992* for failing to comply with the progressive rehabilitation schedule for years 2017 and 2018 as contained within the approved MOP. Maxwell requested a review of the Official Caution noting that Malabar did not acquire the Maxwell Infrastructure site until 26 February 2018 and had commenced rehabilitation activities within one week of taking control of the site. A review was undertaken by the Resources Regulator and the Official Caution was amended in August 2020 to apply only to 2018.

On 8 October 2020, Maxwell received an Official Caution under the *Mining Act 1992* for failing to submit a RCE by the due date required by notice NTCE0005152 and for failing to comply with the progressive rehabilitation schedule for 2019 as contained within the approved MOP.

The omission to lodge the RCE by the required deadline was due to a human error. When brought to the attention of Maxwell, the RCE was promptly produced and lodged with the Resources Regulator. Maxwell has reviewed how this contravention occurred and committed to internally implementing a robust action tracking system to assign, track and complete compliance requirements by their due date.

In accordance with the approved MOP dated December 2016, the original rehabilitation target for 2019 was 218 hectares however, this assumed that the Maxwell Infrastructure site would go into a closure phase and key infrastructure would be demolished. As reported in the 2018 AEMR, the rehabilitation target for 2019 was revised down to 86 hectares as Maxwell did not want to demolish substantial surface facilities or rehabilitate areas that could be used by the Maxwell UG Project, should the SSD consent be granted. A total of 86 hectares of rehabilitation was completed in 2019. Now that SSD 9526 for the Maxwell UG Project has been approved, a new MOP will be prepared during the next reporting period to provide clarity on the rehabilitation schedule.

### 11.2 Exceedances

Instances where monitoring results exceeded approval criteria are listed in **Table 14** with subsequent investigation details.

**Table 14. Monitoring result exceedances**

Date	Monitor	Parameter	Averaging period	Result ( $\mu\text{g}/\text{m}^3$ )	Calculated Contribution ( $\mu\text{g}/\text{m}^3$ )	Approval criteria ( $\mu\text{g}/\text{m}^3$ )	Investigation details
01/01/2020	TEOM	PM <sub>10</sub>	24-hour	107.1	2.9	50	This monitor is located to the north east of the site. Wind direction during the 24-hour period was predominantly from the south east with the monitor located downwind of the site for four per cent of the day. The UHAQMN also recorded elevated readings at Muswellbrook (85.2 $\mu\text{g}/\text{m}^3$ ) indicating a regional dust event. No operations were undertaken at Maxwell Infrastructure on 1 January 2020. A number of bushfires were occurring throughout NSW in January 2020 and smoke from these fires may have contributed to elevated PM <sub>10</sub> levels in the region.
02/01/2020	TEOM	PM <sub>10</sub>	24-hour	51.5	0.0	50	This monitor is located to the north east of the site. Wind direction during the 24-hour period was predominantly from the south east with the monitor located downwind of the site at no time during this day. The UHAQMN also recorded elevated readings at Muswellbrook (52.0 $\mu\text{g}/\text{m}^3$ ) indicating a regional dust event. No operations were undertaken at Maxwell Infrastructure on 2 January 2020. A number of bushfires were occurring throughout NSW in January 2020 and smoke from these fires may have contributed to elevated PM <sub>10</sub> levels in the region.
05/01/2020	TEOM	PM <sub>10</sub>	24-hour	124.2	0.4	50	This monitor is located to the north east of the site. Wind direction during the 24-hour period was predominantly from the south east with the monitor located downwind of the site for one per cent of the day. The UHAQMN also recorded elevated readings at Muswellbrook (127.0 $\mu\text{g}/\text{m}^3$ ) indicating a regional dust event. No operations were undertaken at Maxwell Infrastructure on 5 January 2020. A number of bushfires were occurring throughout NSW in January 2020 and smoke from these fires may have contributed to elevated PM <sub>10</sub> levels in the region.
06/01/2020	TEOM	PM <sub>10</sub>	24-hour	52.0	0.0	50	This monitor is located to the north east of the site. Wind direction during the 24-hour period was predominantly from the south east with the monitor located downwind of the site at no time during this day. The UHAQMN also recorded elevated readings at Muswellbrook (50.3 $\mu\text{g}/\text{m}^3$ ) indicating a regional dust event. No operations were undertaken at Maxwell Infrastructure on 6 January 2020. A number of bushfires were occurring throughout NSW in January 2020 and smoke from these fires may have contributed to elevated PM <sub>10</sub> levels in the region.

Date	Monitor	Parameter	Averaging period	Result ( $\mu\text{g}/\text{m}^3$ )	Calculated Contribution ( $\mu\text{g}/\text{m}^3$ )	Approval criteria ( $\mu\text{g}/\text{m}^3$ )	Investigation details
08/01/2020	TEOM	PM <sub>10</sub>	24-hour	52.6	3.4	50	This monitor is located to the north east of the site. Wind direction during the 24-hour period was predominantly from the south east with the monitor located downwind of the site for 14 per cent of the day. The UHAQMN also recorded elevated readings at Muswellbrook (60.8 $\mu\text{g}/\text{m}^3$ ) indicating a regional dust event. No operations were undertaken at Maxwell Infrastructure on 8 January 2020. A number of bushfires were occurring throughout NSW in January 2020 and smoke from these fires may have contributed to elevated PM <sub>10</sub> levels in the region.
11/01/2020	TEOM	PM <sub>10</sub>	24-hour	71.4	2.4	50	This monitor is located to the north east of the site. Wind direction during the 24-hour period was predominantly from the south east with the monitor located downwind of the site for two per cent of the day. The UHAQMN also recorded elevated readings at Muswellbrook (181.0 $\mu\text{g}/\text{m}^3$ ) indicating a regional dust event. No operations were undertaken at Maxwell Infrastructure on 11 January 2020. A number of bushfires were occurring throughout NSW in January 2020 and smoke from these fires may have contributed to elevated PM <sub>10</sub> levels in the region.
12/01/2020	TEOM	PM <sub>10</sub>	24-hour	52.6	0.0	50	This monitor is located to the north east of the site. Wind direction during the 24-hour period was predominantly from the south east with the monitor located downwind of the site at no time during this day. The UHAQMN also recorded elevated readings at Muswellbrook (57.6 $\mu\text{g}/\text{m}^3$ ) indicating a regional dust event. No operations were undertaken at Maxwell Infrastructure on 12 January 2020. A number of bushfires were occurring throughout NSW in January 2020 and smoke from these fires may have contributed to elevated PM <sub>10</sub> levels in the region.
23/01/2020	TEOM	PM <sub>10</sub>	24-hour	51.2	11.0	50	This monitor is located to the north east of the site. Wind direction during the 24-hour period was predominantly from the south east with the monitor located downwind of the site for 14 per cent of the day. The UHAQMN also recorded elevated readings at Muswellbrook (55.5 $\mu\text{g}/\text{m}^3$ ) indicating a regional dust event. No operations were undertaken at Maxwell Infrastructure on 23 January 2020. A number of bushfires were occurring throughout NSW in January 2020 and smoke from these fires may have contributed to elevated PM <sub>10</sub> levels in the region.



## 12 ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

The measures listed in **Table 15** will be implemented during the next reporting period to continue to improve the environmental and community performance at the Maxwell Infrastructure site.

**Table 15. Improvement measures planned for next reporting period**

Reference Number	Measure	Planned Timing
1	Submit a new MOP and any associated rehabilitation documents.	March 2021
2	Upgrade the hardware and software for the Maxwell Infrastructure real-time noise monitor.	April 2021
3	Upgrade the Maxwell Infrastructure TEOM to include the measurement of particulate matter 2.5 micrometres or less in diameter (PM <sub>2.5</sub> ).	April 2021
4	Install a new monitoring bore within the Permian sequence located south of the former open cut mining area.	August 2021
5	Undertake two tree planting programs covering approximately 40 hectares of existing mine rehabilitation within the conceptual woodland corridor.	March and September 2021
6	A weed control program on mine rehabilitation focussing on Galenia	April and October 2021
7	A weed control program on the Wildlife Refuge focussing on Prickly Pear.	April to June 2021
8	A weed control program on the Southern Offset area focussing on Galenia, Guinea Grass, Rhodes Grass, Castor Oil, Coolatai Grass and Golden Wreath Wattle.	Throughout 2021
9	Installation of nest boxes in appropriately sized canopy trees within the woodland corridor.	September 2021
10	Undertake an IEA under development consents PA 06_0202 and DA 106-04-00.	December 2021

## APPENDIX 1. APPROVAL CONDITIONS RELEVANT TO THE ANNUAL REVIEW

Condition	Description	Report Section
<b>PA 06_0202</b>		
<b>Schedule 3 Condition 7</b>	The Proponent shall: (a) implement all reasonable and feasible noise mitigation measures; (b) investigate ways to reduce the noise generated by the project, including maximum noise levels which may result in sleep disturbance; and (c) report on these investigations and the implementation and effectiveness of these measures in the AEMR.	<b>7.2</b>
<b>Schedule 3 Condition 44</b>	The Proponent shall: (a) keep records of the: <ul style="list-style-type: none"> <li>• amount of coal transported from the site each year; and</li> <li>• number of coal haulage train movements generated by the project (on a daily basis);</li> <li>• date and time of each train movement generated by the project; and</li> </ul> (b) include these records in the AEMR.	<b>7.7 and Appendix 5</b>
<b>Schedule 3 Condition 47</b>	The Proponent shall: ... (e) report on waste management and minimisation in the AEMR,	<b>7.10</b>
<b>Schedule 5 Condition 5</b>	Within 12 months of this approval, and annually thereafter, the Proponent shall submit an AEMR to the Director-General and relevant agencies. This report must: (a) identify the standards and performance measures that apply to the project; (b) describe the works carried out in the last 12 months; (c) describe the works that will be carried out in the next 12 months; (d) include a summary of the complaints received during the past year, and compare this to the complaints received in previous years; (e) include a summary of the monitoring results for the project during the past year; (f) include an analysis of these monitoring results against the relevant: <ul style="list-style-type: none"> <li>• limits/criteria in this approval;</li> <li>• monitoring results from previous years; and</li> <li>• predictions in the EA;</li> </ul> (g) identify any trends in the monitoring results over the life of the project; (h) identify and discuss any non-compliance during the previous year; and (i) describe what actions were, or are being, taken to ensure compliance.	<b>7, 8 and 9</b> <b>5.1 and 5.2</b> <b>5.3</b> <b>10.1</b> <b>7, 8 and 9</b> <b>7, 8 and 9</b> <b>7, 8 and 9</b> <b>1 and 11</b> <b>11 and 12</b>

