# STRATFORD MINING COMPLEX
# ANNUAL REVIEW 2022

| Document | Version | Issue | Author | Approved |
|---|---|---|---|---|
| SMC_RPT_ANNUAL REVIEW 2022 | 1 | MARCH 2023 | SCPL | |

| | |
|---|---|
| **Name of operation** | Stratford Mining Complex |
| **Name of operator** | Yancoal Australia Ltd |
| **Development consent / project approval #** | SSD-4966 (Stratford Extension Project) |
| **Name of holder of development consent / project approval** | Stratford Coal Pty Limited |
| **Mining lease #** | ML1360, ML1409, ML1447, ML1521, ML1528, ML1538, ML1577, ML1733, ML1787 |
| **Name of holder of mining leases** | Gloucester Coal Ltd/CIM Stratford Pty Ltd/Stratford Coal Pty Ltd |
| **Water licence #** | WAL 41534, WAL 41535, WAL 41536, WAL 41537, WAL 41538 |
| **Name of holder of water licence** | Gloucester Coal Ltd/CIM Stratford Pty Ltd/Stratford Coal Pty Ltd |
| **RMP start date** | 1 August 2022 |
| **RMP end date** | N/A |
| **Annual Review start date** | 1 January 2022 |
| **Annual Review end date** | 31 December 2022 |

**I, John Cullen, certify this audit report is true and accurate record of the compliance status of Stratford Coal Mine for the period of 1st January 2022 to 31st December 2022 and that I am authorised to make this statement on behalf of Yancoal.**

Note.

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.

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).

| | |
|---|---|
| **Name of authorised reporting officer** | Mr John Cullen |
| **Title of authorised reporting officer** | Operations Manager – Stratford Coal |
| **Signature of authorised reporting officer** |  |
| **Date** | 31/3/2023 |

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# 1.0 STATEMENT OF COMPLIANCE

This Stratford Mining Complex (SMC) Annual Review has been prepared in accordance with Development Consent SSD-4966 Schedule 5 Condition 4 for the Stratford Extension Project (SEP) for the period 1 January 2022 to 31 December 2022. This report is also prepared in accordance with the annual reporting requirements for Mining Leases ML1360, ML1409, ML1447, ML1521, ML1528, ML1538, ML1577, ML 1733 and ML1787.

**Table 1** provides a statement of compliance against SCPL's relevant approvals, leases and licenses. A summary of the non-compliances with Development Consent SSD-4966, EPL5161 and the Mining Leases during the reporting period are included in **Table 3**.

**Table 1 Statement of Compliance**

| **Were all conditions of the relevant approval(s) complied with?** | |
|---|---|
| SSD-4966 | No (refer to **Table 3**) |
| EPL5161 | No (refer to **Table 3**) |
| ML1360, ML1409, ML1447, ML1521, ML1528, ML1538, ML1577, ML 1733, ML1787 | Yes |

**Table 2 Compliance Status Categories**

| Risk | Colour Code | Description |
|---|---|---|
| High | Non-Compliant | Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence |
| Medium | Non-Compliant | Non-compliance with:<br>• potential for serious environmental consequences, but is unlikely to occur, or<br>• potential for moderate environmental consequences, but is likely to occur |
| Low | Non-Compliant | Non-compliance with:<br>• potential for moderate environmental consequences, but is unlikely to occur, or<br>• potential for low environmental consequences, but is likely to occur |
| Administrative | Non-Compliant | Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions) |

**Table 3 Summary of Non-Compliances**

| Relevant Approval | Condition | Condition Description/Non-Compliance | Compliance Status | Comment | Section addressed |
|---|---|---|---|---|---|
| EPL 5161<br><br>SSD-4966 | O5.3<br><br>Schedule 3 Condition 32 | Uncontrolled discharge | Low Non-compliant | Uncontrolled discharge of water from SMC sediment dam SD16 reporting offsite, which occurred on Tuesday 8 March 2022 as a result of a significant rainfall event exceeding design capacity. Reported to DPE and EPA on 8 March 2022. | **Section 7.3** |
| EPL 5161<br><br>SSD-4966 | Condition M2.3<br><br>Schedule 3 Condition 32 | Less than required Conductivity monitoring undertaken at Point 5 | Low Non-compliant | Less than required Conductivity monitoring undertaken as per EPL 5161 M2.3 Water Monitoring Requirements at Point 5.<br>Continuous monitoring required at Point 5 with eight of twelve months analysed during the reporting period. The continuous Conductivity probe at Point 5 has been replaced and is now operational | **Section 7.3** |
| SSD-4966 | Schedule 3 Condition 23 | Less than required 2022 cumulative PM10 monitoring undertaken at Craven TEOM | Low Non-compliant | Craven TEOM monitoring unit failed to operate or supplied erroneous data for more than 10% (11.35%) of the reporting period.<br>Stratford Coal investigating options to improve reliability of data capture for the Craven TEOM. | **Section 6.2** |

# 2.0 INTRODUCTION

The Stratford Mining Complex (SMC) is located in the Gloucester Basin approximately 100km north of Newcastle in New South Wales. Refer **Figure 1** (**Appendix 1**).

Stratford Coal Pty Ltd (SCPL), a wholly owned subsidiary of Yancoal Australia Limited (YAL), is the owner and operator of the SMC.

The SMC encompasses an area of approximately 1,580 hectares (ha) of cleared former grazing land (owned by SCPL) located to the east of The Bucketts Way, between the villages of Stratford and Craven. Refer **Figure 1** (**Appendix 1**).

Development Consent was originally approved for the Stratford Coal Mine by the then NSW Minister for Planning on 19 December 1994. Production commenced at the SMC in June 1995 with the first coal railed in July 1995 following a six-month construction program. Run-of-mine (ROM) coal at the SMC has been sourced from a number of open cut mining areas.

The SMC consists of an open-cut mine which utilises truck and excavator mining methods to produce run of mine (ROM) coal. ROM coal is processed at the Coal Handling and Processing Plant (CHPP) and transported via train on the North Coast Railway to the Port of Newcastle for distribution to the export market.

Mining activities approved under the former Stratford Coal Mine (DA 23-98/99) and Bowens Road North (DA 39-02-01) Development Consents were suspended in mid-2014.

The Development Consent (SSD-4966) for the Stratford Extension Project (SEP) was granted on 29 May 2015 under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The SEP provides for the continuation and extension of operations at the SMC, including the mining of three new open cut areas.

Mining activities approved under the SEP Development Consent (SSD-4966) commenced on 4 April 2018.

A Modification to SSD-4966 (MOD 2) was approved by the Director, Resource Assessments as delegate of the Minister for Planning and Public Spaces on 13 January 2020. The modification sought approval to allow for water stored within the SMC water management system to be available to the Mid Coast Council (as a public authority) for the benefit of local services and other potential public purpose water needs.

## 2.1 Scope

This Annual Review (AR) has been prepared in accordance with Schedule 5, Condition 4 of SSD-4966. This report is also prepared in accordance with the annual reporting requirements for the Mining Leases held by SCPL and in accordance with the Department of Planning, Industry and Environment *Annual Review Guidelines* (October 2015).

The AR describes the environmental performance, pollution control and rehabilitation activities at the SMC for the period 1 January 2022 to 31 December 2022. As required by SSD-4966, comparisons of environmental monitoring results have been made against relevant statutory requirements/performance criteria, monitoring results of previous years and relevant predictions of Environmental Assessments. This AR also reports on any non-compliances, trends in monitoring data and any discrepancies between the predicted and actual impacts of the development. Environmental management activities planned for the next 12 months are also discussed.

## 2.2 Mine Contacts

The SMC is an owner operated mine site by SCPL. Site personnel responsible for mining, CHPP, rehabilitation and environmental issues at the end of the reporting period are provided in **Table 4**.

**Table 4 Site Contact Personnel**

| Position | Name | Contact | Email |
|---|---|---|---|
| Operations Manager, Stratford & Duralie Operations | Mr John Cullen | 02 6538 4210 | John.cullen@yancoal.com.au |
| Senior Environment & Community Advisor | Mr Thomas Kirkwood | 02 6538 4208 | Thomas.kirkwood@yancoal.com.au |
| CHPP Superintendent | Mr Bruce Robinson | 02 6538 4235 | Bruce.robinson@yancoal.com.au |
| Community Information Hotline | 1300 658 239 | | |
| Postal Address | PO Box 168, Gloucester, NSW, 2422 | | |

# 3.0 APPROVALS

## 3.1 Status of Leases, Licences and Approvals

The SMC operates in accordance with the approvals provided in **Table 5**.

**Table 5 SMC – Leases, Licences and Approvals**

| Description | Date of Grant | Duration of Approval | Comment |
|---|---|---|---|
| **NSW Development Consents** | | | |
| Stratford Extension Project Development Consent SSD-4966 | 29 May 2015 | 31 December 2025 (mining operations) | • Action commenced on 4 April 2018.<br>• MOD 2 granted 13/01/2020 |
| **Mining Leases and Exploration Licences** | | | |
| ML 1360 | 21 December 1994 (renewed 21 December 2015) | 21 December 2036 | Variation of Conditions dated 22 June 2018 |
| ML 1409 | 7 January 1997 | 7 January 2039 | Renewed 7 March 2018<br>Variation of Conditions dated 8 October 2018 |
| ML 1447 | 1 April 1999 | 1 April 2020 | Renewal lodged 13 Mar 2019. |
| ML 1521 | 24 September 2002 | 24 September 2023 | Variation of Conditions dated 8 October 2018 |
| ML 1528 | 20 January 2003 | 20 January 2024 | |
| ML 1538 | 25 June 2003 | 25 June 2024 | |
| ML 1577 | 1 March 2006 | 1 March 2027 | Variation of Conditions dated 8 October 2018 |
| ML 1733 | 8 April 2016 | 8 April 2037 | Variation of Conditions dated 19 February 2018 |
| ML 1787 | 5 June 2019 | 5 June 2040 | |
| A311 | 17 September 1982 | 17 September 2024 | Renewed 21/12/2022 |
| A315 | 27 December 1982 | 18 January 2027 | Renewed 21/12/2022 |
| EL 6904 | 9 October 2007 | 9 October 2017 | Renewal lodged 09/10/2017 |
| **Environment Protection Licences** | | | |
| Environment Protection Licence (EPL) 5161 | 1 July 2000 | Until the licence is surrendered, or revoked | As modified by subsequent variations (refer to EPA website) |
| **Commonwealth Approvals** | | | |
| Commonwealth Approval (EPBC 2011/6176) | 29 January 2016 | 30 November 2030 | Commencement of Action 04/04/2018 |

| **Water Licences** | | | |
|---|---|---|---|
| Water Access Licences (WAL 41534, WAL 41535, WAL 41536, WAL 41537, WAL 41538) | Various | Perpetuity | Groundwater extraction – open cut dewatering |
| Groundwater bore licences – various | Various | Perpetuity | Groundwater monitoring |
| Water Access Licences – Surface Water (WAL 19536, WAL 19514, WAL 19540) | Various | Perpetuity | Avon River Water Source |

### 3.1.1 Environmental Management Plans

Environmental Management Plans (EMPs) have been prepared and approved for the SMC. The current versions approved by the Department of Planning and Environment (DPE) are available on the Stratford Coal website.

- Environmental Management Strategy (revised). Approved 21 January 2022
- Air Quality Management Plan (revised). Approved 21 January 2022
- Biodiversity Management Plan (revised). Approved 24 February 2023
- Blast Management Plan (revised). Approved 21 January 2022
- Heritage Management Plan. Approved 30 January 2023
- Life of Mine Rejects Disposal Plan (revised), October 2018
- Noise Management Plan (revised). Approved 4 October 2022
- Water Management Plan (revised). Approved 18 October 2021
- Rehabilitation Management Plan (RMP). Revised January 2023
- Pollution Incident Response Management Plan (revised). October 2022
- Squirrel Glider Management Plan (revised). Approved 19 October 2018
- Transport Monitoring Program. Approved 8 March 2018

# 4.0 OPERATIONS SUMMARY

A summary of operations (Production), during the preceding and current reporting period as well as a forward forecast for the next reporting period is provided below in **Table 6**.

**Table 6 Production Summary**

| Material | Approved limit (specify source) | Previous reporting period | This reporting period | Next reporting period |
|---|---|---|---|---|
| Waste Rock/ Overburden (BCM) | N/A | 6,660,359 | 4,445,576 | 5,437,592ŧ |
| ROM Coal (tonnes) | 2.6 million tonnes per annum | 1,279,889 | 1,008,842 | 845,497 |
| Codisposal Reject (tonnes) | N/A | 514,092 | 420,712 | 404,561 |
| Saleable product Coal (tonnes) | N/A (Process limit of 5.6 million tonnes per annum) | 835,129 | 686,356 | 553,096 |

ŧIncludes waste rock and PAF material rehandle

Total saleable product coal for the 12-month reporting period was 686,356 tonnes. 4,445,576 BCM of waste rock/overburden was mined from Stratford East and Avon North pits during the reporting period.

Saleable coal production by month for the reporting period is listed in **Table 7** below.

**Table 7 Production Summary**

| MONTH | Coking Coal | Thermal Coal | Total Product Coal |
|---|---|---|---|
| January 2022 | 6,678 | 17,199 | 23,877 |
| February 2022 | 21,987 | 52,461 | 74,448 |
| March 2022 | 23,519 | 45,588 | 69,107 |
| April 2022 | 15,995 | 24,032 | 40,027 |
| May 2022 | 13,905 | 25,828 | 39,733 |
| June 2022 | 21,506 | 32,041 | 53,547 |
| July 2022 | 16,185 | 24,886 | 41,071 |
| August 2022 | 30,720 | 49,713 | 80,433 |
| September 2022 | 19,588 | 46,317 | 65,905 |
| October 2022 | 15,810 | 33,703 | 49,513 |
| November 2022 | 30,181 | 49,791 | 79,972 |
| December 2022 | 15,554 | 53,168 | 68,722 |
| **Total Annual** | **231,628** | **454,728** | **686,356** |

## 4.1 Exploration

Exploration activities occur in the Mining Lease and Exploration Lease areas within, and external to, the open cut footprints and is used to investigate aspects such as geological features, seam structure and coal/overburden characteristics as input to detailed mine planning and feasibility studies.

An SMC Group ML Annual Exploration Report 2022 has been prepared and lodged for the period 21/12/2021 to 20/12/2022. Furthermore, Annual Exploration Reports and Community Consultation Reports have been prepared and lodged for Auth 311, Auth 315 and EL 6904.

Hydrological studies (including ground water and surface water studies), forming part of the mine closure studies are still ongoing.

During the next reporting period surface exploration activity in AUTH 315 and ML1787 is anticipated. Mining studies and feasibility type studies are ongoing to further investigate the data gathered during in recent field mapping.

Exploration activities would be undertaken in accordance with the RMP. Exploration outside the ML area would require a Review of Environmental Factors prior to activities commencing.

## 4.2 Estimated Mine Life

SSD-4966 provides approval for activities described in the SEP Environmental Impact Statement (EIS 2012) and includes:

- 11 years of mining;
- Up to 2.6 Mtpa ROM coal;
- 3 new open cut mining areas; and
- Use of existing CHPP and infrastructure.

Schedule 2, Condition 5 of SSD-4966 permits the carrying out of mining operations on the site until 31 December 2025.

A Rehabilitation Management Plan (RMP), in accordance with the requirements of the Resources Regulator's Rehabilitation Reforms, has been prepared for the SMC during the reporting period. The RMP includes the ongoing compliance requirements in accordance with SSD-4966, ML1360, ML1409, ML1447, ML1521, ML1528, ML1538, ML1577, ML 1733 and ML1787 including rehabilitation obligations. As part of the Reforms a Rehabilitation Report and Forward Program for SMC has also been prepared which provides details of the scheduled surface disturbance and rehabilitation activities at the SMC from 1 January 2022 to 31 December 2024.

## 4.3 Mining

SMC consists of an open-cut mine which utilises truck and excavator mining methods to produce ROM coal. ROM coal is processed at the CHPP and transported via train on the North Coast Railway to the Port of Newcastle for distribution to the export market.

The following key activities were undertaken during the reporting period:

- Mining continued in the Avon North Open Cut and Stratford East Open Cut within the existing footprints; and
- Reprocessing of coal from the western co-disposal area continued during the reporting period.

Mining operations are permitted 7 days per week. Operational time restrictions apply as prescribed in SSD-4966. During the reporting period SCPL complied with the approved operating hours.

The mining activities proposed for the next reporting period are described in Section 2.1.2(c) of the SMC Annual Rehabilitation Report Forward Program.

Surface facilities at the mine and current mine development and rehabilitation as of 31 December 2022 are indicated within **Figure 4** (**Appendix 1**).

## 4.4 Coal Handling and Beneficiation

### 4.4.1 CHPP Throughput and Rejects Management

Coal is processed in a 600 tonnes per hour (tph) coal handling and processing plant (CHPP) with coarse coal (i.e. 50mm down to 1mm) treated using dense medium cyclones (50mm to 1.5mm) and "teeter bed" separator/spirals (1.5mm to 0.4mm) and fine coal using floatation (0.4mm to <0.1mm). The CHPP operates on a two shift, 5 days per week basis. Feed to the CHPP is by front end loader based on blending of coal plies from the ROM stockpile. The essential elements of the CHPP and their design capacities are as follows:

| | |
|---|---|
| ROM coal processing | 5.6 Mtpa maximum |
| CHPP feed rate | 600 tph |
| Product coal | 3.3 Mtpa |
| Train load out rate | 3,000 tph |

Reclaimed previously emplaced CHPP reject material was also used as feed for the CHPP, as an addition to SMC ROM coals during the reporting period. No Duralie Coal Mine ROM coal was received during the reporting period.

### 4.4.2 Coal Stockpile Capacity (Rom and Product)

| | |
|---|---|
| ROM coal stockpile capacity | 150,000 t |
| Product coal stockpile capacity | 400,000 t |

### 4.4.3 Product Transport

All saleable (product) coal is transported from site by rail. A total of 110 export trains were loaded during the reporting period. Schedule 2, Condition 8 of SSD-4966 permits a maximum of 6 laden trains per day and no more than 2 laden trains during night-time hours to be dispatched. SCPL were compliant during the reporting period with regard to export trains.

A summary of product coal transported during the reporting period is provided below in **Table 8**. The minor difference in totals between Table 7 and Table 8 is due to stockpiled coal at the end of 20221 to be railed in 2023. Records of the export train movements are provided in **Appendix 8** and are also available on the Stratford Coal website.

**Table 8 Export Train Coal Transported by Month**

| MONTH | Product Coal Transported (Tonnes) |
|---|---|
| January 2022 | 17,972 |
| February 2022 | 41,776 |
| March 2022 | 53,846 |
| April 2022 | 66,901 |
| May 2022 | 48,634 |
| June 2022 | 49,180 |
| July 2022 | 5,986 |

| MONTH | Product Coal Transported (Tonnes) |
|---|---|
| August 2022 | 95,776 |
| September 2022 | 89,806 |
| October 2022 | 42,117 |
| November 2022 | 53,503 |
| December 2022 | 99,594 |
| **Total Annual** | **665,091** |

### 4.4.4 CHPP Reject Management

Reject material produced at the SMC CHPP is disposed of in accordance with the SMC Life of Mine Rejects Disposal Plan (RDP). Reference should be made to the RDP for a detailed description of reject management at the SMC. Details of management measures undertaken at SMC are found in Section 7.3 of the SMC Surface Water Management Plan (SWMP).

In general, the coarse and fine reject materials are pumped via pipeline from the CHPP to the Stratford Main Pit where they are deposited in locations below the simulated final void ground water levels. Monitoring results for the CHPP rejects are included in **Section 6.12**.

# 5.0 ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

DPE provided notification on 27 May 2022 that the SMC Annual Review 2021 satisfies the reporting requirements of the development consent (SSD-4966) and the Department's Annual Review guidelines. No further amendments or actions were requested.

Further correspondence was received from DPE on 16 December 2022 regarding additional reporting requirements for Coal Mine Annual Reviews. These are summarised in the table below.

No response regarding the SMC Annual Review 2021 was received from the Resources Regulator.

Actions to the commitments made in the 2021 Annual Review are summarised below.

| Action Required | Due Date | Action taken by SCPL | Where Discussed |
|---|---|---|---|
| SCPL will prepare a new Rehabilitation Management Plan (RMP) consistent with the requirements of the Resources Regulator Operational Rehabilitation Reform. The new RMP will incorporate a Mine Closure Plan for the SMC consistent with the Mine Closure Planning Program described in Section 10 of the MOP | 1 August 2022 | The SMC RMP was prepared during the reporting period and submitted to Resources Regulator on 1 July 2022. | **Section 8.0** and RMP |
| Additional Annual Review reporting requirements for Greenhouse Gas Emissions | 31 March 2023 | Reporting on GHG emissions is included in the 2022 AR. Reporting includes annual methane and annual total CO2 emissions with comparisons against the EIS predictions. Measures to minimise GHG emissions are described in the SMC AQMP. | **Section 6.2.2** and AQMP |
| Additional Annual Review reporting requirements for Biodiversity Offsets | 31 March 2023 | Long-term security arrangements of the SEP Biodiversity Offset Area and status of the Conservation Bond requirements are discussed in this AR. | **Section 6.3.10** and the SMC BMP |

# 6.0 ENVIRONMENTAL PERFORMANCE

A brief review of environmental performance in relation to Environment Protection License (EPL) 5161, together with SSD-4966 Development Consent conditions, is provided below. This performance is further discussed in the sections on environmental management activities and environmental monitoring. The location of environmental monitoring undertaken during the 2022 reporting period are identified in **Figure 3** (**Appendix 1**). This section provides summary details on:

- **Section 6.1** – Meteorological Overview;
- **Section 6.2** – Noise;
- **Section 6.3** – Biodiversity;
- **Section 6.4** – Blasting;
- **Section 6.5** – Noise; and
- **Section 6.6** – Heritage.

Water, Rehabilitation and Community aspects are reported in **Sections 7.0, 8.0** and **9.0** respectively.

## 6.1 Meteorological Monitoring

A meteorological station (i.e., weather station) is operated at the mine site as required by SSD-4966. The location of the meteorological station and the two inversion monitoring towers is shown on **Figure 3** (**Appendix 1**).

### 6.1.1 Rainfall

**Table 9** provided below summarises the rainfall record obtained from the site Weather Station rain gauge compared to the 1908 – 2007 district average. Graphical representation of the historical average and monthly recorded rainfall during the reporting period is provided in **Appendix 2**.