Condition	Description	Report Section
<b>Appendix 3 Statement of Commitments Ref 21</b>	[Maxwell Infrastructure] will prepare and submit to relevant regulatory departments an AEMR which will discuss monitoring results and include a discussion on predictions and commitments made within this EA.	<b>7, 8 and 9</b>
<b>DA 106-04-00</b>		
<b>Schedule 2 Condition 5.1b</b>	The Applicant shall: ... (iii) provide all results and analysis of air quality monitoring in the AEMR including a determination of the annual dust deposition rate in gm/m <sup>2</sup> /month, which shall be plotted in the AEMR.	<b>7.4 and Appendix 4</b>
<b>Schedule 2 Condition 5.3.2c</b>	The Applicant shall also: ... (ii) include a summary of noise monitoring results in the AEMR.	<b>7.2 and Appendix 3</b>
<b>Schedule 2 Condition 8.1a</b>	The Applicant shall, throughout the life of the rail loading facility and rail loop and for a period of at least three years after the completion of operations in the DA area, prepare and submit an Annual Environmental Management Report (AEMR), which may be incorporated into the existing Drayton AEMR to the satisfaction of the Director- General. The AEMR shall include a review of the performance of coal transportation against the Environmental Management Strategy, the conditions of this consent, and other licences and approvals relating to the coal transport operations. To enable ready comparison with the predictions of the EIS, diagrams and tables, the report shall include, but not be limited to, the following matters:  (i) an annual compliance review of the performance of the project against conditions of this consent and statutory approvals;  (ii) a review of the effectiveness of the environmental management of the coal transport operations in terms of EPA, DMR, and MSC requirements;  (iii) results of all environmental monitoring required under this consent or other approvals, including interpretations and discussion by a suitably qualified person;  (iv) identify trends in monitoring results over the life of coal transport operations;  (v) a listing of any variations obtained to approvals applicable to the subject area during the previous year; and  (vi) environmental management targets and strategies for the next year, taking into account identified trends in monitoring results.	<b>1 and 11</b>  <b>7.7</b>  <b>7, 8 and 9</b>  <b>7, 8 and 9</b>  <b>4</b>  <b>12</b>
<b>Schedule 2 Condition 8.1b</b>	In preparing the AEMR, the Applicant shall: (i) respond to any request made by the Director-General for any additional requirements; and  (ii) comply with any requirements of the Director-General or other relevant government agencies.	<b>6</b>  <b>6</b>

Condition	Description	Report Section
<b>Schedule 2 Condition 9.2a</b>	The environmental coordinator employed by [Maxwell Infrastructure] (refer condition 2.1) shall be responsible: ...  (ii) for providing a report of complaints received with respect to the Drayton coal transportation operations every six months throughout the life of the project to the Director-General, MSC, EPA, DMR, and CCC, or as otherwise agreed by the Director-General. A summary of this report shall be included in the AEMR (condition 8.1(a)).	<b>10.1</b>
<b>CL 229, CL 395 and ML 1531</b>		
<b>Condition 3</b>	<p>(1) Within 12 months of the commencement of mining operations and thereafter annually or, at such other times as may be allowed by the Director-General, the lease holder must lodge an Annual Environmental Management report (AEMR) with the Director-General.</p> <p>(2) The AEMR must be prepared in accordance with the Director-General's guidelines current at the time of reporting and contain a review and forecast of performance for the preceding and ensuing twelve months in terms of:</p> <ul style="list-style-type: none"> <li>(a) the accepted Mining Operations Plan;</li> <li>(b) development consent requirements and conditions;</li> <li>(c) Environment Protection Authority and Department of Land and Water Conservation (or Department of Environment and Conservation and Department of Planning) licences and approvals;</li> <li>(d) Any other statutory environmental requirements;</li> <li>(e) Details of any variations to environmental approvals applicable to the lease area; and</li> <li>(f) Where relevant, progress towards final rehabilitation objectives.</li> </ul>	<p>All</p> <p><b>9</b></p> <p><b>7, 8 and 9</b></p> <p><b>7, 8 and 9</b></p> <p><b>7, 8 and 9</b></p> <p><b>4</b></p> <p><b>9</b></p>

# APPENDIX 2. ENVIRONMENTAL MONITORING LOCATIONS



Figure 17. Environmental monitoring locations

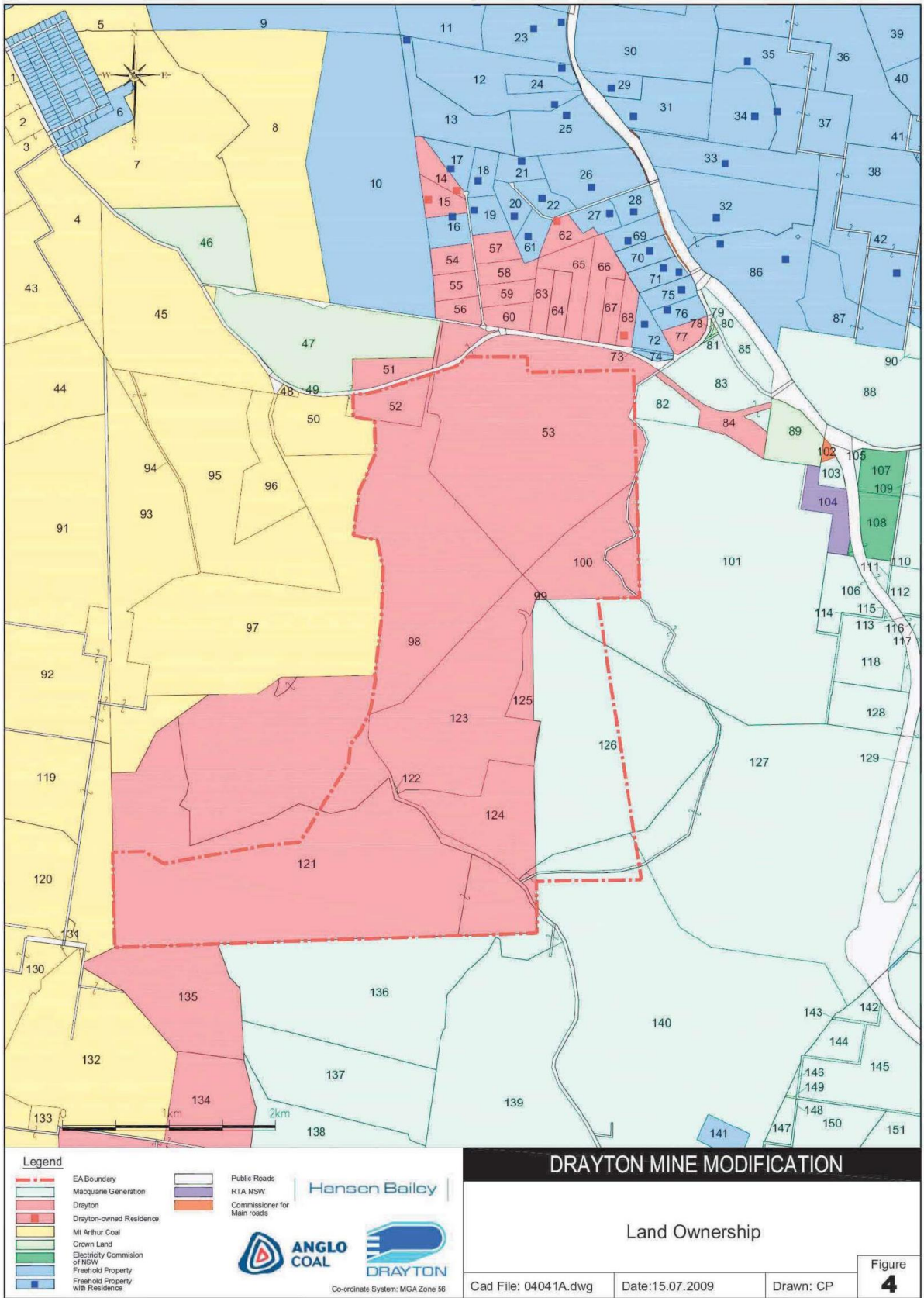


Figure 18. Noise modelling locations (land ownership)

## APPENDIX 3. NOISE MONITORING RESULTS

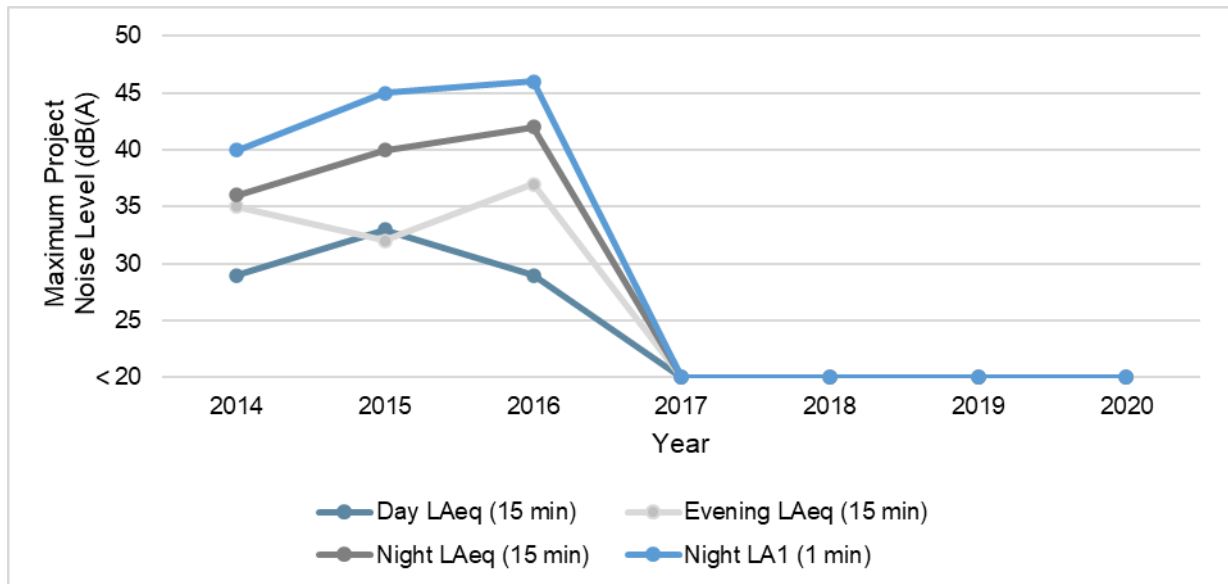
Table 16. Modelled noise generated by the project alone

Location	Approval criterion (dB(A))				EA year 10 prediction (dB(A))			2020 maximum result (dB(A))				
	Day	Evening	Night		Day	Evening	Night	Day	Evening	Night		
	L <sub>Aeq</sub> (15 min)	L <sub>Aeq</sub> (15 min)	L <sub>Aeq</sub> (15 min)	L <sub>A1</sub> (1 min)	L <sub>Aeq</sub> (15 min)	L <sub>Aeq</sub> (15 min)	L <sub>Aeq</sub> (15 min)	L <sub>Aeq</sub> (15 min)	L <sub>Aeq</sub> (15 min)	L <sub>Aeq</sub> (15 min)	L <sub>Aeq</sub> (15 min)	L <sub>Aeq</sub> (1 min)
34	35	35	39	45	<30	<30	34	<20	<20	<20	<20	
29	35	35	36	47	32	33	34	<20	<20	<20	<20	
31	35	35	37	47	32	34	35	<20	<20	<20	<20	
33	35	35	38	45	<30	32	36	<20	<20	<20	<20	
86	35	35	38	45	30	31	38	<20	<20	<20	<20	
32	35	35	40	47	30	33	39	<20	<20	<20	<20	
71	35	35	41	47	32	35	40	<20	<20	<20	<20	
75*	35	35	41	47	32	34	40	<20	<20	<20	<20	
70	35	36	41	47	33	36	40	<20	<20	<20	<20	
76*	35	36	42	47	33	35	42	<20	<20	<20	<20	
28	35	37	40	47	33	36	39	<20	<20	<20	<20	
69	35	37	41	47	34	36	40	<20	<20	<20	<20	
13	36	36	35	45	35	34	33	<20	<20	<20	<20	
12	36	36	36	47	34	35	35	<20	<20	<20	<20	
25*	36	37	37	47	34	35	35	<20	<20	<20	<20	
26	36	37	38	47	34	36	37	<20	<20	<20	<20	
27	36	37	39	47	34	36	38	<20	<20	<20	<20	
72*	36	37	42	47	34	36	42	<20	<20	<20	<20	
17	37	38	36	47	36	37	36	<20	<20	<20	<20	
21	38	38	38	45	36	37	37	<20	<20	<20	<20	
22	38	38	38	45	36	37	37	<20	<20	<20	<20	
18	38	39	38	47	37	38	37	<20	<20	<20	<20	
20	39	40	39	45	38	39	39	<20	<20	<20	<20	
61*	39	40	39	45	37	39	39	<20	<20	<20	<20	
14	40	39	39	47	38	39	38	<20	<20	<20	<20	
19	40	40	39	47	39	40	39	<20	<20	<20	<20	
16*	41	41	39	47	40	41	39	<20	<20	<20	<20	
23	35	35	35	47	32	33	33	<20	<20	<20	<20	
35*	35	35	35	47	<30	30	34	<20	<20	<20	<20	
42*	35	35	35	47	<30	<30	31	<20	<20	<20	<20	
37	35	35	35	45	<30	<30	33	<20	<20	<20	<20	