**Table 9 Stratford Mine – Monthly Rainfall Records**

| MONTH | YEAR | | | | Stratford District |
|---|---|---|---|---|---|
| | 2022 | | 2021 | | Average |
| | Monthly Total (mm) | No. of Rain Days/Month[1,2] | Monthly Total (mm) | No. of Rain Days/Month[1,2] | 1908-2007 |
| **January** | 81.0 | 13 | 167.8 | 15 | 113.7 |
| **February** | 203.4 | 19 | 174.4 | 19 | 114.8 |
| **March** | 416.2 | 21 | 433.2 | 16 | 129.3 |
| **April** | 66.4 | 17 | 56.2 | 5 | 78.2 |
| **May** | 61.0 | 16 | 41.6 | 10 | 71.6 |
| **June** | 15.4 | 7 | 88.6 | 13 | 69.4 |
| **July** | 224.2 | 16 | 36.8 | 8 | 52.7 |
| **August** | 28.6 | 8 | 23 | 4 | 47.1 |
| **September** | 151.2 | 15 | 61.2 | 10 | 50.5 |
| **October** | 97.8 | 15 | 92.6 | 14 | 65.5 |
| **November** | 33.4 | 5 | 211.2 | 18 | 82.7 |
| **December** | 42.2 | 10 | 111.2 | 16 | 102.2 |
| **Total** | **1420.8** | **162** | **1497.8** | **148** | **977.7** |

Notes:

1. No. of Rain Days/Month - the number of days in the month on which rain fell
2. When tipping bucket rain gauge data used, a "rain day" by definition requires a minimum recording of >0.20mm comprising dew, heavy fog or light rain (or a combination thereof.

The 2022 calendar year rainfall total was higher than the long-term district average and similar to the 2021 calendar year rainfall total. Five of the twelve months in 2022 exceeded their respective long-term average.

### 6.1.2 Wind Speed and Direction

**Table 10** below indicates the monthly average and maximum wind speeds and dominant wind directions for the period January 2022 to December 2022, inclusive. Wind direction data is unavailable from 8 May 2022 until the 2 June 2022 due to the wind vane seizing and requiring replacement. The wind vane was replaced on 2 June 2022. The graphical representation of the daily average and maximum wind speeds recorded and monthly wind roses for each month during this period are provided in **Appendix 2**.

**Table 10 Monthly Average and Maximum Wind Speeds and Dominant Wind Directions by Month**

| MONTH | Average wind speed (k/hr) | Maximum wind speed recorded (k/hr) | Dominant wind directions |
|---|---|---|---|
| **January** | 9.2 | 40.0 | N-NE & S-SSW |
| **February** | 8.0 | 37.2 | S-SSW |
| **March** | 6.8 | 41.5 | SSW |
| **April** | 6.2 | 45.9 | NNE & SSW |
| **May** | 6.0 | 56.2 | NNE |
| **June** | 6.2 | 46.2 | N |
| **July** | 7.2 | 44.4 | SSW |
| **August** | 7.8 | 46.0 | NNE |
| **September** | 8.3 | 44.1 | NNE & SSW |
| **October** | 8.0 | 34.1 | NNE |
| **November** | 9.9 | 47.2 | NNE |
| **December** | 9.3 | 52.4 | S & NNE |

*Wind direction data unavailable for 23 days of May 2022 due to wind vane fault

### 6.1.3 Temperature

**Table 11** summarises monthly air temperatures. The graphical representation of the daily minimum, average and maximum atmospheric temperatures recorded for each month is provided in **Appendix 2**.

**Table 11 Monthly Minimum, Average and Maximum Air Temperatures**

| MONTH | Minimum air temp recorded (deg c) | Average air temp (deg c) | Maximum air temp recorded (deg c) |
|---|---|---|---|
| **January** | 14.0 | 22.6 | 33.9 |
| **February** | 11.8 | 20.8 | 35.4 |
| **March** | 10.3 | 19.5 | 30.6 |
| **April** | 7.3 | 17.4 | 29.4 |
| **May** | 3.6 | 14.1 | 26.9 |
| **June** | -2.3 | 8.9 | 21.5 |
| **July** | -0.2 | 10.3 | 21.6 |
| **August** | 0.5 | 11.7 | 24.3 |
| **September** | 1.8 | 13.9 | 26.0 |
| **October** | 3.2 | 16.7 | 30.2 |
| **November** | 4.1 | 17.9 | 33.3 |

| | | | |
|---|---|---|---|
| **December** | 6.4 | 19.3 | 33.1 |

## 6.2 Air Quality

SMC manages air quality in accordance with an Air Quality Management Plan (AQMP). The AQMP was revised and approved in January 2022.

The monitoring network under the approved AQMP includes:

- Seven static dust deposition gauges
- Five high volume PM10 air samplers
- Two real-time dust monitors (TEOM); and
- One meteorological monitoring station.

Monthly dust deposition levels are measured so that dust deposition rates in g/m2/month can be determined at or near seven (7) residences that surround the mine site. The annual average condition of consent limit for dust deposition is 4.0g/m2/month.

The high-volume air samplers (HVAS) (PM10), are located near Stratford Village and Craven Village and are also located to the north and south of the operations. The HVAS results are also used for total suspended particulate (TSP) estimation.

HVAS sampling is undertaken over a 24 hour 6 day week cycle in accordance with AS 2724.3. The consent criteria for PM10 air quality is an annual average limit of 30ug/m3/day cumulative impact and a 24-hour average limit of 50ug/m3/day incremental impact.

Two Tapered Element Oscillating Microbalance (TEOM) analysers measuring PM10 and PM2.5 are used to continuously measure particulate matter. The TEOMs are located in close proximity to Stratford village and Craven village. Real-time air quality monitoring data is used to identify when ambient PM10 levels in the surrounding environment are elevated and require contingency action. Real-time response triggers have been established and are designed to provide a system to warn operations personnel (via SMS) when dust levels are approaching a relevant criterion and to require management/control actions to mitigate potential impacts.

### 6.2.1 Review of Air Quality Monitoring Results and Performance

#### 6.2.1.1 Dust Deposition Gauges

**Table 12** shows the dust deposition results for seven (7) dust deposition gauges and annual averages at the end of the reporting period (December 2022).

**Table 12 Dust Deposition Gauge Results**

| MONTH | D5 | D6 | D7 | D8 | D9 | D10 | D11 |
|---|---|---|---|---|---|---|---|
| **January** | 0.5 | 0.5 | 0.4 | 2.7 | 2.6 | 0.7 | 0.8 |
| **February** | 0.8 | 0.4 | 0.6 | 1.2 | 0.7 | 2.3 | 0.6 |
| **March** | 0.7 | 0.6 | 0.4 | 6.1[c] | 0.5 | 0.3 | 0.4 |
| **April** | 0.6 | 0.8 | 0.9 | 2.6 | 2.6 | 0.6 | 0.8 |
| **May** | 0.1 | 0.3 | 0.2 | 2.5 | 0.9 | 0.2 | 0.2 |
| **June** | 0.4 | 0.5 | 0.1 | 11.2 [I,S] | 0.2 | 0.2 | 0.3 |
| **July** | 0.2 | 0.3 | 0.1 | 2.0 | 0.4 | 0.5 | 0.4 |
| **August** | 0.2 | 0.5 | 0.5 | 3.9 | 0.6 | 0.4 | 0.4 |
| **September** | 0.4 | 1.0 | 0.2 | 2.0 | 0.5 | 0.3 | 0.4 |

| MONTH | D5 | D6 | D7 | D8 | D9 | D10 | D11 |
|---|---|---|---|---|---|---|---|
| **October** | 0.3 | 0.4 | 0.3 | 2.6 | 0.5 | 0.3 | 0.3 |
| **November** | 0.7 | 0.7 | 0.8 | 2.7 | 0.8 | 0.6 | 0.5 |
| **December** | 0.8 | 0.4 | 0.5 | 0.6 | 0.5 | 0.6 | 0.9 |
| **Annual Average** | **0.5** | **0.5** | **0.4** | **2.3** | **0.9** | **0.6** | **0.5** |

Notes/excluded results, Visual Description Guide:
D=Dirt: Subhedral to euhedral crystalline grains including fine sand, clay and other fine mineral particulates.
C=Coal: Black sharp angled grains with glossy conchoidal fractures or dull with cellular feature.
I=Insects: Whole insects e.g. spiders, ants, moths or outer parts of insects including wings, legs and exoskeletons.
S=Polysaccharide Slime: Slimy gelatinous material including decomposed soft body parts of insects and vegetation.
V=Vegetation: Plant debris and algae including trichomes, decomposed organic matter and particulates showing characteristic cellular structures.
B=Bird droppings: The most common contamination.
O=Other contaminants not included above.

Dust levels recorded had an average value of 0.8 g/m2/month (contaminated results not counted). Elevated values were at times affected by various degrees of contamination from insects, bird droppings, vegetation (seeds/grasses) and algae. Only one gauge was deemed contaminated during the reporting period; D8 in June 2022.

#### 6.2.1.2 High Volume (PM10) Air Samplers

HVAS PM10 monitoring results show that all monitoring locations (in terms of monitored days) did not exceed the National Environmental Protection Measure (NEPM) of 50ug/m3/day, listed under Condition 19, Schedule 3 of the Project Approval. **Figure 3** (**Appendix 3**) shows the recorded PM10 24hr results across the five HVAS monitoring sites during the reporting period.

The HVAS annual rolling averages remained low and fluctuations generally reflect changes in meteorological conditions throughout the year, i.e. rainfall and wind (**refer Figure 4 Appendix 3**).

#### 6.2.1.3 High Volume (TSP) Calculation

A site-specific correlation between Total Suspended Particulates (TSP) and PM10 concentrations was developed by SCPL, based on co-located HVAS measuring PM10 and TSP as per the AQMP. From the monitoring, approximately 45% of TSP was PM10, which compares well with the relationship developed by the NSW Minerals Council for the Hunter Valley (NSW Minerals Council, 2000), which found that approximately 40% of TSP is PM10.

**Figure 5** (**Appendix 3**) shows the TSP estimates across the five HVAS during the reporting period. The Development Consent Criteria of 90ug/m3 was not exceeded during the reporting period.

The HVAS monitoring results are generally similar to those reported in previous ARs and align with predictions made in the EIS (2012) that particulate levels (PM10 and TSP) would not exceed relevant air quality criteria at any residence.

#### 6.2.1.4 TEOM (PM10) Monitoring

Two TEOM (Tapered Element Oscillating Microbalances) dust analysers measuring PM10 and PM2.5 are used to continuously measure particulate matter and provide a management tool for operations to guide proactive and reactive mitigation measures. The TEOMs are located in close proximity to Stratford village and Craven village. Real-time air quality monitoring data is used to identify when ambient PM10 levels in the surrounding environment are elevated and require contingency action. Real-time response triggers have been established and are designed to provide a system to warn

operation personnel (via SMS) when dust levels are approaching a relevant criterion and to require management/control actions to mitigate potential impacts.

The Stratford Village TEOM was installed in June 2013 and the Craven Village TEOM was installed and began operation in August 2018. The annual average PM10 for the Stratford TEOM from 1 January 2022 to 31 December 2022 is 9.4ug/m3. The annual average PM10 for the Craven TEOM from 1 January 2022 to 31 December 2022 is 6.0ug/m3. The 24 hour average results for the reporting period and graphical representation of the rolling annual average of PM10 results are provided in **Appendix 3**.

Outages at the Craven TEOM during February, March and June 2022 resulted in a non-compliance in the 2022 cumulative PM10 data capture rate of 88.65%. PM10The PM2.5 capture rate from the Craven TEOM for the same period was 88.62%. Data capture was impacted by maintenance, power loss and equipment failures. SMC have completed a TEOM overhaul and are further investigating options to improve the reliability of data capture for the Craven TEOM.

The TEOM results are generally consistent with those measured by the HVAS units. The TEOM results continue to be utilised as a management tool for operations to determine proactive and reactive dust controls.

A register was maintained of any trigger alarms from the TEOM system to record the response implemented by SCPL. Alarms during the reporting period primarily resulted from either external events such as wind or system faults such as erroneous recorded values. The real-time dust monitoring response register for the reporting period is provided in **Appendix 3**.

TEOM data is screened to check the operating state of the instrument and the validity of air quality monitoring data through:

- checks on equipment status codes;
- comparison of measure values to upper and lower limits (range check);
- rate of change checks to identify data that changes too rapidly or not at all (stuck signal); and
- physical principle assessments relating two or more variables (e.g. dew point should never exceed the dry-bulb temperature.

#### 6.2.1.5 Analysis of Data Trends and Comparison with EA Predictions

**Table 13** presents the annual average dust deposition levels at the end of the reporting period (December 2022) along with the previous five years. The 2022 reporting period annual average dust deposition levels are within the range of results recorded in the previous five years at all sites. All 2022 annual averages are well below the performance criteria. Graphical representation of dust gauge results and annual rolling averages are provided in **Appendix 3**.

**Table 13 Annual Average Dust Depositional Gauge Results**

| Reporting Period | Total Insoluble Solids (g/m²/month) | | | | | | |
|---|---|---|---|---|---|---|---|
| | D5 | D6 | D7 | D8 | D9 | D10 | D11 |
| **Criteria** | **4.0** | **4.0** | **4.0** | **4.0** | **4.0** | **4.0** | **4.0** |
| **2017** | 0.6 | 1.2 | 0.6 | 0.6 | 0.4 | 0.5 | 0.9 |
| **2018** | 0.8 | 1.1 | 0.9 | 0.8 | 1.1 | 0.7 | 1.2 |
| **2019** | 1.1 | 1.2 | 0.9 | 1.3 | 1.0 | 1.2 | 1.7 |
| **2020** | 0.6 | 1.1 | 1.2 | 1.0 | 0.8 | 1.1 | 0.9 |
| **2021** | 0.4 | 0.5 | 0.4 | 1.8 | 0.8 | 0.4 | 0.8 |
| **2022** | 0.5 | 0.5 | 0.4 | 2.3 | 0.9 | 0.6 | 0.5 |

The dust deposition monitoring results are similar to results presented in previous reports and align with predictions made in the Stratford Extension Project EIS (2012) that dust deposition levels would not exceed relevant air quality criteria at any private residence.

**Table 14** presents the reporting period (December 2022) HVAS PM10 annual averages along with the previous five years.

**Table 14 Annual Average HVAS (PM10) Results**

| Reporting Period | PM10 (µg/m3) | | | | |
|---|---|---|---|---|---|
| | Stratford | Craven | Ellis | Clarke | Glen Road* |
| **Criteria** | **30** | **30** | **30** | **30** | **30** |
| **2017** | 8.3 | 7.6 | 12.8 | 7.2 | NA |
| **2018** | 8.3 | 9.2 | 14.9 | 9.7 | NA |
| **2019**** | 16.1 | 15.7 | 24.6 | 16.1 | 30.7 |
| **2020** | 8.6 | 8.7 | 9.8 | 8.3 | 10.5 |
| **2021** | 6.2 | 6.0 | 6.3 | 5.8 | 8.0 |
| **2022** | 5.6 | 6.0 | 5.2 | 4.3 | 6.0 |

*Glen Road added to monitoring program late 2019
**High results recorded due to extraordinary bushfire events during 2019

Annual averages for all sampling locations were well below the 30 µg/m3/day criterion set under the Project Approval. The HVAS rolling averages generally decreased over the 12-month period but are consistent with previous years (excluding 2019 where widespread bushfires caused elevated results).

Results of HVAS monitoring are in concurrence with the EIS (2012), which predicts the annual average PM10 criteria of 30µg/m3 will not be exceeded at any private receiver and that project only 24 hour PM10 concentrations will not be above the 50 µg/m3 assessment criteria at any privately owned receiver. The HVAS annual rolling averages reduced to near background levels following exclusion of bushfire affected results. HVAS results remain low and fluctuations generally reflect changes in meteorological conditions throughout the year, i.e. rainfall and wind.

### 6.2.2 Greenhouse Gas

Measures taken to minimise GHG emissions from the SMC are described in Section 6.2 of the AQMP.

Yancoal's operations are reported under the National Greenhouse and Energy Reporting Scheme (NGERS) each financial year. SMC Scope 1 and Scope 2 emissions calculated for the 2021-2022 financial year was 38,728 $tCO_2$-e. **Table 15** below shows GHG emissions at the SMC over the past three financial years.

The approximate 11% increase in emissions since the previous financial year (2020-2021) can be attributable to an increase in electricity usage, increase in Diesel (stationary) usage and an increase in production within the reporting period. Scope 1 and Scope 2 emissions at the SMC are generally consistent with the EIS (2012) predictions.

**Table 15 SMC GHG Emissions**

| | 2019-2020 | 2020-2021 | 2021-2022 |
|---|---|---|---|
| **Scope 1** | 23,937 | 23,116 | 25,969 |
| **Scope 2** | 8,570 | 9,296 | 12,759 |
| **Total GHS Emissions ($tCO_2$-e)** | **32,507** | **32,412** | **38,728** |

### 6.2.3 Air Quality Complaints

One (1) complaint related to air quality was received during the reporting period. SCPL continues to implement measures to reduce the impacts to air quality far as reasonably practicable. A full detailed complaints list is provided in **Appendix 7**.

## 6.3 Biodiversity Management

In accordance with Condition 33, Schedule 3 of SSD-4966, SCPL is required to implement the Biodiversity Offset Strategy and achieve the broad completion criteria to the satisfaction of the Secretary of the DPE. The management of biodiversity at the SMC in both the Mining Lease areas and the Biodiversity Areas is undertaken in accordance with the approved Biodiversity Management Plan (BMP).

The Stratford Mining Complex Annual Biodiversity Report 2022 provides a review of the effectiveness of measures in the Biodiversity Management Plan (BMP) for the annual year ending 31 December 2022 in accordance with Section 8.2.1 of the BMP. The scope of the report includes the biodiversity management activities across the Mining Lease areas, the Biodiversity Offset Areas and the Biodiversity Enhancement Area.

In accordance with the BMP, the Stratford Mining Complex Annual Biodiversity Report 2022 is included in **Appendix 9**. A summary of the main biodiversity activities and conclusions are provided in the subsections below.

### 6.3.1 Vegetation Clearance Report

Vegetation clearance is undertaken in accordance with the BMP Section 4.1 Vegetation Clearance Protocol. Prior to any clearance operations being undertaken a Clearing Plan is prepared, and pre-clearance surveys are undertaken.

Information obtained during the preparation of the Clearing Plans and the vegetation clearance activities (i.e. habitat features, hollows cleared and fauna observed) is used to determine the requirements for nest box replacement in the Biodiversity Offset and Enhancement Areas.

Section 4.1.4 of the BMP requires salvaged material from vegetation clearance activities to be used for habitat enhancement within the rehabilitation, Biodiversity Offset areas and Biodiversity Enhancement Areas. Habitat features such as trunks, logs, large rocks, branches, stumps and roots are salvaged and relocated where practicable.

During the 2022 reporting period, minor vegetation clearance was undertaken in Roseville BRN Haul Road Stage 3 Area. This area was a mixture of previously cleared pasture and low density woodland. No habitat material was suitable for salvage.

### 6.3.2 Managing Access, Fencing, Gates and Signage

Managing access, fencing, gates and signage is undertaken in accordance with the BMP Section 5.1 and 5.2.

During the reporting period, mapping of fencing and access tracks has been completed to assist with ongoing management of the Biodiversity Areas. During the reporting period the removal of redundant fencing has continued and maintenance of existing fencing has been undertaken as required. Access tracks and previously erected signage have continued to be maintained.

### 6.3.3 Revegetation Management

***Seed Collection & Propagation***

Seed collection and propagation is undertaken in accordance with the BMP Sections 4.1.5 and 5.3. Revegetation in the BMP Revegetation Areas (BMP Management Zone A) will occur via seed and tube-stock. Local endemic (adapted) species are preferentially be used where a seed supply is available, however consideration will be given to the use of a high-quality seed sourced further from the site as required.

In preparation for revegetation works each year, SCPL has prepared a scope and schedule for the revegetation works to be implemented. The total volume of seed required was calculated based on the floral listings for the target communities in the BMP appendices.

Wedgetail Project Consulting, Tubeaus, Australian Seed Company and Riverdene Nursery have been engaged to assist in the propagation of native plant species with tube-stock grown under controlled nursery conditions and delivered to site as required for revegetation works in the next reporting period.

***Revegetation & Regeneration***

Revegetation management is undertaken in accordance with the BMP Section 5.3 Revegetation Programme.

The aim of revegetation is to establish a range of habitat niches including native canopy, and understorey. The Revegetation Area (Management Zone A) in the Biodiversity Areas will be revegetated to substantially increase the area of native vegetation in the area and maximise habitat diversity and a range of successional stages.

During 2022, SCPL prepared a scope and schedule for the revegetation works to be implemented in the Biodiversity Areas. Wedgetail Project Consulting, have been engaged to assist with both the site planning and implementation of the revegetation works. The site planning included:

- Mapping of the priority revegetation areas completed in 2020; and
- Calculation of seed and tube-stock requirements based on the indicative lists of flora species in the BMP appendices.

Furthermore, a scope and schedule for the revegetation works to be implemented 2023 has been prepared during the second half of 2022. The proposed revegetation schedule for the Biodiversity Areas in 2023 is included in Annual Biodiversity Report (**Appendix 9**).

The 2022 revegetation work was heavily disrupted by the higher-than-average rainfall experienced in late 2021 and throughout most of 2022. The planned planting program aimed to install 18,000 plants across approximately 60 hectares (ha) of the SMC Biodiversity Enhancement, Offsets and Rehabilitation Areas. Unfortunately, due to unsuitable, waterlogged, ground conditions the Autumn planting schedule was abandoned entirely. In late Spring 2022, a much-reduced planting program was put into place across two of the Rehabilitation areas at the SMC.

These were the Bowens Road North (BRN) rehabilitation area and the Roseville Waste Emplacement (RWE). The BRN planting consisted of two small areas designated the BRN Top (2.1 ha) and BRN South (1.1 ha). The RWE was approximately 14 ha in size across the north and south waste emplacements.

The next round of tube-stock planting is scheduled to commence in March 2023. Details of the 2023 revegetation works will be included in the next annual biodiversity report.

***Monitoring***

Vegetation Monitoring commenced in 2019 to assess the effectiveness of revegetation in the Revegetation Area (Management Zone A) and to assess the natural regeneration in the Existing Remnant Vegetation Area (Management Zone B). The data gathered in 2019 will serve as a baseline to assess the success of the revegetation efforts for future reporting periods.

Vegetation monitoring was undertaken again in April 2022. Habitat and vegetation monitoring is discussed in Section 11 of the Annual Biodiversity Report (**Appendix 9**). Habitat and vegetation condition monitoring will continue to be undertaken annually to quantitatively measure the change in habitat and vegetation condition over time and to inform any ongoing maintenance requirements.

### 6.3.4 Weed Control and Monitoring

Weed control is undertaken in accordance with the BMP Sections 4.4 and 5.6. The weed control program aims to manage weeds to minimise their impact on native flora and fauna.

A contractor is engaged at the SMC to undertake weed management activities on an ongoing basis. Weed management during summer 2021/22 was continued following above average rainfall in 2022. The weed control activities in 2022 continued to target areas of known weed infestation. The key species targeted included blackberry, lantana, privet, wild tobacco and Giant Parramatta grass.

Weeds mapping has been undertaken during Summer 2022 to assist in setting future management priorities and developing on-ground actions for weed control. Refer to the Annual Biodiversity Report (**Appendix 9**).

Weeds monitoring to evaluate the effectiveness of control measures is undertaken in conjunction with the annual vegetation monitoring and is documented in Annual Biodiversity Report.

### 6.3.5 Feral Animal Control and Monitoring

Feral animal control is undertaken in accordance with the BMP Section 4.5 and Section 5.7. The objective of feral animal control program is to manage feral animals to minimise their impact on native flora and fauna in the Biodiversity Offset and Biodiversity Enhancement Areas or the impact on agricultural production in other surrounding areas.