\* Measured: Doherty (16), Skinner (61), Robertson (72), Shaman (75) and Holder (76)

**Table 17. Monitoring summary - cumulative noise**

Location	Approval criterion (dB(A))			EA year 10 prediction (dB(A))	2020 maximum result (dB(A))		
	Day (L <sub>Aeg</sub> (11 hr))	Evening (L <sub>Aeg</sub> (4 hr))	Night (L <sub>Aeg</sub> (9 hr))		Day (L <sub>Aeg</sub> (11 hr))	Evening (L <sub>Aeg</sub> (4 hr))	Night (L <sub>Aeg</sub> (9 hr))
<b>Doherty (16)</b>	50	45	40	None	<20	22	23
<b>Skinner (61)</b>					<20	<20	23
<b>Robertson (72)</b>					<20	<20	25
<b>Sharman (75)</b>					<20	<20	<20
<b>Horder (76)</b>					<20	<20	<20



**Figure 19. Long-term maximum project noise levels**



## APPENDIX 4. AIR QUALITY MONITORING RESULTS

Table 18. PM<sub>10</sub> 24-hour average concentrations for the reporting period

Date	PM <sub>10</sub> 24-hour result (µg/m <sup>3</sup> )	Date	PM <sub>10</sub> 24-hour result (µg/m <sup>3</sup> )	Date	PM <sub>10</sub> 24-hour result (µg/m <sup>3</sup> )
1/01/2020	107.07	12/02/2020	11.18	25/03/2020	17.67
2/01/2020	51.53	13/02/2020	9.03	26/03/2020	7.04
3/01/2020	49.16	14/02/2020	20.08	27/03/2020	11.74
4/01/2020	35.32	15/02/2020	19.62	28/03/2020	14.79
5/01/2020	124.21	16/02/2020	13.13	29/03/2020	12.03
6/01/2020	52.00	17/02/2020	8.50	30/03/2020	8.47
7/01/2020	32.42	18/02/2020	11.72	31/03/2020	9.00
8/01/2020	52.63	19/02/2020	41.68	1/04/2020	13.69
9/01/2020	45.00	20/02/2020	22.80	2/04/2020	12.34
10/01/2020	37.77	21/02/2020	19.03	3/04/2020	6.83
11/01/2020	71.44	22/02/2020	14.25	4/04/2020	7.92
12/01/2020	61.52	23/02/2020	12.18	5/04/2020	17.53
13/01/2020	36.69	24/02/2020	15.33	6/04/2020	13.43
14/01/2020	35.77	25/02/2020	11.63	7/04/2020	13.09
15/01/2020	26.74	26/02/2020	10.13	8/04/2020	13.09
16/01/2020	30.03	27/02/2020	25.02	9/04/2020	12.26
17/01/2020	29.71	28/02/2020	23.82	10/04/2020	6.29
18/01/2020	19.57	29/02/2020	21.29	11/04/2020	12.54
19/01/2020	15.71	1/03/2020	20.14	12/04/2020	14.61
20/01/2020	-	2/03/2020	22.87	13/04/2020	13.14
21/01/2020	-	3/03/2020	23.64	14/04/2020	15.57
22/01/2020	-	4/03/2020	12.33	15/04/2020	16.83
23/01/2020	51.16	5/03/2020	12.19	16/04/2020	11.83
24/01/2020	40.20	6/03/2020	6.08	17/04/2020	13.12
25/01/2020	42.84	7/03/2020	12.30	18/04/2020	13.12
26/01/2020	15.49	8/03/2020	10.23	19/04/2020	10.62
27/01/2020	32.33	9/03/2020	10.63	20/04/2020	11.21
28/01/2020	26.64	10/03/2020	16.25	21/04/2020	9.81
29/01/2020	36.80	11/03/2020	17.44	22/04/2020	14.86
30/01/2020	35.33	12/03/2020	13.54	23/04/2020	14.74
31/01/2020	26.12	13/03/2020	19.99	24/04/2020	20.17
1/02/2020	35.74	14/03/2020	13.89	25/04/2020	16.65
2/02/2020	28.68	15/03/2020	14.87	26/04/2020	22.08
3/02/2020	22.40	16/03/2020	9.78	27/04/2020	21.08
4/02/2020	42.89	17/03/2020	8.32	28/04/2020	16.75
5/02/2020	22.08	18/03/2020	12.30	29/04/2020	7.11
6/02/2020	14.40	19/03/2020	18.00	30/04/2020	5.30
7/02/2020	2.41	20/03/2020	15.40	1/05/2020	3.50
8/02/2020	3.79	21/03/2020	32.58	2/05/2020	6.08
9/02/2020	2.99	22/03/2020	26.65	3/05/2020	5.29
10/02/2020	9.13	23/03/2020	19.87	4/05/2020	9.47
11/02/2020	12.31	24/03/2020	16.26	5/05/2020	11.82

Date	PM <sub>10</sub> 24-hour result (µg/m <sup>3</sup> )
6/05/2020	6.06
7/05/2020	-
8/05/2020	-
9/05/2020	9.02
10/05/2020	9.46
11/05/2020	9.32
12/05/2020	10.86
13/05/2020	18.24
14/05/2020	13.84
15/05/2020	15.53
16/05/2020	13.34
17/05/2020	21.27
18/05/2020	15.27
19/05/2020	13.83
20/05/2020	8.80
21/05/2020	4.64
22/05/2020	4.67
23/05/2020	4.70
24/05/2020	4.41
25/05/2020	5.44
26/05/2020	8.60
27/05/2020	12.54
28/05/2020	10.02
29/05/2020	12.23
30/05/2020	13.17
31/05/2020	8.62
1/06/2020	10.44
2/06/2020	6.97
3/06/2020	6.16
4/06/2020	16.66
5/06/2020	7.47
6/06/2020	8.18
7/06/2020	19.94
8/06/2020	20.91
9/06/2020	9.15
10/06/2020	4.03
11/06/2020	7.86
12/06/2020	16.99
13/06/2020	18.40
14/06/2020	9.57
15/06/2020	5.88

Date	PM <sub>10</sub> 24-hour result (µg/m <sup>3</sup> )
16/06/2020	4.94
17/06/2020	7.56
18/06/2020	11.21
19/06/2020	-
20/06/2020	7.18
21/06/2020	5.60
22/06/2020	3.72
23/06/2020	2.91
24/06/2020	2.60
25/06/2020	4.28
26/06/2020	7.90
27/06/2020	13.00
28/06/2020	11.39
29/06/2020	11.86
30/06/2020	8.72
1/07/2020	8.98
2/07/2020	10.56
3/07/2020	14.96
4/07/2020	7.67
5/07/2020	2.86
6/07/2020	6.56
7/07/2020	14.60
8/07/2020	12.70
9/07/2020	14.27
10/07/2020	14.05
11/07/2020	5.31
12/07/2020	3.50
13/07/2020	3.36
14/07/2020	3.50
15/07/2020	4.05
16/07/2020	5.92
17/07/2020	11.90
18/07/2020	9.51
19/07/2020	5.90
20/07/2020	10.65
21/07/2020	10.91
22/07/2020	13.14
23/07/2020	14.86
24/07/2020	17.98
25/07/2020	11.11
26/07/2020	1.45

Date	PM <sub>10</sub> 24-hour result (µg/m <sup>3</sup> )
27/07/2020	-
28/07/2020	1.60
29/07/2020	3.99
30/07/2020	9.22
31/07/2020	16.89
1/08/2020	11.36
2/08/2020	7.87
3/08/2020	5.75
4/08/2020	10.81
5/08/2020	8.35
6/08/2020	12.72
7/08/2020	15.03
8/08/2020	4.18
9/08/2020	1.80
10/08/2020	6.52
11/08/2020	7.76
12/08/2020	11.70
13/08/2020	12.27
14/08/2020	13.61
15/08/2020	4.88
16/08/2020	4.60
17/08/2020	3.66
18/08/2020	3.25
19/08/2020	33.08
20/08/2020	26.06
21/08/2020	7.01
22/08/2020	6.28
23/08/2020	7.94
24/08/2020	10.36
25/08/2020	7.03
26/08/2020	11.14
27/08/2020	8.87
28/08/2020	12.51
29/08/2020	14.34
30/08/2020	15.85
31/08/2020	23.22
1/09/2020	22.84
2/09/2020	20.01
3/09/2020	20.24
4/09/2020	17.84
5/09/2020	10.19

Date	PM <sub>10</sub> 24-hour result (µg/m <sup>3</sup> )
6/09/2020	20.90
7/09/2020	17.97
8/09/2020	14.58
9/09/2020	12.45
10/09/2020	-
11/09/2020	-
12/09/2020	6.23
13/09/2020	9.68
14/09/2020	10.68
15/09/2020	17.16
16/09/2020	12.47
17/09/2020	16.56
18/09/2020	21.04
19/09/2020	17.47
20/09/2020	16.50
21/09/2020	8.84
22/09/2020	12.19
23/09/2020	18.48
24/09/2020	13.34
25/09/2020	14.64
26/09/2020	5.71
27/09/2020	8.60
28/09/2020	17.94
29/09/2020	16.00
30/09/2020	13.23
1/10/2020	12.97
2/10/2020	13.63
3/10/2020	12.90
4/10/2020	15.97
5/10/2020	13.73
6/10/2020	20.96
7/10/2020	17.60
8/10/2020	19.44
9/10/2020	10.97
10/10/2020	12.25
11/10/2020	14.18
12/10/2020	25.71
13/10/2020	24.96
14/10/2020	33.57
15/10/2020	18.39
16/10/2020	25.79

Date	PM <sub>10</sub> 24-hour result (µg/m <sup>3</sup> )
17/10/2020	20.31
18/10/2020	9.01
19/10/2020	14.12
20/10/2020	17.17
21/10/2020	17.53
22/10/2020	13.98
23/10/2020	18.81
24/10/2020	7.07
25/10/2020	2.42
26/10/2020	1.53
27/10/2020	4.44
28/10/2020	7.21
29/10/2020	6.97
30/10/2020	10.21
31/10/2020	10.61
1/11/2020	8.85
2/11/2020	13.23
3/11/2020	14.63
4/11/2020	14.15
5/11/2020	9.23
6/11/2020	8.69
7/11/2020	18.84
8/11/2020	11.65
9/11/2020	11.49
10/11/2020	15.14
11/11/2020	13.72
12/11/2020	22.28
13/11/2020	22.45
14/11/2020	12.74
15/11/2020	15.78
16/11/2020	21.66
17/11/2020	36.53
18/11/2020	25.29
19/11/2020	28.34
20/11/2020	27.29
21/11/2020	38.54
22/11/2020	36.18
23/11/2020	18.05
24/11/2020	15.76
25/11/2020	17.78
26/11/2020	25.09