MDP Vertebrate Pest Management has been engaged by SCPL since 2016 to implement wild dog and fox control programs across property owned by SCPL including both the Stratford & Duralie Mining Leases and the Stratford & Duralie Biodiversity Offset Areas. During 2022 no feral animal control programs were undertaken due to prolonged wet weather. The last control program at the SMC was conducted between 4 October to 5 November 2021 and focused on wild dog control. The program was productive and successful with a total of 6 wild dogs and 3 foxes trapped over the 31-Day control program.

The next feral animal control program is scheduled for Spring 2023 and will target wild dogs, foxes and feral cats.

### 6.3.6 Bushfire Management

Bushfire management is undertaken in accordance with the BMP Sections 4.7 and 5.9. The objective of bushfire management in the Biodiversity Areas is to prevent impacts from unplanned bushfire and to use fire to promote biodiversity.

Monitoring of fuel loads to evaluate bushfire risk and guide bushfire hazard reduction activities is undertaken in conjunction with the annual vegetation monitoring and was conducted in April 2022. Bushfire risk has continued to be mitigated through the maintenance of access tracks and fire breaks. Additionally, fuel loads have been reduced during 2022 by slashing where required in the Mining Leases and Biodiversity Areas. During 2022 no hazard reduction burning has been undertaken. Following the revegetation works, the aim is to exclude fire from the offset areas for at least 5 years to allow for tubestock and seedlings to establish.

Schedule 3 Condition 51 of SSD-4966 requires the SCPL to assist the Rural Fire Service and emergency services as much as possible if there is a fire in the surrounding area.

Section 4.7 of the BMP states SCPL will:

- ensure that the development is suitably equipped to respond to any fires on site; and
- assist the Rural Fire Service (RFS), emergency services and National Parks and Wildlife Service as much as possible if there is a fire in the surrounding area

### 6.3.7 Nest Box Program

Nest box management is undertaken in accordance with the BMP Section 5.10. Nest boxes have been installed to provide habitat opportunities in the short to medium-term for a number of arboreal fauna species including the Squirrel Glider.

The nest box programme consists of two main components to replace any tree hollows cleared prior to mining activities:

- suitable nest boxes for the Squirrel Glider will be installed at a ratio of least 3:1 for each tree hollow cleared suitable for the Squirrel Glider.
- for tree hollows that provide habitat to arboreal fauna species (other than the Squirrel Glider), nest boxes will be installed at a minimum ratio of 1:1 (i.e. one nest box of appropriate size to replace one hollow of similar size and properties).

Nest boxes are installed within the Biodiversity Offset Area and Biodiversity Enhancement Area in Existing Remnant Vegetation (Management Zone B) as well as the Revegetation Area (Management Zone A).

In accordance with Section 5.10 of the BMP, nest boxes will be monitored by suitably qualified personnel with quarterly inspections during the first year followed by annual inspections in spring. Nest box monitoring was undertaken during 31 January – 3-4 February, 2 March, 14-16 June, 19 October, 24-25 November 2022 and 13-17 February 2023. A summary of these monitoring reports are included in the Annual Biodiversity Report (**Appendix 9**).

Nest boxes will continue to be installed in accordance with the BMP.

### 6.3.8 Squirrel Glider Management Plan

The management of Squirrel Glider populations is undertaken in accordance with the Squirrel Glider Management Plan (SQMP). The SGMP has been prepared to facilitate the management of squirrel glider populations at the SMC, Biodiversity Enhancement Areas and Biodiversity Offset Areas.

Squirrel glider management programs which have commenced include:

- definition of the squirrel glider colonies (SQMP Section 4.1)
- identification of the squirrel glider home ranges (SQMP 4.2)
- tree hollow census within the home ranges (SQMP Section 7.1)
- nest box program (SQMP Section 7.2) in conjunction with BMP nest box program
- Squirrel Glider vegetation pathways (SQMP Section 8.1) in conjunction with BMP revegetation
- Squirrel Glider population monitoring (SQMP Section 10.1) in conjunction with BMP fauna monitoring.

### 6.3.9 Biodiversity Offset Monitoring and Reporting

The Biodiversity Offset monitoring program is prescribed in the BMP Section 7. The program aims to monitor and report on the effectiveness of the BMP management measures and progress against the detailed performance and completion criteria.

The Stratford Mining Complex Annual Biodiversity Report 2022 provides a review of the effectiveness of measures in the Biodiversity Management Plan (BMP) for the annual year ending 31 December 2022 in accordance with Section 8.2.1 of the BMP and is included in **Appendix 9**. The annual report includes the results of the monitoring for:

- habitat and Vegetation monitoring, including visual and photo monitoring;
- fauna monitoring program
- effectiveness of weed control;
- effectiveness of feral animal control; and
- nest box monitoring program.

***Habitat and Vegetation Monitoring***

Habitat and vegetation condition monitoring is undertaken to quantitatively measure the change in habitat and vegetation condition over time. The visual monitoring and photo monitoring programs are undertaken concurrently with the vegetation monitoring to provide additional information on the change of the Biodiversity Areas over time and inform maintenance requirements.

Vegetation Monitoring commenced in 2019 to assess the effectiveness of revegetation in the Revegetation Area (Management Zone A) and to assess the natural regeneration in the Existing Remnant Vegetation Area (Management Zone B). The data gathered in 2019 serves as a baseline to assess the success of the revegetation efforts and progress against the project specific performance

and completion criteria. This survey was undertaken prior to the revegetation works commencing in the Biodiversity Offset areas.

Vegetation monitoring was undertaken again in April 2022. Habitat and vegetation condition monitoring will continue to be undertaken annually to quantitatively measure the change in habitat and vegetation condition over time and to inform any ongoing maintenance requirements.

In summary, the monitoring results show good progress has been made with the successful introduction of many target species in areas that have been replanted. The increased rainfall that has continued to be experienced since this survey was undertaken will contribute to good growth for the older rehabilitation and improve survival for the newer planted areas.

***Fauna Monitoring***

Monitoring of fauna usage within the Biodiversity Areas is conducted every three years to document the fauna species response to improvement in vegetation and habitat in the Biodiversity Areas and assess the performance in providing habitat for a range of vertebrate fauna. The surveys include an assessment of habitat complexity, species richness and abundance.

The first round of fauna monitoring was completed by AMBS Ecology and Heritage (AMBS) during September and October 2019.

During 2022 AMBS were engaged to undertake a fauna survey within the SMC Biodiversity Offset Areas Biodiversity Enhancement Areas and Stratford Rehabilitation Areas. The full report is included as an Appendix in the Annual Biodiversity Report (**Appendix 9**) An extracted summary of the survey results is outlined below.

Targeted fauna surveys were undertaken at six sites within the Stratford Offset Areas, two sites within the Stratford Biodiversity Enhancement Area, and two sites within the Stratford Rehabilitation Area, from 7 to 12 November 2022 and 21 to 26 November 2022. At each site survey techniques included pitfall traps, funnel traps, Elliott A traps, harp traps, ultrasonic call recording, spotlighting, diurnal bird surveys and reptile searches. Frog surveys were undertaken at four separate sites. Opportunistic observations of signs of fauna were noted throughout the field survey period, including travel to and during transit between surveys sites.

A total of 166 species of vertebrate were recorded, comprising 15 frogs, 13 reptiles, 100 birds and 38 mammals most of which were native (refer to the species list).The fauna surveys confirm that the Stratford Offset, Biodiversity Enhancement and Rehabilitation areas provide foraging and breeding habitat for a range of native vertebrate fauna, including birds, mammals, reptiles, and frogs. Further detail of monitoring results can be found in **Appendix 9.**

### 6.3.10 Long Term Security and Conservation Bond

***Long-term Security***

In accordance with Condition 36, Schedule 3 of Development Consent SSD-4966, SCPL is required to make suitable arrangements for the long-term security of the Stratford Extension Project Biodiversity Offset Area. SCPL has pursued the mechanisms available under section 88E(3) of the NSW *Conveyancing Act, 1919*, namely:

- registration of a Positive Covenant under section 88E(3) of the NSW *Conveyancing Act, 1919*; and
- registration of a Restriction on the Use of Land by a Prescribed Authority under section 88E(3) of the NSW *Conveyancing Act, 1919*.

Public Positive Covenants and Restrictions on the Use of Land for the Biodiversity Offsets have been registered on title with NSW Land and Property Information (LPI) in October 2019. Copies of the executed Positive Covenants and notice of registration of the instruments was included in the 2019 SMC Annual Biodiversity Report.

***Conservation Bond***

In accordance with Condition 40, Schedule 3 of Development Consent SSD-4966, SCPL is required to lodge a Conservation Bond with the DPE which covers the cost of implementing the Biodiversity Offset Strategy detailed in the BMP.

The conservation bond calculation was prepared by Kleinfelder and a verification of the costs was undertaken by Rider Levett Bucknall. The conservation bond calculation was submitted in January 2019 and subsequently approved by DPE on 15 January 2019.

The Conservation Bond in the form of a bank guarantee was executed and lodged with DPE on 8 February 2019. During the next reporting period the Conservation Bond will be reviewed by SCPL.

## 6.4 Blasting

### 6.4.1 Blast Criteria and Control Procedures

Blasting at the SMC is conducted in accordance with Conditions 9-15, Schedule 3 of SSD-4966, respective EPL conditions and the approved Blast Management Plan (BLMP). Blasting criteria, blasting hours, blasting frequency, property inspection requirements and operating conditions are provided in Conditions 9 to 15, Schedule 3 of the Project Approval.

### 6.4.2 Review of Blast Monitoring Results and Performance

Blasting activities during the reporting period were undertaken within the Avon North Open Cut and the Stratford East Open Cut.

The locations of blast monitoring units are shown on **Figure 3** (**Appendix 1**). Blast monitors are located at the following residences:

- Isaac Property (mine owned) (south-west of blasting);
- Ex-Judge Property (mine owned) (west);
- Atkins Property (mine owned) (north-west);
- Greenwood Property (south); and
- Clarke Property (mine owned) (east).

Monitoring is undertaken at the Clarke property due to restrictions with monitoring at the next closest residence on privately-owned land. Enviro Strata Consulting (ESC) has been previously engaged to undertake an independent assessment of blasting results and prepare a model to extrapolate the overpressure and ground vibration levels at private residences where monitoring is not possible.

Blast monitoring is also undertaken at Aboriginal heritage site CTS-1 when blasting is within 1km. Blasting has now ceased in the Stratford East Pit and subsequently blast monitoring at CTS-1 has also ceased and the potential impact pathway to CTS-1 no longer exists

Airblast overpressure and ground vibration results for all blasts undertaken during the reporting period are provided in **Appendix 5** and summarised below.

***Overpressure Results***

There were no exceedances of the overpressure criteria of 120 dBL or 115 dBL overpressure criteria during the reporting period.

***Vibration Results***

During the reporting period, there were no blasts where ground vibration exceeded 5 mm/s.

***Fume Results***

The level of blast fume generation is monitored for each blast by the shotfirer as described in the BLMP. During the reporting period, there was no occasion of blast fume being recorded.

The EIS (2012) provides predictions on blast emissions for various residential receivers. The blasting predictions indicate that blasting emissions would generally comply with airblast criteria of 115 dBL and ground vibration of 5 mm/s at nearby private receivers. During the reporting period, predicted blast emissions were generally consistent with measured values.

### 6.4.3 Property Inspections and Investigations

In accordance with the Development Consent Schedule 3 Conditions 12 landowners within 2 kilometres of blasting may request a property inspection to establish the baseline condition of a building. Additionally, in accordance with Condition 13 if a landowner claims damage has been caused to a building as a result of blasting they may request a property investigation.

Prior to recommencing blasting activities at the SMC, SCPL notified all relevant landowners of their rights in accordance with the Development Consent.

During the reporting period no further building inspections were requested. Building inspections have previously been undertaken by Bill Jordon as a suitably qualified, experienced and independent person to undertake the building condition inspections.

Building condition inspections will continue to be undertaken on request.

No requests have been received by SCPL for a property investigation due to claims of damage resulting from blasting activities.

### 6.4.4 Blasting Complaints

One (1) blast related complaint was received during the reporting period. Follow up investigations identified that all blasting activities, including the blast corresponding to the complaint, were deemed to be compliant during the reporting period. SCPL continues to implement measures to reduce the impacts of blasting activities as far as reasonably practicable. A full list of complaints received, including responses by SCPL is provided in **Appendix 7**.

## 6.5 Noise

### 6.5.1 Noise Criteria and Control Procedures

SMC has an approved Noise Management Plan (NMP) that establishes a noise management strategy which:

- identifies noise criteria;
- outlines proactive and responsive noise management and control measures;

- formulates a noise monitoring program;
- establishes data assessment protocols; and
- details reporting and review requirements.

Noise emissions from the SMC are managed in accordance with the criteria and procedures described in the NMP. SCPL implements measures to ensure noise from the SMC is managed to approved levels, through a combination of the following:

- ensuring best management practices are implemented and reviewed;
- implementing noise controls to reduce noise from the source and attenuate noise transmission; and
- if necessary, implementing measures to control noise at receivers following a review of monitoring data.

The SMC noise monitoring program comprises attended noise surveys, real-time noise monitoring, rail noise monitoring, meteorological monitoring and sound power testing. The results of compliance attended monitoring are used to assess compliance with relevant noise impact assessment criteria in SSD-4966 and the NMP. Real-time noise monitoring results are used for ongoing performance assessment and will assist in the implementation of pre-emptive management actions to avoid potential non-compliances.

SCPL undertakes monthly attended noise monitoring surveys in accordance with the NMP in order to determine the status of compliance with noise limits provided in SSD-4966 and the EPL.

The Sentinex real-time noise (RTN) monitors are used as a management tool for operations to measure mine contribution noise emissions and implement management controls as outlined under the approved NMP. Sentinex RTN monitors are located near Stratford Village and Craven Village.

### 6.5.2 Review of Attended Noise Monitoring Results and Performance

The summary results of the attended noise surveys undertaken during the reporting period are provided in **Appendix 6**. Noise monitoring locations are shown on **Figure 3** (**Appendix 1**). The full Noise Survey Reports are available at the Stratford Coal website (www.stratfordcoal.com.au).

Operator-attended operational noise monitoring was conducted on a monthly basis at eight nominated locations in the NMP, as well as additional locations representative of receivers in the area surrounding the SMC, in January through to December 2022.

All noise performance assessments of day, evening and night operational noise emissions found SMC to be compliant with the relevant criteria, contained within SSD-4966 and EPL 5161, at all attended monitoring locations.

### 6.5.3 Analysis of Data Trends and Comparison with EA Predictions

The SEP EIS 2012 provides predictions on mine contributed noise emissions for various operational years. In terms of the nine monitoring locations (“Atkins”, “Clarke”, “Wadland”, “Hall”, “141 Deards Lane”, “Lowrey”, “Pryce-Jones”, “Van der Drift” and “Greenwood”) predicted mine contributed noise emissions were consistent with measured values for all locations.

Results of noise monitoring during 2017 to 2022 has shown mine contribution to be generally inaudible.

### 6.5.4 Real Time Noise Monitoring System

A real-time noise (RTN) monitoring system is described in the NMP. Real-time monitoring is used as a management tool to assist SCPL to take proactive management actions and implement additional noise mitigation measures to avoid potential non-compliances. A Sentinex RTN monitor is located near Craven Village and a second Sentinex unit is located near Stratford Village.

Noise investigation triggers have been established in the NMP which send alarms when noise emissions are approaching levels which may exceed the noise criteria at privately-owned receivers. Details of any RTN alarms and the operational responses implemented by SCPL are recorded in the RTN Response Register (**Appendix 6**).

In general, noise alarms during the reporting period related to abnormal meteorological conditions, environmental and traffic noise from The Bucketts Way. The SMC noise contribution was generally inaudible and the alarms activated by external noise sources. The RTN response register details the response actions taken by SCPL.

To address any noise alarms regardless of abnormal meteorological conditions such as inversions, SCPL continue to implement the management measures described in the NMP. Additionally, SCPL implement operational management measures in accordance with the real-time noise monitoring response protocol described in the NMP Section 7.3.4.

### 6.5.5 Noise Prediction and Forecasting System

A noise and meteorological forecasting system is implemented at the SMC to predict meteorological conditions for the coming day to determine, one day in advance, where the risk of noise-enhancing meteorological conditions may occur (e.g. based on wind speed, direction and atmospheric stability).

Predictive noise and meteorological forecasting information is provided at the start of every operational shift to inform the need for any control of the locations of major mobile equipment (i.e. to maintain compliance with Development Consent SSD-4966 noise criteria). The predictive meteorological forecasting system operates in conjunction with the real-time monitoring system, providing an alert for the appropriate personnel to review the real-time data and manage the intensity of activities for that day, increase controls (e.g. gear restriction) or limit activity to various areas of the site.

### 6.5.6 Rail Noise Monitoring

The Stratford export train is required to be approved to operate on the NSW rail network in accordance with the noise limits specified in ARTC's EPL 3142, as per Condition 5(d), Schedule 3 of SSD-4966. ARTC have recently received a variation to EPL 3142 which has amended conditions relating to the operation of rolling stock. Previously only the rail infrastructure operator was required to hold an EPL. The changes now require the rolling stock operators to also hold an EPL for the operation of rolling stock. PN are the operator of the Stratford export train and have confirmed the Stratford locomotives are listed in locomotives class register approved to operate on the NSW rail network.

The NMP requires rail noise monitoring to be undertaken along the North Coast railway on a quarterly basis at the existing Wards River and Craven village monitoring points.

Rail noise monitoring is reported against rail noise criteria described in Section 4 of the NMP. Rail operations aim to progressively reduce noise levels to the goals of 65dB(A)Leq, (daytime from 7am – 10pm), 60dB(A)Leq (night-time from 10pm –7am) and 85dB(A) (24hr) max pass-by noise, at one metre from the façade of affected residential properties. This is consistent with the criteria in the ARTC EPL noise limits.

Rail noise monitoring was conducted during the February 2022, June 2022, September 2022 and October 2022 Noise Surveys when export trains were operating. Rail noise survey results are included in the Noise Survey reports which are available at the Stratford Coal website. Attended noise measurements were conducted at two locations; TN1 (Craven) and TN2 (Wards River Village).

During the reporting period for all rail noise monitoring undertaken, the maximum SMC rail pass-by noise levels complied with the noise goal of 85 dBA at all monitoring locations, excluding the sounding of horns on approach to level crossings.

### 6.5.7 Mobile Plant Noise Assessments

Sound power testing is undertaken in accordance with the NMP. The indicative mine fleet at the SMC is provided in the SEP Noise Impact Assessment (NIA) (EIS 2012 Appendix C). The NIA provides the overall A-weighted and Linear Sound Power Levels (SWLs) for each item of plant and equipment proposed to be used at the SMC.

The current mining fleet is shown in **Section 4.3.1** of this report. The SMC fleet of mobile plant are assessed annually against the target SWLs.

Sound power testing of existing of plant and equipment at the SMC was undertaken by SLR during September 2022. A summary of the results from the sound power testing is included below.

Most of the plant and equipment tested conformed to the target SMC sound power levels.

- all excavators conformed with the A-weighted and Linear SWL targets with the exception of the R994B (ID 002) and CAT 349 (ID 007) exceeding the Linear SWL target
- six CAT 785s (ID 105, 106, 108, 109, 110, 113) and two CAT 789s (ID 116, 118) exceeded the static A-weighted SWLs. Two CAT 789s (ID 116, 118) exceeded the linear SWL target. One CAT 785 (ID 110) and one CAT 789 (ID 118) exceeded the target A-weighted SWLs under dynamic test conditions by a negligible 1 dB
- CAT D10T dozers (ID 214, 218) exceeded the A-weighted SWL target when in first gear reverse, second gear forward and second gear reverse operation. CAT D10T (ID 216) exceeded the dynamic Linear SWL target when in second gear reverse by a negligible 1 dB and exceeded the Linear SWL target under static test conditions. CAT D11Ts (ID 122) exceeded the A-weighted SWL target when in second gear reverse
- Komatsu WA900 ROM Loader (ID 401) exceeded both the A weighted and Linear SWL targets under both static and dynamic test conditions. CAT 988 ROM Loader (ID 402) exceeded the A-weighted target under static test conditions by a negligible 1 dB
- Drill 51 exceeded both the A weighted and Linear SWL targets.

The results of the items of plant measured in 2021 compared 2022 showed to be consistent (in the order of up to 5 dB) with only some minor changes between some items of plant. Some differences may be attributed to measurements being conducted in relatively confined areas and as such are sensitive to the position and operation of the plant and equipment at the time of test.

Since the completed sound power testing completed in September 2022 major sound improvements have been utilised at the SMC. These improvements have included:

- installation of new sound suppressed undercarriages on all CAT D10T dozers and the Komatsu

WA900 loader;

- design and installation of new cooler packs with deflection grills installed on the Komatsu WA900 loader; and
- Fan speed reduction on Atlas Copco D56 completed in December 2022.

Within the next reporting period, SCPL will complete additional sound power testing on the fleet that has received sound improvements.

Notwithstanding, given that the current equipment fleet in use at SMC is considerably less than those predicted in the EIS 2012 the overall sound power level from SMC is likely to be less than 136 dBA.

### 6.5.8 Noise Complaints

One (1) noise related complaint was received during the reporting period. SCPL continue to implement management and mitigation measures for noise. The complaints list is provided in **Appendix 7**.

## 6.6 Heritage

Aboriginal culture heritage and non-Aboriginal heritage at the SMC is managed in accordance with the approved Heritage Management Plan (HMP). The purpose of the HMP is to ensure that the development does not cause any direct or indirect impact on identified Aboriginal or Non-Aboriginal heritage sites located outside the approved disturbance area of the development on the site.

### 6.6.1 Aboriginal Heritage

Aboriginal cultural heritage sites within the vicinity are shown on Figure 3 of the HMP and status of each site is outlined below in **Table 16**.

**Table 16 Aboriginal Cultural Heritage Sites**

| Site Name | AHIMS[1] | Site Type | Status |
|---|---|---|---|
| OS-1 | 38-1-0087 | Open Artefact Scatter | Monitored quarterly |
| OS-2 | 38-1-0088 | Open Artefact Scatter | Monitored quarterly |
| OS-3 | 38-1-0089 | Open Artefact Scatter | Salvaged 2018 |
| OS-4 | 38-1-0077 | Open Artefact Scatter | Salvaged 2018 |
| OS-5 | 38-1-0008 | Open Artefact Scatter | Salvaged 2019 |
| ST-1 | 38-1-0079 | Scarred Tree | Monitored quarterly |
| ST-2 | 38-1-0080 | Scarred Tree | Relocated 2019 |
| ST-3 | 38-1-0081 | Scarred Tree | Monitored quarterly |
| ST-4 | 38-1-0082 | Scarred Tree | Monitored quarterly |
| IF-1 | 38-1-0083 | Isolated Find | Salvaged 2018 |
| IF-2 | 38-1-0084 | Isolated Find | Salvaged 2018 |
| IF-3 | 38-1-0085 | Isolated Find | Salvaged 2020 |
| IF-4 | 38-1-0086 | Isolated Find | Salvaged 2020 |
| IF-5 | 38-1-0031 | Isolated Find | Monitored quarterly |
| PAD-1 | 38-1-0101 | PAD | Monitored quarterly |
| PAD-2 | 38-1-0078 | PAD | Monitored quarterly |

| Site Name | AHIMS[1] | Site Type | Status |
|---|---|---|---|
| CTS-1 | - | Cultural/Traditional Site | Monitored quarterly, access restricted |

[1] AHIMS = Aboriginal Heritage Information Management System.