Date	PM <sub>10</sub> 24-hour result (µg/m <sup>3</sup> )
27/11/2020	43.96
28/11/2020	19.80
29/11/2020	38.51
30/11/2020	29.34
1/12/2020	34.26
2/12/2020	-
3/12/2020	16.22
4/12/2020	21.90
5/12/2020	32.19
6/12/2020	15.53
7/12/2020	24.14
8/12/2020	18.22
9/12/2020	26.41
10/12/2020	27.88
11/12/2020	12.22
12/12/2020	13.20
13/12/2020	10.78
14/12/2020	11.78
15/12/2020	5.78
16/12/2020	9.00
17/12/2020	-
18/12/2020	10.98
19/12/2020	11.34
20/12/2020	18.69
21/12/2020	6.50
22/12/2020	2.84
23/12/2020	12.01
24/12/2020	16.27
25/12/2020	12.78
26/12/2020	9.18
27/12/2020	9.17
28/12/2020	9.15
29/12/2020	6.95
30/12/2020	7.09
31/12/2020	8.25

Notes:

*Invalid 24-hour PM<sub>10</sub> results were recorded by the TEOM on 20, 21 and 22 January 2020. This was due to a power outage.*

*Invalid 24-hour PM<sub>10</sub> results were recorded by the TEOM on 7 and 8 May 2020, due to a faulty TEOM which was replaced.*

*Invalid 24-hour PM<sub>10</sub> results were recorded by the TEOM on 19 June and 10 and 11 September 2020 due to equipment calibration occurring on these days.*

*Invalid (negative) 24-hour PM<sub>10</sub> results were recorded on 27 July and 2 and 17 December 2020. The reason is suspected to be high ambient relative humidity which can affect the TEOM instrument.*

## APPENDIX 5. TRAIN MOVEMENTS

Date	Total train movements per day	Time of train movements (24 hr)	Total tonnage per day
01-Jan-19	0	-	0
02-Jan-19	0	-	0
03-Jan-19	0	-	0
04-Jan-19	1	02:30	0
05-Jan-19	0	-	0
06-Jan-19	0	-	0
07-Jan-19	0	-	0
08-Jan-19	0	-	0
09-Jan-19	0	-	0
10-Jan-19	0	-	0
11-Jan-19	0	-	0
12-Jan-19	0	-	0
13-Jan-19	0	-	0
14-Jan-19	0	-	0
15-Jan-19	0	-	0
16-Jan-19	1	16:30	0
17-Jan-19	1	06:30	0
18-Jan-19	1	07:00	0
19-Jan-19	0	-	0
20-Jan-19	0	-	0
21-Jan-19	0	-	0
22-Jan-19	0	-	0
23-Jan-19	0	-	0
24-Jan-19	0	-	0
25-Jan-19	0	-	0
26-Jan-19	0	-	0
27-Jan-19	1	17:00	0
28-Jan-19	0	-	0
29-Jan-19	0	-	0
30-Jan-19	0	-	0
31-Jan-19	0	-	0
01-Feb-19	0	-	0
02-Feb-19	0	-	0
03-Feb-19	0	-	0
04-Feb-19	0	-	0
05-Feb-19	1	10:49	0
06-Feb-19	0	-	0
07-Feb-19	0	-	0
08-Feb-19	0	-	0
09-Feb-19	0	-	0
10-Feb-19	0	-	0
11-Feb-19	0	-	0
12-Feb-19	0	-	0

Date	Total train movements per day	Time of train movements (24 hr)	Total tonnage per day
13-Feb-19	0	-	0
14-Feb-19	0	-	0
15-Feb-19	1	16:41	0
16-Feb-19	1	20:41	0
17-Feb-19	0	-	0
18-Feb-19	0	-	0
19-Feb-19	0	-	0
20-Feb-19	0	-	0
21-Feb-19	0	-	0
22-Feb-19	0	-	0
23-Feb-19	0	-	0
24-Feb-19	0	-	0
25-Feb-19	0	-	0
26-Feb-19	0	-	0
27-Feb-19	1	19:00	0
28-Feb-19	0	-	0
01-Mar-19	0	-	0
02-Mar-19	0	-	0
03-Mar-19	0	-	0
04-Mar-19	0	-	0
05-Mar-19	0	-	0
06-Mar-19	0	-	0
07-Mar-19	0	-	0
08-Mar-19	0	-	0
09-Mar-19	0	-	0
10-Mar-19	0	-	0
11-Mar-19	0	-	0
12-Mar-19	0	-	0
13-Mar-19	0	-	0
14-Mar-19	0	-	0
15-Mar-19	0	-	0
16-Mar-19	0	-	0
17-Mar-19	1	13:00	0
18-Mar-19	1	20:00	0
19-Mar-19	0	-	0
20-Mar-19	0	-	0
21-Mar-19	0	-	0
22-Mar-19	0	-	0
23-Mar-19	0	-	0
24-Mar-19	0	-	0
25-Mar-19	0	-	0
26-Mar-19	1	16:50	0
27-Mar-19	0	-	0
28-Mar-19	0	-	0
29-Mar-19	0	-	0

Date	Total train movements per day	Time of train movements (24 hr)	Total tonnage per day
30-Mar-19	2	13:10 14:00	0
31-Mar-19	0	-	0
01-Apr-19	0	-	0
02-Apr-19	0	-	0
03-Apr-19	0	-	0
04-Apr-19	0	-	0
05-Apr-19	0	-	0
06-Apr-19	1	18:00	0
07-Apr-19	0	-	0
08-Apr-19	0	-	0
09-Apr-19	0	-	0
10-Apr-19	1	15:00	0
11-Apr-19	0	-	0
12-Apr-19	0	-	0
13-Apr-19	0	-	0
14-Apr-19	1	12:00	0
15-Apr-19	0	-	0
16-Apr-19	0	-	0
17-Apr-19	0	-	0
18-Apr-19	0	-	0
19-Apr-19	0	-	0
20-Apr-19	0	-	0
21-Apr-19	0	-	0
22-Apr-19	0	-	0
23-Apr-19	0	-	0
24-Apr-19	0	-	0
25-Apr-19	0	-	0
26-Apr-19	0	-	0
27-Apr-19	0	-	0
28-Apr-19	0	-	0
29-Apr-19	0	-	0
30-Apr-19	0	-	0
01-May-19	0	-	0
02-May-19	1	11:30	0
03-May-19	0	-	0
04-May-19	0	-	0
05-May-19	0	-	0
06-May-19	0	-	0
07-May-19	0	-	0
08-May-19	0	-	0
09-May-19	0	-	0
10-May-19	1	02:54	0
11-May-19	0	-	0
12-May-19	0	-	0
13-May-19	0	-	0

Date	Total train movements per day	Time of train movements (24 hr)	Total tonnage per day
14-May-19	0	-	0
15-May-19	0	-	0
16-May-19	0	-	0
17-May-19	0	-	0
18-May-19	0	-	0
19-May-19	0	-	0
20-May-19	0	-	0
21-May-19	0	-	0
22-May-19	0	-	0
23-May-19	0	-	0
24-May-19	0	-	0
25-May-19	0	-	0
26-May-19	0	-	0
27-May-19	0	-	0
28-May-19	0	-	0
29-May-19	0	-	0
30-May-19	0	-	0
31-May-19	0	-	0
01-Jun-19	0	-	0
02-Jun-19	0	-	0
03-Jun-19	0	-	0
04-Jun-19	1	14:00	0
05-Jun-19	0	-	0
06-Jun-19	0	-	0
07-Jun-19	0	-	0
08-Jun-19	1	15:15	0
09-Jun-19	0	-	0
10-Jun-19	0	-	0
11-Jun-19	0	-	0
12-Jun-19	0	-	0
13-Jun-19	0	-	0
14-Jun-19	0	-	0
15-Jun-19	0	-	0
16-Jun-19	0	-	0
17-Jun-19	0	-	0
18-Jun-19	0	-	0
19-Jun-19	0	-	0
20-Jun-19	0	-	0
21-Jun-19	0	-	0
22-Jun-19	0	-	0
23-Jun-19	0	-	0
24-Jun-19	0	-	0
25-Jun-19	0	-	0
26-Jun-19	0	-	0
27-Jun-19	0	-	0



Date	Total train movements per day	Time of train movements (24 hr)	Total tonnage per day
28-Jun-19	0	-	0
29-Jun-19	0	-	0
30-Jun-19	0	-	0
01-Jul-19	0	-	0
02-Jul-19	0	-	0
03-Jul-19	0	-	0
04-Jul-19	0	-	0
05-Jul-19	1	15:21	0
06-Jul-19	0	-	0
07-Jul-19	0	-	0
08-Jul-19	0	-	0
09-Jul-19	0	-	0
10-Jul-19	0	-	0
11-Jul-19	0	-	0
12-Jul-19	0	-	0
13-Jul-19	0	-	0
14-Jul-19	0	-	0
15-Jul-19	0	-	0
16-Jul-19	0	-	0
17-Jul-19	0	-	0
18-Jul-19	0	-	0
19-Jul-19	0	-	0
20-Jul-19	0	-	0
21-Jul-19	1	20:11	0
22-Jul-19	0	-	0
23-Jul-19	0	-	0
24-Jul-19	0	-	0
25-Jul-19	0	-	0
26-Jul-19	0	-	0
27-Jul-19	0	-	0
28-Jul-19	0	-	0
29-Jul-19	0	-	0
30-Jul-19	0	-	0
31-Jul-19	0	-	0
01-Aug-19	0	-	0
02-Aug-19	0	-	0
03-Aug-19	0	-	0
04-Aug-19	0	-	0
05-Aug-19	0	-	0
06-Aug-19	0	-	0
07-Aug-19	0	-	0
08-Aug-19	0	-	0
09-Aug-19	0	-	0
10-Aug-19	0	-	0
11-Aug-19	0	-	0

Date	Total train movements per day	Time of train movements (24 hr)	Total tonnage per day
12-Aug-19	1	14:30	0
13-Aug-19	0	-	0
14-Aug-19	0	-	0
15-Aug-19	0	-	0
16-Aug-19	0	-	0
17-Aug-19	0	-	0
18-Aug-19	0	-	0
19-Aug-19	0	-	0
20-Aug-19	0	-	0
21-Aug-19	0	-	0
22-Aug-19	2	08:30 23:00	0
23-Aug-19	0	-	0
24-Aug-19	0	-	0
25-Aug-19	0	-	0
26-Aug-19	0	-	0
27-Aug-19	0	-	0
28-Aug-19	0	-	0
29-Aug-19	0	-	0
30-Aug-19	0	-	0
31-Aug-19	0	-	0
01-Sep-19	0	-	0
02-Sep-19	0	-	0
03-Sep-19	0	-	0
04-Sep-19	1	10:41	0
05-Sep-19	0	-	0
06-Sep-19	0	-	0
07-Sep-19	0	-	0
08-Sep-19	0	-	0
09-Sep-19	0	-	0
10-Sep-19	0	-	0
11-Sep-19	0	-	0
12-Sep-19	1	19:00	0
13-Sep-19	0	-	0
14-Sep-19	0	-	0
15-Sep-19	0	-	0
16-Sep-19	0	-	0
17-Sep-19	0	-	0
18-Sep-19	0	-	0
19-Sep-19	0	-	0
20-Sep-19	0	-	0
21-Sep-19	0	-	0
22-Sep-19	0	-	0
23-Sep-19	0	-	0
24-Sep-19	0	-	0
25-Sep-19	0	-	0

Date	Total train movements per day	Time of train movements (24 hr)	Total tonnage per day
26-Sep-19	1	10:38	0
27-Sep-19	0	-	0
28-Sep-19	0	-	0
29-Sep-19	0	-	0
30-Sep-19	0	-	0
01-Oct-19	0	-	0
02-Oct-19	0	-	0
03-Oct-19	0	-	0
04-Oct-19	0	-	0
05-Oct-19	0	-	0
06-Oct-19	0	-	0
07-Oct-19	0	-	0
08-Oct-19	0	-	0
09-Oct-19	1	06:26	0
10-Oct-19	0	-	0
11-Oct-19	0	-	0
12-Oct-19	0	-	0
13-Oct-19	0	-	0
14-Oct-19	0	-	0
15-Oct-19	0	-	0
16-Oct-19	0	-	0
17-Oct-19	0	-	0
18-Oct-19	0	-	0
19-Oct-19	1	10:00	0
20-Oct-19	0	-	0
21-Oct-19	0	-	0
22-Oct-19	0	-	0
23-Oct-19	0	-	0
24-Oct-19	2	04:41 09:51	0
25-Oct-19	0	-	0
26-Oct-19	0	-	0
27-Oct-19	0	-	0
28-Oct-19	0	-	0
29-Oct-19	1	07:31	0
30-Oct-19	0	-	0
31-Oct-19	0	-	0
01-Nov-19	0	-	0
02-Nov-19	0	-	0
03-Nov-19	0	-	0
04-Nov-19	0	-	0
05-Nov-19	0	-	0
06-Nov-19	0	-	0
07-Nov-19	0	-	0
08-Nov-19	0	-	0
09-Nov-19	0	-	0

Date	Total train movements per day	Time of train movements (24 hr)	Total tonnage per day
10-Nov-19	0	-	0
11-Nov-19	0	-	0
12-Nov-19	0	-	0
13-Nov-19	2	11:44 19:00	0
14-Nov-19	0	-	0
15-Nov-19	0	-	0
16-Nov-19	1	08:00	0
17-Nov-19	0	-	0
18-Nov-19	0	-	0
19-Nov-19	0	-	0
20-Nov-19	0	-	0
21-Nov-19	0	-	0
22-Nov-19	0	-	0
23-Nov-19	1	07:30	0
24-Nov-19	0	-	0
25-Nov-19	0	-	0
26-Nov-19	0	-	0
27-Nov-19	0	-	0
28-Nov-19	1	22:51	0
29-Nov-19	0	-	0
30-Nov-19	0	-	0
01-Dec-19	0	-	0
02-Dec-19	0	-	0
03-Dec-19	0	-	0
04-Dec-19	0	-	0
05-Dec-19	0	-	0
06-Dec-19	0	-	0
07-Dec-19	0	-	0
08-Dec-19	1	18:21	0
09-Dec-19	0	-	0
10-Dec-19	0	-	0
11-Dec-19	0	-	0
12-Dec-19	1	13:00	0
13-Dec-19	0	-	0
14-Dec-19	0	-	0
15-Dec-19	0	-	0
16-Dec-19	0	-	0
17-Dec-19	0	-	0
18-Dec-19	0	-	0
19-Dec-19	1	07:00	0
20-Dec-19	0	-	0
21-Dec-19	0	-	0
22-Dec-19	0	-	0
23-Dec-19	0	-	0
24-Dec-19	0	-	0

Date	Total train movements per day	Time of train movements (24 hr)	Total tonnage per day
25-Dec-19	0	-	0
26-Dec-19	0	-	0
27-Dec-19	0	-	0
28-Dec-19	0	-	0
29-Dec-19	0	-	0
30-Dec-19	0	-	0
31-Dec-19	0	-	0

## APPENDIX 6. VISUAL IMPACT RESULTS

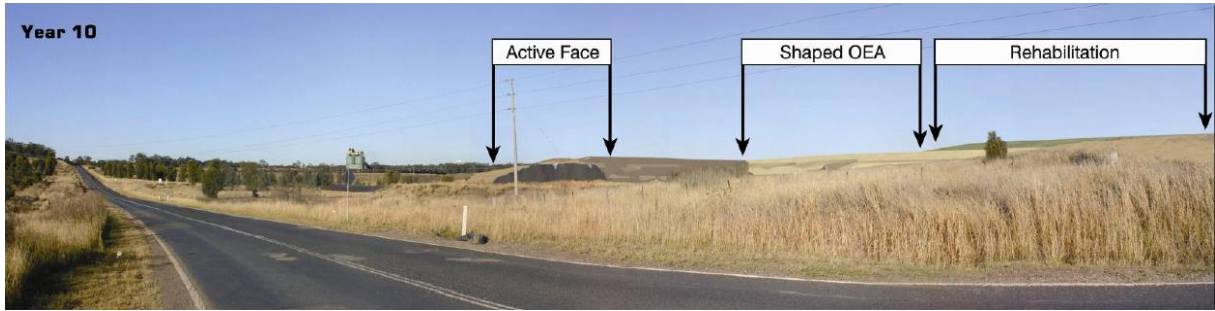


Figure 20. EA photomontage from Thomas Mitchell Drive in year 10



Figure 21. Current view from Thomas Mitchell Drive



Figure 22. EA photomontage from Hassall Rd in year 1 (final landform)



Figure 23. Current view from Hassall Rd

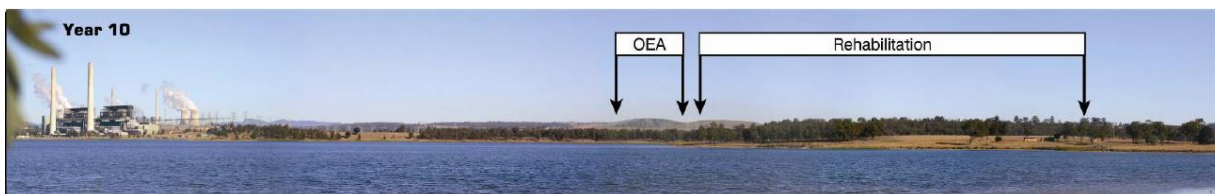
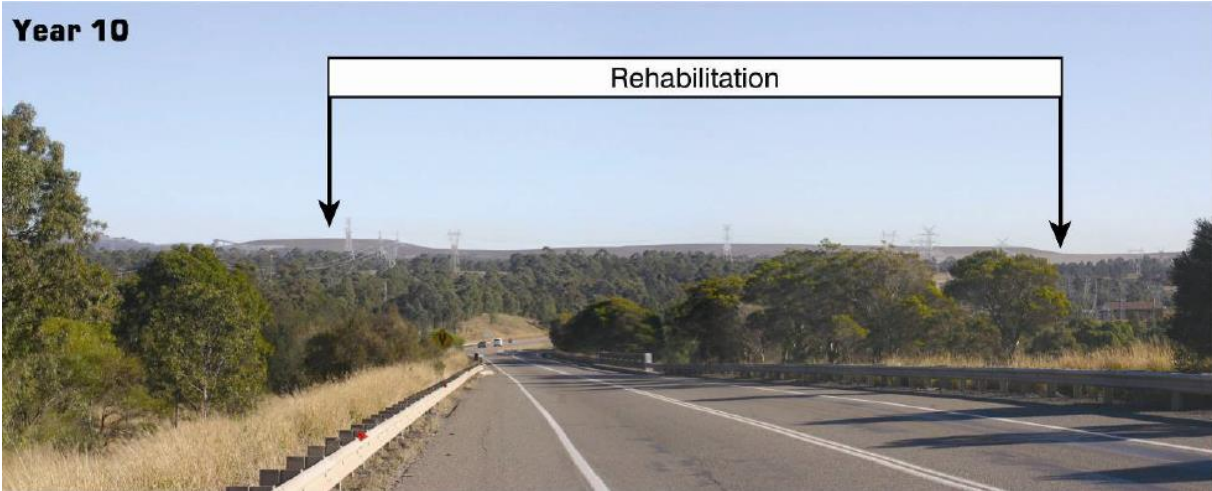


Figure 24. EA photomontage from Lake Liddell in year 10



**Figure 25. Current view from Lake Liddell**

**Note. Due to access restrictions the photo in Figure 25 has been taken from a higher vantage.**



**Figure 26. EA photomontage from New England highway in year 10**



**Figure 27. Current view from New England Highway**

## APPENDIX 7. BIODIVERSITY MONITORING RESULTS

**Table 19. Performance of reference sites**

Performance Criteria	Site No.	2016			2018 <sup>#</sup>			2020 <sup>#</sup>		
		Canopy	Mid-storey	Ground	Canopy	Mid-storey	Ground	Canopy	Mid-storey	Ground
There is regeneration of species from all structural layers	1a	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	1c	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	3a	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	5a	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Species (sp.) composition does not decrease by more than 10 per cent from year to year (no. of sp.)	1a	55			36			42 (>16%)		
	1c	35			39			47 (>20%)		
	3a	42			35			36 (>3%)		
	5a	40			33			30 (<9% <sup>o</sup> )		
Total cover of invasive weed species is less than 5 per cent (%)	1a	2			5			3		
	1c	1			5			1		
	3a	1			2			1		
	5a	5			5			17		

Notes:

<sup>#</sup> Results influenced by drought conditions.

**Table 20. Performance of pasture rehabilitation sites**

Performance Criteria	Site No.	2016	2018 <sup>#</sup>	2020 <sup>#</sup>
Ground cover is between 90-100 per cent (%)	11c	80	80	71
	11f	48	80	52
	11g	94	80	58
	11h	92	85	62
Appropriate seed mix (5 species from FY16-FY20 MOP Table 29)	11c	Yes	Yes	Yes
	11f	Yes	Yes	Yes
	11g	Yes	Yes	Yes
	11h	Yes	Yes	Yes
More than 80 per cent target species (%)	11c	13	18	17
	11f	38	27	11
	11g	53	27	17
	11h	32	45	12
Less than 40 per cent cover of a single species (%)	11c	80	70	45
	11f	15	25	30
	11g	50	45	55
	11h	40	45	20
	11c	1	2	2



Performance Criteria	Site No.	2016	2018 <sup>#</sup>	2020 <sup>#</sup>
Five to six perennial species per square metre (sp./m <sup>2</sup> )	11f	2	2	1
	11g	3	2	2
	11h	2	2	2
Less than 20 per cent significant weed cover (%)	11c	1	0	8
	11f	40	23	5
	11g	2	5	1
	11h	5	2	22
Weeds have been actively managed	11c	-	N	N
	11f	-	N	Y
	11g	-	N	N
	11h	-	N	N
Cover of perennial grasses (%)*	11c	-	4	8
	11f	-	12	5
	11g	-	4	3
	11h	-	10	4
Total number of flora species (sp.)*	11c	-	21	53
	11f	-	37	23
	11g	-	23	14
	11h	-	30	16

Notes:

\* No performance criteria.