During the reporting period SCPL continued the management of Aboriginal heritage sites associated with the project. The results of all survey activities during the period have been record and included on the SMC Heritage database. No salvage activities were completed during the reporting period.

There was no unapproved or unplanned disturbance of any Aboriginal heritage sites during the reporting period. No previously unidentified heritage sites were identified during the reporting period.

### 6.6.2 Non-Aboriginal Heritage

No items of state or regional non-Aboriginal heritage significance were identified in the vicinity of the SMC (EIS, 2012). If sites with suspected non-Aboriginal heritage significance are identified in the future, an appropriately qualified individual will be required to determine management measures.

There was no unapproved or unplanned disturbance of any non-Aboriginal heritage sites during the reporting period. No previously unidentified heritage sites were identified during the reporting period.

## 6.7 Waste Management

All waste streams generated at the SMC are managed in accordance with the SMC Waste Management and Minimisation Strategy. Key waste streams (apart from waste rock) generated at the SMC comprise:

- recyclable and non-recyclable wastes;
- sewerage and wastewater; and
- other wastes from mining and workshop activities (e.g. used tyres, scrap metal and waste hydrocarbons and oil filters).

All general domestic waste (e.g. general solid [putrescibles] waste and general solid [non-putrescible] waste as defined in *Waste Classification Guidelines Part 1: Classifying Waste* [EPA, 2014]) and general recyclable products are collected by an appropriately licensed contractor. SMC will maintain a register of regulated waste collected by the licensed waste contractor.

Heavy vehicle waste tyres at the SMC are to be disposed into the open cut voids (Bowens Road North Pit and Roseville West Pit) in accordance with the methodology described in the SEP (SCPL, 2012) and the Waste Management and Minimisation Strategy which is summarised below.

- tyres are stockpiled before disposal in discrete patches;
- overburden is segregated into potential acid-forming and non acid-forming (NAF) materials. Tyres are placed with NAF overburden into backfilled sections of the open cut voids, with approximately 20 m coverage in unsaturated zones above the groundwater table;
- each tyre has a unique serial number that is recorded before disposal; and
- burial locations are recorded in the used tyre register that is maintained on a regular basis by SCPL, and land surveyed (location and depth) (consistent with the SMC Waste Management and Minimisation Strategy)

Scrap metal is collected by a licensed waste contractor for recycling.

Sewage and wastewater from ablution facilities on-site is collected and transferred via a sewerage system to the existing on-site sewage treatment plant. Sewage is treated in the on-site sewage treatment plant (that consists of an aerobic treatment system) and is disposed of in a manner to the satisfaction of the EPA (i.e. EPL 5161) and the MidCoast Council.

### 6.7.1 Waste Minimisation and Performance

The waste management contractor provides monthly reporting on all waste streams disposed from the SMC. The monthly reports also provide details of recycling achieved and hazardous substances.

A review of the effectiveness of waste minimisation and management measures is provided below, including a comparison against results of previous years and assessment of any trends over time. During the reporting period the volume of waste generated at the SMC increased. The increase in total waste during the reporting period was a factor of production and pre-emptive mine closure clean up works. The main waste stream increases were hazardous recycled waste and mixed-solid waste.

During the reporting period the SMC recycled 90.19% of the total waste generated. This is consistent with previous reporting periods with waste recycling showing a slight increase each year since 2019 as shown in **Table 17**.

**Table 17 Waste Generation at SMC**

| | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| **Total Waste (kg)** | 498.75 | 431.41 | 521.70 | **578.12** |
| **Recycled Waste (t)** | 428.11 | 375.86 | 463.29 | **521.42** |
| **Percentage Recycled** | 85.84% | 87.12% | 88.8% | **90.19%** |

## 6.8 Hazardous and Explosive Materials Management

Hazardous materials are stored and used in accordance with relevant safety data sheets (SDS). SDS's are kept in a file inside the First Aid Room and are available from an online database on the company intranet.

Bulk explosive area approved for storage within an explosives compound at site.

All hazardous waste is appropriately disposed of by a fully accredited waste contractor and waste tracking certificates are supplied to SCPL.

## 6.9 PAF Material Management and Spontaneous Combustion

An assessment of the geochemical characteristics of the waste rock material associated with the development of the SEP is provided in the Geochemistry Assessment (EIS 2012 Appendix L) prepared by EGi (2012). The Geochemistry Assessment (EGi, 2012) concluded that the waste rock materials generated from three of the four SMC open cut mining areas are likely to be non-acid forming (NAF). The acid base accounting test work indicates that the Stratford East Open Cut waste rock materials would be expected to be generally potentially acid forming (PAF), with some potentially acid forming – low capacity (PAF-LC) and NAF materials also expected to be present (EIS Appendix L).

PAF material is managed in accordance with Section 7.2 of the SMC Surface Water Management Plan. PAF waste rock material is segregated and selectively handled and then placed in in-pit (below the predicted final water table recovery level) waste rock emplacements.

During operations, limestone is placed on the open pit floor and interim waste rock in-pit and historical out-of-pit waste rock emplacement lifts/faces where PAF material is present, to minimise the generation of acid rock drainage.

SCPL monitors the water quality of contained water storages (i.e. pH and solute concentrations) as part of the existing surface water monitoring program. If in the event acid rock drainage is identified through the surface water monitoring program, specific acid rock drainage controls will be implemented. Refer to the surface water monitoring results in **Section 7.2.2** of this report.

During the reporting period PAF materials have been appropriately managed to minimise the potential for any short-term or long-term effects of acid rock drainage.

Any incidences of spontaneous combustion at the SMC are managed in accordance with a Spontaneous Combustion Management Procedure. Management and mitigation practices generally involve reducing the interaction of potentially reactive materials with water and oxygen by appropriate dumping practices, profiling and capping any materials likely to heat and reducing the time coal faces are exposed prior to mining.

There have been very few occurrences of spontaneous combustion on the Stratford site during the 20 years of operation. During the reporting period there were no spontaneous combustion events on site or observed heating in any stockpiles.

## 6.10 CHPP Reject Management

Reject material produced at the Stratford CHPP is disposed of in accordance with the SMC Life of Mine Rejects Disposal Plan (RDP 2018).

The Development Consent SSD-4966 Table 8 prescribes the performance criteria for CHPP rejects. Reference should be made to the RDP for a detailed description of reject management at the SMC. In general the rejects, both coarse and fine fractions, are pumped via pipeline from the CHPP to the Stratford Main pit where they are deposited below final void ground water levels.

Rejects at the SMC have been previously characterised as being PAF and the EIS 2012 geochemical assessment report concluded that implementation of appropriate management measures would be required to manage potential ARD impacts associated with the existing and proposed co-disposed CHPP rejects. Rejects management measures include placement into the Stratford Main Pit where they are inundated with water to prevent significant pyrite oxidation and acid generation in the long term, with monitoring of water quality undertaken during operations and provision for lime (calcium hydroxide - Ca[OH]2) dosing and limestone (calcium carbonate - CaCO3) treatment as required.

Reject placement in the Stratford Main Pit for the reporting period involved sub-aqueous deposition only, eliminating the use of reject beaches. Hence, no liming or monitoring of the exposed reject beach was undertaken during the reporting period. Lime dosing of the reject stream was continued.

Water quality monitoring in the Main Pit is undertaken monthly, refer to the results in **Section 7.0** Water Management. The management measures implemented have successfully controlled the formation of acid conditions in the Stratford Main Pit, with recorded pH circum neutral.

# 7.0 WATER MANAGEMENT

Water management is undertaken in accordance with the approved Water Management Plan (WMP) and sub-components of the plan including surface water, groundwater and site water balance required under SSD-4966. The local and regional hydrological setting along with the baseline data is provided in the WMP.

SCPL has investigated options for the beneficial reuse of mine water however continue to maintain zero discharge of mine water from site. The mine water balance at SMC is managed predominantly through storage within on site containment facilities. Where possible all clean water is diverted offsite.

## 7.1 Water Licences

### 7.1.1 Surface Water Licencing

The SMC is located within the mapped extent of the Avon River Water Source under the Water Sharing Plan for the Lower North Coast Unregulated and Alluvial Water Sources 2009. SMC is a water surplus site and no extraction of surface water from any unregulated stream is proposed for the SMC.

### 7.1.2 Groundwater Licencing

The groundwater systems within which the SMC lies, specifically relate to:

- Gloucester Basin Water Source (i.e. porous rock aquifer) under the *Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016*
- Avon River Water Source (i.e. alluvial aquifers) under the *Water Sharing Plan for the Lower North Coast Unregulated and Alluvial Water Sources 2009*

SCPL currently holds several WALs in the Gloucester Basin Groundwater Source, for a total of 1,476 share components under the *Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016*, to account for direct and indirect take of groundwater from the porous rock aquifer.

SCPL holds existing groundwater licences for dewatering issued by the NSW DPE Water that allow for the dewatering requirements from the open cut pits. The estimated groundwater inflows at the SMC during 2022 where are below the annual extraction limits as shown in **Table 18.**

**Table 18 Water Take**

| Water Licence | Operation | Entitlement | Estimated 2022 take total (ML) |
|---|---|---|---|
| WAL 41534 (20BL169400) | Stratford Main Pit, ANOC, SEOC | 500ML extraction | 129.6 |
| WAL 41535 (20BL169101) | Stratford (Roseville) Pit | 20ML extraction | 1 |
| WAL 41536 (20BL169102) | Roseville Extended and West Pit | 315ML extraction | 168 |
| WAL 41538 (20BL169103) | Bowens Road North Pit | 410ML extraction | 0 |
| WAL 41537 (20BL169104) | Parkers Pit | 186ML extraction | - |

## 7.2 Water Balance

SCPL monitors the water balance for the operation to assist in forecasting and management of site water. The site water balance (**Table 19**) for the reporting period was prepared by ATC Williams.

During the reporting period, no water was extracted from licenced production bores.

**Table 19 Input Output Water Balance Statement for SMC**

| Description | Volume (ML) |
|---|---|
| Total Inputs | 5,861 |
| Total Outputs | 1,442 |
| **Total Inputs minus Total Outputs** | **4,419** |
| Storage at Start of 2022 | 26,103 |
| Storage at End of 2022 | 30,673 |
| **Change in Storage over 2022** | **4,470** |

## 7.3 Surface Water

### 7.3.1 Surface Water Management

Surface water management is managed in accordance with the SWMP, Appendix 2 of the WMP. The SWMP outlines the procedures and strategies for surface water management at the SMC to ensure compliance with SSD-4966. The SWMP includes the management of clean water and mine related water as outlined below. Mine related water comprises both mine water and sediment laden/turbid water. The local and regional hydrological setting along with the baseline data is provided in the SWMP.

#### 7.3.1.1 Erosion and Sediment Control

The primary objectives of the erosion and sediment control strategy at the SMC are to:

- minimise and control soil erosion and sediment generation in areas disturbed by ongoing mining and construction activities; and
- minimise the potential for mine related activities to lower the water quality (particularly in terms of total suspended solids content) of downstream local watercourses.