# Results influenced by drought conditions.

**Table 21. Performance of woodland sites**

Performance Criteria	Site No.	2016			2018 <sup>#</sup>			2020 <sup>#</sup>		
		Canopy	Mid-storey	Ground	Canopy	Mid-storey	Ground	Canopy	Mid-storey	Ground
Ground cover is establishing evenly with bare areas not greater than analogue sites (%) (i.e. 14 per cent)	6a	18			8			8		
	7a	8			15			10		
	8a	0			5			4		
	9a	2			5			2		
	10b	16			15			22		
	10e	0			22			20		
	12a	-			10			6		
	6a	1	0	3	1	4	11	0	2	14
	7a	1	0	4	0	1	12	2	0	5
	8a	1	0	2	2	0	8	2	1	2
	9a	1	0	4	1	2	-	1	2	4

Performance Criteria	Site No.	2016			2018 <sup>#</sup>			2020 <sup>#</sup>		
		Canopy	Mid-storey	Ground	Canopy	Mid-storey	Ground	Canopy	Mid-storey	Ground
80 per cent of species from each stratum are represented (%) (average reference site native canopy composition is 2 species so 80 per cent is more than 1 species)	10b	1	0	4	2	2	10	4	4	6
	10e	2	0	1	3	3	10	3	1	4
	12a	-	-	-	3	3	5	4	2	7
An average of 100 stems/ha surviving in woodland/forest rehabilitation	6a	50 stems/ha			2 stems/ha			2 stems/ha		
	7a	75 stems/ha			33 stems/ha			30 stems/ha		
	8a	98 stems/ha			5 stems/ha			5 stems/ha		
	9a	n/a			n/a			70 stems/ha		
	10b	n/a			n/a			75* stems/ha		
	10e	n/a			n/a			100+ stems/ha		
	12a	-			35 stems/ha			65 stems/ha		
Exotic weeds form less than 10 per cent of the species cover (%)	6a	29			60			38		
	7a	85			70			54		
	8a	88			60			82		
	9a	77			90			85		
	10b	2			25			19		
	10e	-			40			48		
	12a	-			40			7		
Total ground coverage of noxious and nationally significant weeds (High Threat Exotic) is less than 10 per cent (%)	6a	-			44			33		
	7a	-			65			48		
	8a	-			52			79		
	9a	-			84			75		
	10b	-			5			16.		
	10e	-			21			21		
	12a	-			3			1%		

Notes:

\* several stems in 10b include *Eucalyptus Cladocalyx* (Sugar Gum)-High Threat exotic

# Results influenced by drought conditions

#### Key

	Met performance criteria		Did not meet performance criteria
--	--------------------------	--	-----------------------------------

## APPENDIX 8. WATER ACCOUNTING FRAMEWORK INPUT – OUTPUT STATEMENT

Reporting Period	Date	Storage (ML)
Start	01/01/2020	12,826
Finish	31/12/2020	14,362

### INPUTS-OUTPUTS

Input-Output	Element (Source / Destination)	Sub-element (Inputs/Outputs)	Water Quality			Sub-element Total (ML)	Measured, Estimated, Simulated	Accuracy
			Category 1 (ML)	Category 2 (ML)	Category 3 (ML)			
Inputs	Surface Water	<i>Precipitation and Runoff</i>		2029.2		2029.2	Simulated	Medium
		<i>Rivers and Creeks</i>						
		<i>External Surface Water Storage</i>						
	Groundwater	<i>Aquifer Interception</i>			59.0	59.0	Estimated	Medium
		<i>Bore Fields</i>						
		<i>Entrainment</i>						
	Seawater	<i>Estuary</i>						
		<i>Sea/Ocean</i>						
	Third Party Water	<i>Contract</i>						
		<i>Wastewater</i>						
<i>Other</i>		1.6				Measured	High	
<b>TOTAL INPUTS</b>			<b>1.6</b>	<b>2029.2</b>	<b>59.0</b>	<b>2,089.8</b>		
Outputs	Surface Water	<i>Discharge</i>						
		<i>Environmental Flows</i>						
	Groundwater	<i>Seepage</i>						
		<i>Reinjection</i>						
	Seawater	<i>Discharge to Estuary</i>						
		<i>Discharge to Sea/Ocean</i>						
	Supply to Third Party							
	Other	<i>Evaporation</i>	538.3			538.3	Simulated	Medium
<i>Entrainment</i>								
<i>Other (potable, misc)</i>								
<b>TOTAL OUTPUTS</b>			<b>538.3</b>			<b>538.3</b>		

## APPENDIX 9. GROUNDWATER QUALITY RESULTS

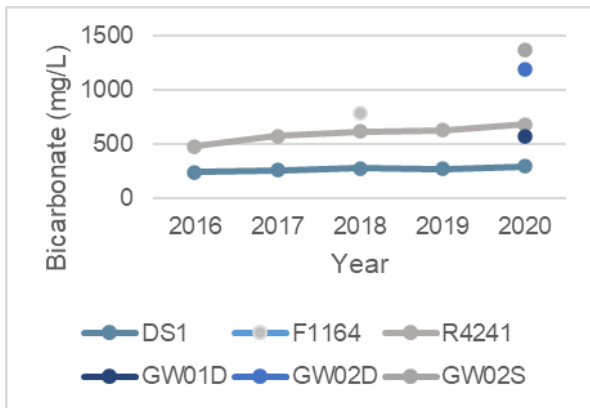


Figure 28. Long-term groundwater bicarbonate

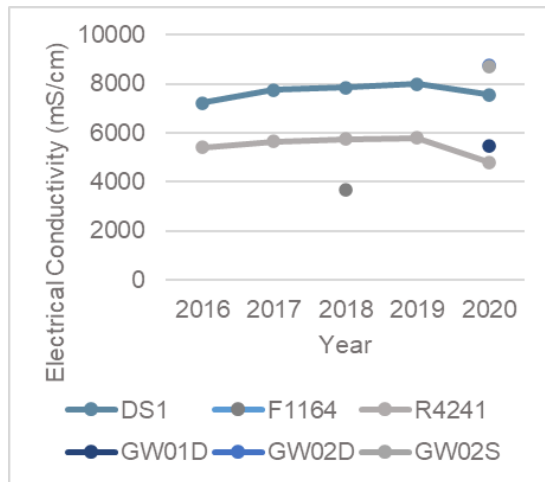


Figure 31. Long-term groundwater EC

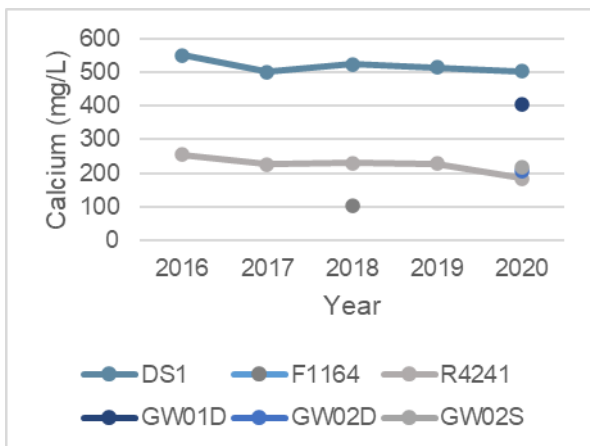


Figure 29. Long-term groundwater calcium

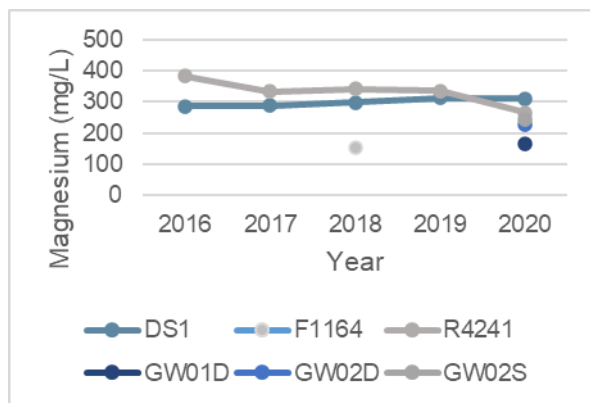


Figure 32. Long-term groundwater magnesium

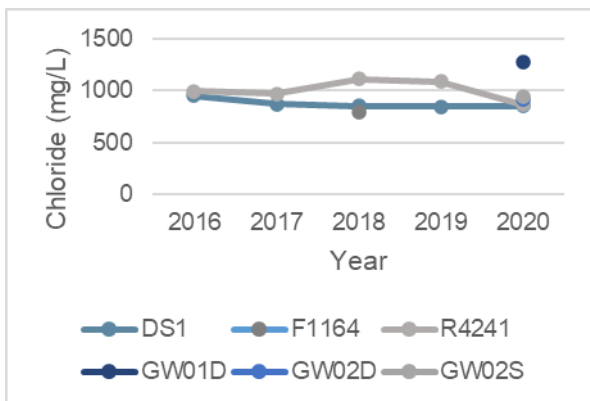


Figure 30. Long-term groundwater chloride

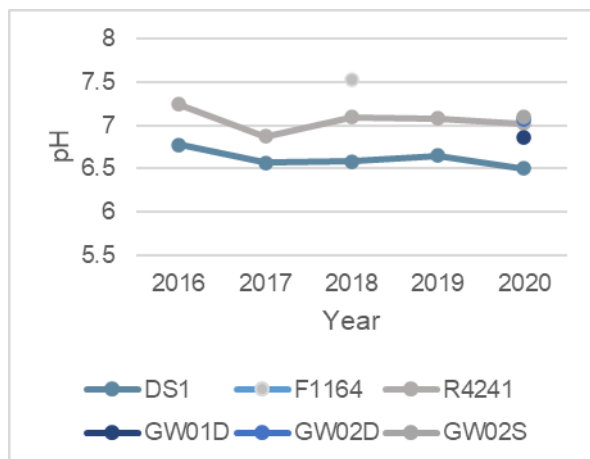


Figure 33. Long-term groundwater pH

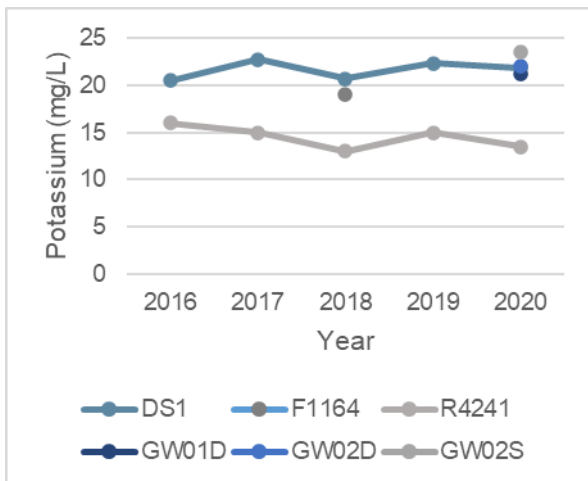


Figure 34. Long-term groundwater potassium

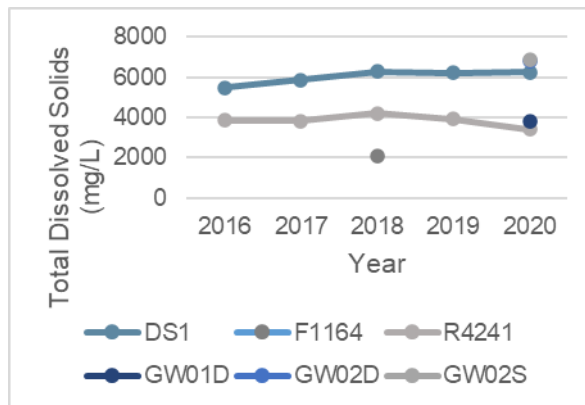


Figure 37. Long-term groundwater TDS

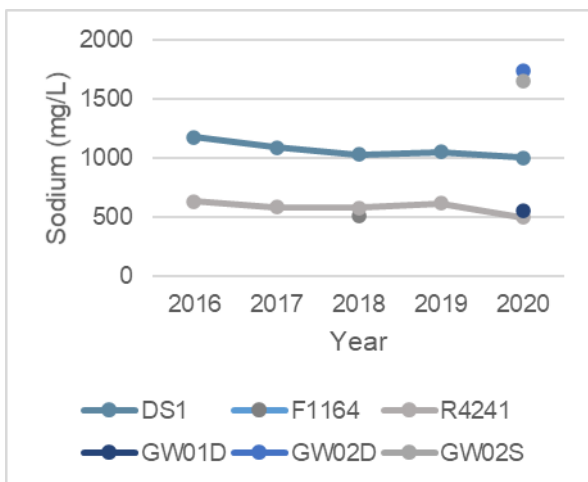


Figure 35. Long-term groundwater sodium

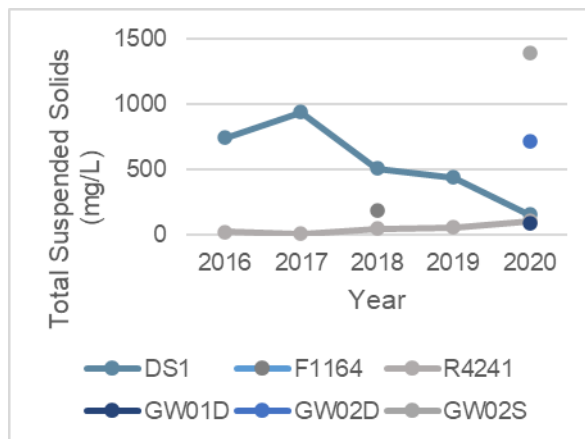


Figure 38. Long-term groundwater TSS

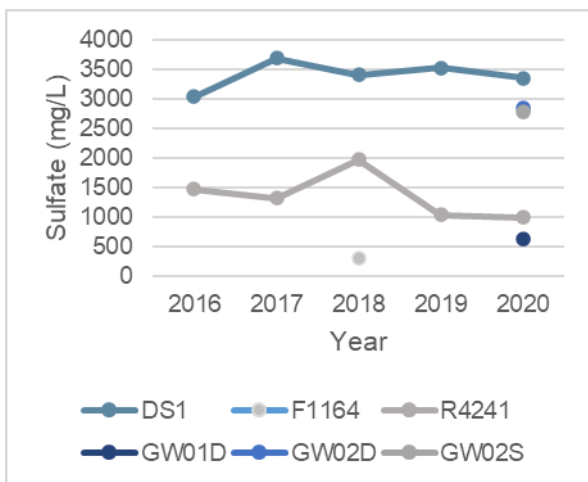


Figure 36. Long-term groundwater sulfate

**Table 22. 2020 Dissolved and Total Metals Concentrations in Groundwater**

Metal	Dissolved or Total	Monitoring Site				
		DS1	R4241	GW01D	GW02D	GW02S
<b>Arsenic</b>	Dissolved	0.0010	0.0010	0.0010	0.0028	0.0013
	Total	0.0013	0.0023	0.0018	0.022	0.0028
<b>Barium</b>	Dissolved	0.0080	0.048	0.060	0.029	0.030
	Total	0.017	0.060	0.079	0.34	0.031
<b>Beryllium</b>	Dissolved	0.0010	0.0010	0.0010	0.0010	0.0010
	Total	0.0010	0.0010	0.0010	0.0015	0.0010
<b>Boron</b>	Dissolved	0.058	0.13	0.29	0.16	0.16
	Total	0.065	0.15	0.32	0.23	0.13
<b>Cadmium</b>	Dissolved	0.00015	0.00010	0.00010	0.00010	0.00010
	Total	0.00020	0.00010	0.00010	0.00025	0.00010
<b>Chromium</b>	Dissolved	0.0010	0.0010	0.0010	0.0010	0.0010
	Total	0.0013	0.0043	0.0020	0.019	0.0018
<b>Cobalt</b>	Dissolved	0.0065	0.0035	0.0060	0.0043	0.0023
	Total	0.0080	0.0040	0.0078	0.016	0.0050
<b>Copper</b>	Dissolved	0.0010	0.0010	0.0010	0.0013	0.0015
	Total	0.0015	0.011	0.0040	0.035	0.0020
<b>Lead</b>	Dissolved	0.0010	0.0010	0.0010	0.0010	0.0010
	Total	0.0010	0.019	0.0015	0.026	0.0015
<b>Manganese</b>	Dissolved	1.7	0.14	0.25	0.61	0.43
	Total	1.8	0.16	0.29	0.74	0.73
<b>Mercury</b>	Dissolved	0.00010	0.00010	0.00010	0.00010	0.00013
	Total	0.00010	0.00010	0.00010	0.00010	0.00010
<b>Nickel</b>	Dissolved	0.018	0.013	0.014	0.010	0.010
	Total	0.023	0.017	0.020	0.044	0.015
<b>Selenium</b>	Dissolved	0.010	0.010	0.010	0.010	0.010
	Total	0.010	0.010	0.010	0.010	0.010
<b>Vanadium</b>	Dissolved	0.010	0.010	0.010	0.010	0.010
	Total	0.010	0.010	0.010	0.030	0.010
<b>Zinc</b>	0.025	0.030	0.039	0.0075	0.015	0.025
	0.030	0.13	0.11	0.13	0.018	0.030

**Table 23. 2020 Average Nutrient Concentrations in Groundwater**

Metal	MonitoringSite				
	DS1	R4241	GW01D	GW02D	GW02S
Ammonia as N	0.05	0.82	0.53	2.2	1.6
Nitrate as N	0.018	0.36	0.24	0.048	0.073
Nitrite as N	0.010	0.015	0.010	0.043	0.010
Reactive Phosphorus as P	0.013	0.010	0.010	0.010	0.010
Total Kjeldahl Nitrogen as N	0.13	1.48	0.85	3.3	2.6
Total Nitrogen as N	0.13	1.9	1.1	3.4	2.6
Total Phosphorus as P	0.035	0.20	0.070	0.84	0.59

## APPENDIX 10. SURFACE WATER QUALITY RESULTS

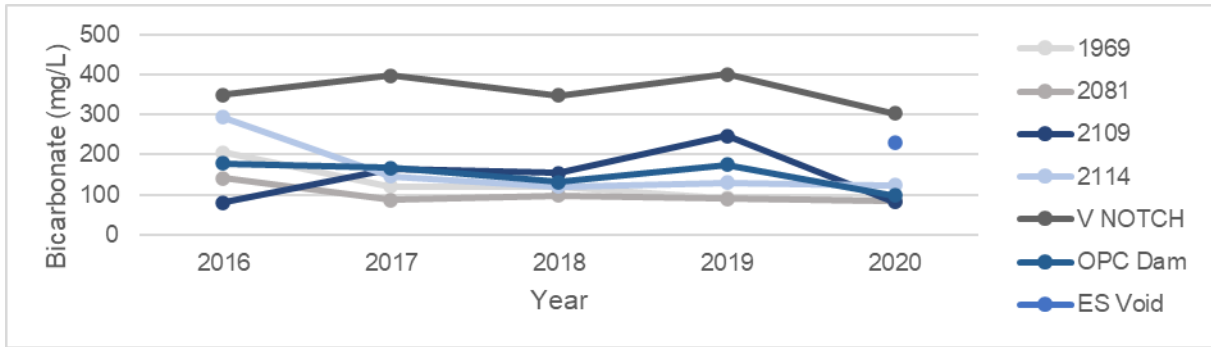


Figure 39. Long-term surface water bicarbonate

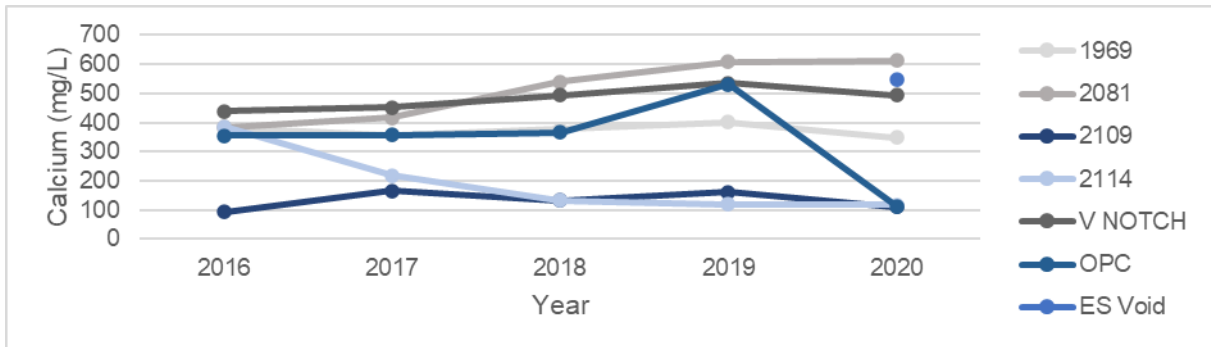


Figure 40. Long-term surface water calcium

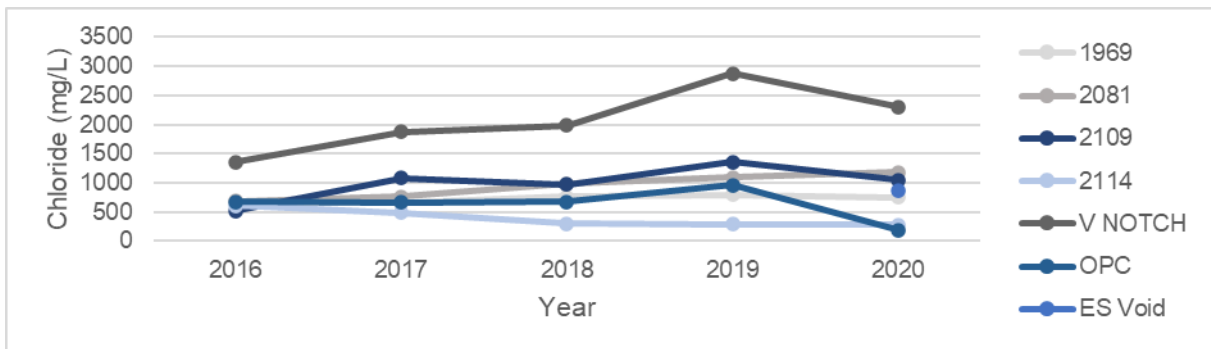


Figure 41. Long-term surface water chloride

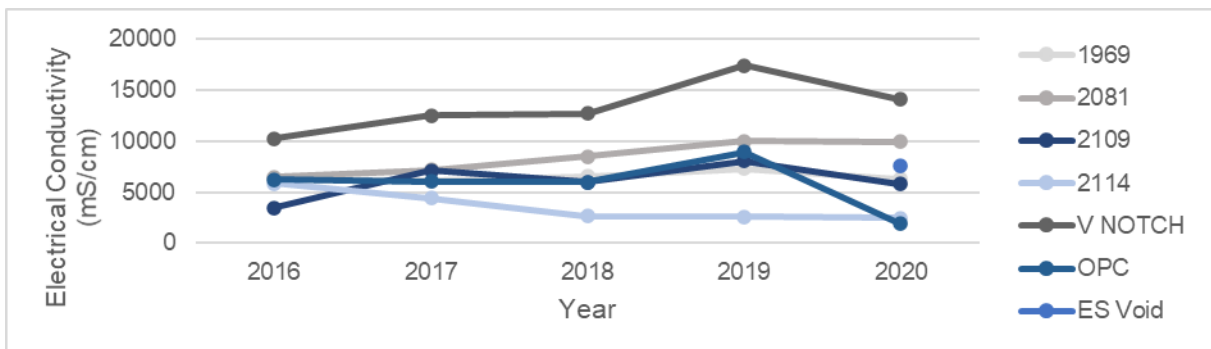


Figure 42. Long-term surface water electrical conductivity



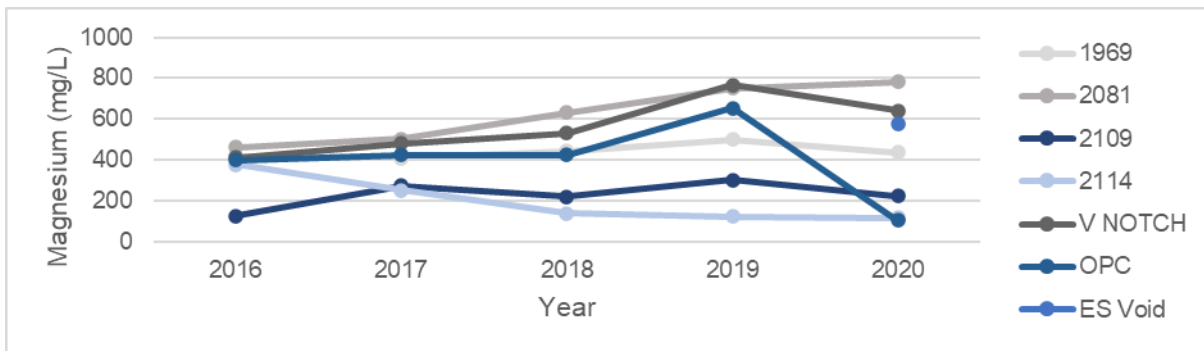


Figure 43. Long-term surface water magnesium

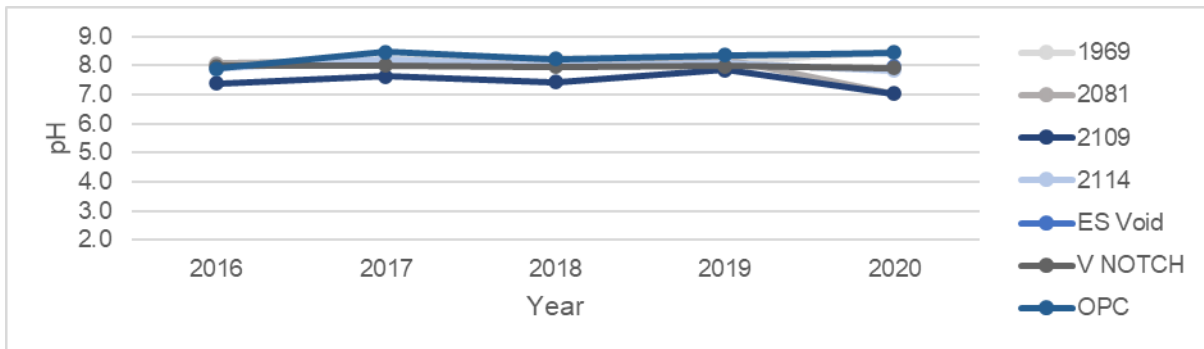


Figure 44. Long-term surface water pH

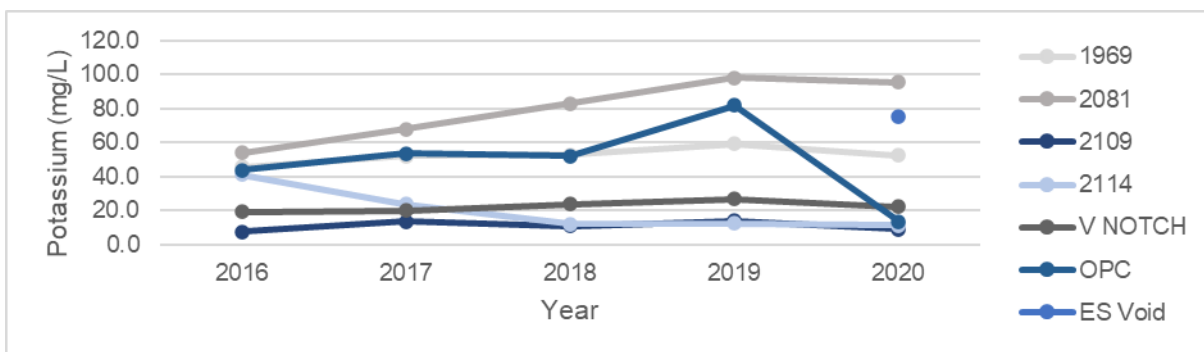


Figure 45. Long-term surface water potassium

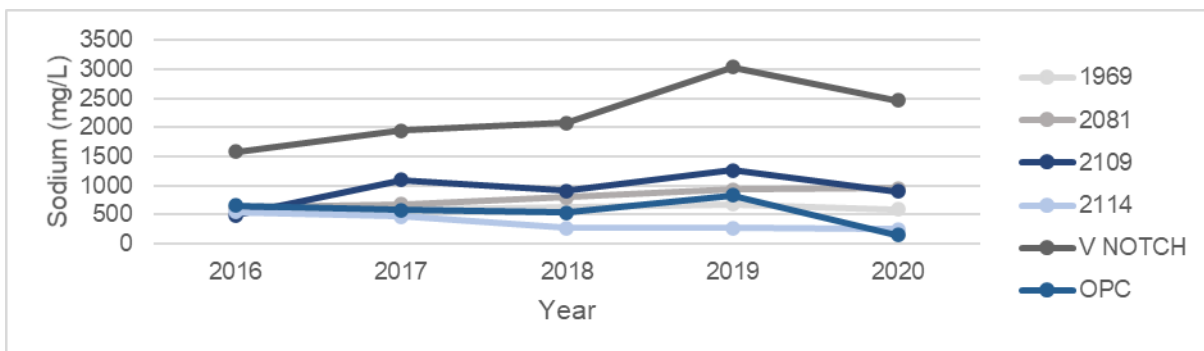


Figure 46. Long-term surface water sodium

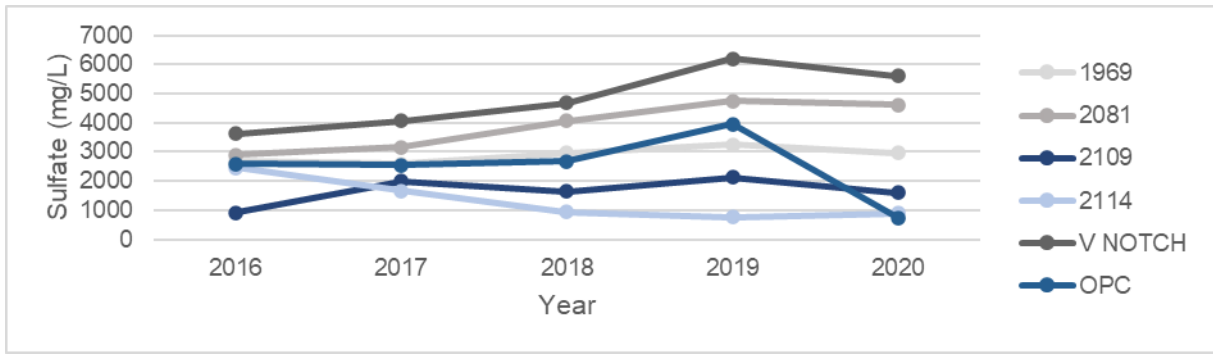


Figure 47. Long-term surface water sulfate

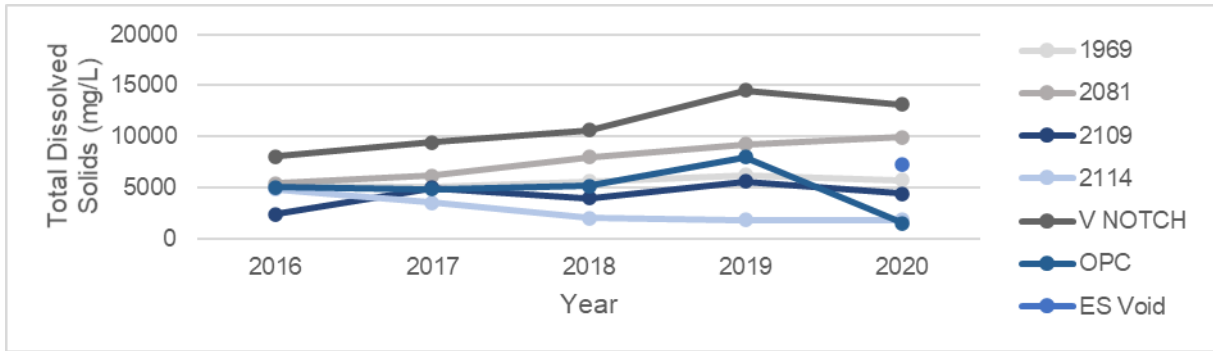


Figure 48. Long-term surface water total dissolved solids

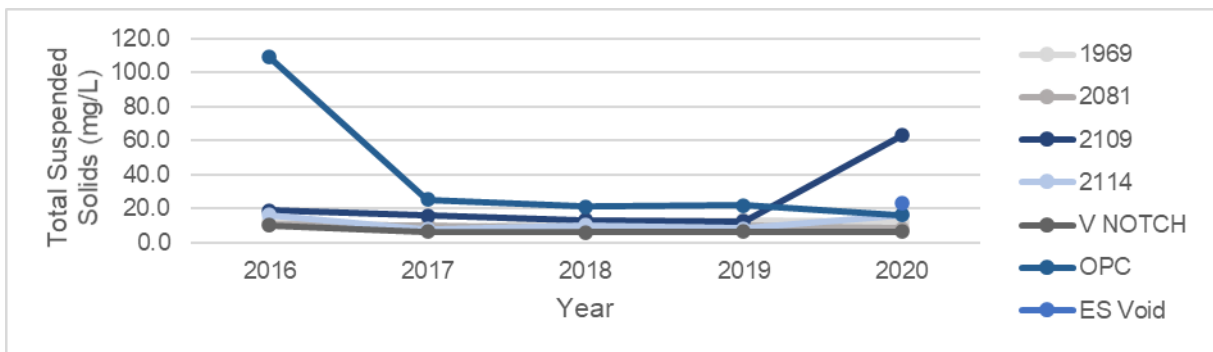


Figure 49. Long-term surface water total suspended solids

Table 24. Average BTEX, PAH and TPHs Measured Concentrations at the OPC Dam

Location	Year	Parameter		
		BTEX	PAHs	TPHs
OPC Dam	2020	<LOR	<LOR	<LOR

Note: Regular monitoring for these variables commenced in 2020. LOR: Limit of reporting