Control strategies for soil erosion and sediment migration for the SMC include:

- maximum separation of runoff from disturbed and undisturbed areas
- construction of sediment dams downstream of disturbed areas to contain runoff up to specified design criteria (refer Design Criteria below)
- subsequent priority use of these waters in SMC related activities and/or natural controlled release to substantial buffer zones in a manner that minimises the potential for change to downstream turbidity
- selective use of benign flocculants such as gypsum to assist in the settlement of suspended solids if required
- construction of surface drains to facilitate the efficient transport of surface runoff.
- construction of silt fences downslope of disturbed sites
- rapid and progressive stabilisation of disturbed surfaces

SMC operate a network of sediment control structures to control sediment laden runoff from disturbed areas and active mining areas. All sediment control structures at the SMC were reviewed during 2018 following the approval of the SMP with maintenance or upgrades undertaken in accordance with the SWMP as required. In 2022 no new sediment control structures were constructed.

All sediment dams are inspected/monitored on a minimum quarterly basis or following receipt of sufficient rain whereby such dams have the potential to spill. Maintenance activities are undertaken on sediment dams as required. Sediment dams are cleaned out when the storage volume is reduced by sediment deposition (i.e. when 30% of storage volume is lost to sediment build up) and inspected after major rainfall events. Silt fences are cleaned out and/or repaired to maintain their effectiveness.

During the reporting period there was one sediment dam spill. A spill from SD16 was recorded on 8 March 2022. The dam spill occurred due to the rainfall volume exceeding the design capacity. Water quality sampling was undertaken at the time of the spill and the incident reported to regulators as required.

In addition to dedicated sediment dams, clean water is directed around disturbed areas (where practicable) using diversion drains/bunds in order to minimise sediment laden water. Areas under rehabilitation are stabilised by structural controls such as bench drains and contour banks (as required), to break up effective slope length exposed to erosion. Final slopes will generally not exceed 14 degrees in order to limit the potential for erosion and sediment generation.

Inspections of diversion structures were undertaken during and after rainfall events of >50mm/day or a minimum of every 6 months. Remedial and maintenance works were completed as required within the diversion drains and dams during the reporting period.

### 7.3.2 Surface Water Monitoring and Performance

SCPL monitors surface water quality on and surrounding the mine site by sampling from a series of selected locations. These locations comprise both streams and water storage structures. A meteorological monitoring station (i.e. weather station) provides site rainfall data. The locations of these monitoring sites are shown on **Figure 3** (**Appendix 1**).

Surface water monitoring is conducted in accordance with the approved SWMP and EPL 5161.

Surface water is sampled and analysed on a weekly, monthly, event basis or following a sediment dam spill.

Water sampling is not undertaken in no-flow conditions. Collected waters are analysed for a suite of physical and chemical parameters. Results are compared with the performance indicators and measures described in the SWMP Section 9 (WMP Appendix B).

During the reporting period there was one (1) surface water related (minor) incident. Details regarding the water related incident are included in **Section 1**, **Table 3**.

The routine surface water monitoring sites at the SMC are described in **Table 20**.

**Table 20 Routine Surface Water Monitoring Sites**

| Site | Area | Property | Hydrological location |
|---|---|---|---|
| W1 | Wenham Cox Road | Glenavon | Avon River upstream of the mine (i.e. upstream of junction with Dog Trap Creek) |
| W2 | Marengo | Bignall | Avon River downstream of the mine (i.e. downstream of junction with Dog Trap Creek) |
| W3 | Dog Trap Creek | Ex-Ellis/SMC | Upstream Dog Trap Creek (above junction with Avondale Creek) |
| W3A | Dog Trap Creek | Ex-Ellis/SMC | Upstream Dog Trap Creek (above junction with Avondale Creek) and Upstream of BRN Operations |
| W4 | Dog Trap Creek | Ex-Atkins/SMC | Dog Trap Creek downstream of junction with Avondale Creek and upstream of Avon River |
| W5 | Wenham Cox Road | SMC | Avondale Creek downstream of mine and upstream of junction with Dog Trap Creek |
| W6 | Parkers Road | SMC | Upstream of Mine on Avondale Creek |
| W8 | Bowens Road | SMC | Avondale Creek in the centre of operations |
| W9 | Glen Road | SMC | Upper Avondale Creek |
| W10 | Lemon Tree Creek - Bowens Road | SMC | "Lemon Tree" Creek upstream of Avondale Creek junction |
| W11 | Dog Trap Creek | Ex-Ellis | Dog Trap Creek upstream of Avon North operations |

#### 7.3.2.1 Review of Local Streams Monitoring Results

Reference should be made to accompanying data tables provided in **Appendix 4**.

**Assessment of Performance Indicators**

The surface water monitoring results are used to assess the SMC against the performance indicators and performance measures as detailed in Section 9 Table 12 of the SWMP. If data analysis indicates a performance indicator has been exceeded or is likely to be exceeded, an assessment will be made against the performance measure. If a performance measure is considered to have been exceeded, the Contingency Plan will be implemented (SWMP Section 10). If data analysis indicates that the performance measure has not been exceeded, SCPL will continue to monitor.

**Table 21** provides a summary of surface water analysis of the monitoring data to assess against the surface water performance indicators and measures outlined in Table 12 of the SWMP.

**Table 21 Summary of Water Monitoring Results – 2022 Reporting Period**

| Monitoring Site | Indicator | Long Term Mean | Standard Deviation | 12 Month Mean 2022 |
|---|---|---|---|---|
| W4 | pH | 7.0 | 0.5 | 7.1 |
| | EC | 574 | 380 | 403 |
| | Sulphate | 37 | 59 | 24 |
| | Iron | 1.0 | 0.9 | 2.3 |
| W3 | pH | 7.0 | 0.4 | 7.1 |
| | EC | 415 | 205 | 313 |
| | Sulphate | 12 | 11 | 8 |

| Monitoring Site | Indicator | Long Term Mean | Standard Deviation | 12 Month Mean 2022 |
|---|---|---|---|---|
| | Iron | 1.0 | 1.2 | 1.3 |
| W1 | pH | 7.1 | 0.4 | 7.2 |
| | EC | 322 | 183 | 259 |
| | Sulphate | 9 | 9 | 7 |
| | Iron | 1.9 | 2.8 | 2.4 |
| W11 | pH | 6.8 | 0.2 | 6.8 |
| | EC | 253 | 87 | 227 |
| | Sulphate | 12 | 5 | 11 |
| | Iron | 0.8 | 1.0 | 0.8 |
| W6 | pH | 6.7 | 0.6 | 6.9 |
| | EC | 664 | 721 | 211 |
| | Sulphate | 23 | 96 | 7 |
| | Iron | 1.6 | 1.7 | 2.8 |
| W9 | pH | 6.7 | 0.6 | 6.8 |
| | EC | 178 | 217 | 143 |
| | Sulphate | 4 | 4 | 2 |
| | Iron | 2.3 | 1.3 | 2.0 |

Assessment of the Performance Indicators and Performance outcomes are presented in **Table 22.** Monitoring results during the reporting period were influenced by above average rainfall which continued from 2020 through 2022.

**Table 22 Surface Water Monitoring Performance Outcomes – 2022 Reporting Period**

| Performance Measure | Specific Performance Indicators | Data Analysis to Assess against Performance Indicators | Monitoring | | | Cascading Trigger Levels | Assessment of Performance Indicator and Performance Measure | Relevant Management and Contingency Measures |
|---|---|---|---|---|---|---|---|---|
| | | | Sites | Parameters | Frequency | | | |
| No impact on water quality in Avondale Creek as a result of the SMC | Greater than negligible decline in water quality at W4 or W3 | Select water quality data analysed annually (as part of Annual Review:<br>- The mean and standard deviation for each water quality parameter at W4 and W3 will be calculated from the long-term monitoring data.<br><br>- The mean and standard deviation for each water quality parameter at upstream control sites (W1, W11, W6 and W9) will be calculated from the long-term monitoring data. | W4 (and W3)<br><br>W1, W11, W6 and W9 | EC, pH, $SO_4$, Iron | Monthly/Event | **Low Risk (Negligible) Outcome:**<br>The 12 month mean is within the long-term data 'mean plus 1.5 standard deviation', and the same trigger has not been exceeded at an upstream control site.<br>**Moderate Risk Trigger:**<br>The 12 month mean exceeds the long term data 'mean plus 1.5 standard deviation', and the same trigger has not been exceeded at an upstream control site.<br>**High Risk Trigger:** The 12 month mean exceeds the long term data 'mean plus 2 standard deviation', and the same trigger has not been exceeded at an upstream control site. | Analysis of the monitoring data indicates no statistically significant change in the quality of water at W4 and W3 compared to the long-term data. The 12 month mean for all water quality parameters did not exceed the long-term data mean plus 1.5 standard deviation.<br><br>Additionally, a similar trend was observed at the reference sites.<br><br>No further requirement for assessment of Performance Measure. | Continue monitoring as per SWMP. |

#### 7.3.2.2 Review of Mine Water Monitoring Results

***Mine Water Storages***

The monitoring program for the water management system is described in the SWMP Section 8.2.

The performance measure and performance indicator for the mine water storages (SWMP Table 12) states "No discharge of mine affected water to downstream surface waters" indicated by "Modelled forward risk of spill from Stratford Main Pit is negligible".

**Table 23** provides a summary of Stratford mine water storage surface water analysis. The full results are included in **Appendix 4**.

**Table 23 Summary of Mine Water Storage and Open Cut Monitoring Results – 2022**

| | pH | | EC (µS/cm) | | TSS (mg/L) | |
|---|---|---|---|---|---|---|
| **Site** | **Range** | **Average** | **Range** | **Average** | **Range** | **Average** |
| Stratford Main Pit | 7.8 – 8.4 | 8.1 | 2460 - 3310 | 3099 | <5 - 19 | 8 |
| Stratford East Dam | 7.9 – 8.6 | 8.3 | 618 - 768 | 687 | <5 - 5 | 5 |
| Return Water Dam | 7.7 – 8.7 | 8.3 | 1844 - 3220 | 2655 | NA | NA |
| Parkers Pit | 7.6 – 8.5 | 8.0 | 2320 - 3050 | 2685 | <5 - 306 | 156 |
| Roseville West Pit | 7.7 – 8.2 | 8.0 | 2840 - 3300 | 3074 | <5 - 82 | 24 |
| Stratford East Pit | 6.6 – 8.2 | 7.3 | 3390 - 4030 | 3830 | 6 - 267 | 46 |
| Avon North Pit | 7.5 – 8.4 | 7.9 | 1330 - 2510 | 1947 | <5 - 136 | 27 |

NA = Not applicable

***Sediment Dams***

The management of sediment dams is described in **Section 7.3.1.1** of this report. The monitoring program for the water management system is described in the SWMP Section 8.2. Monitoring of sediment dams was undertaken on a monthly and rain event basis as required in the SWMP.

During the reporting period there was one spill from sediment dams and disturbed area dams. A spill from SD16 was recorded on 8 March 2022. The uncontrolled discharge of water from SD16 reporting to Avon River catchment area occurred as a result of a significant rainfall event exceeding design capacity. Follow up monitoring found no significant difference between water quality monitoring results at SD16 or at upstream or downstream monitoring locations. SMC concluded no material harm to the environment resulted by the uncontrolled discharge. Refer to **Section 1, Table 3**.

**Table 24 Summary of Sediment Dam/Disturbed Area Dam Monitoring Results – 2022**

| | pH | | EC (µS/cm) | | TSS (mg/L) | |
|---|---|---|---|---|---|---|
| **Site** | **Range** | **Average** | **Range** | **Average** | **Range** | **Average** |
| SD12 | 7.3 – 8.0 | 7.7 | 356 - 565 | 445 | <5 - 36 | 8 |
| SD15 | 6.9 – 7.5 | 7.3 | 1880 - 3810 | 3353 | <5 - 10 | 6 |
| SD16 | 6.8 – 8.1 | 7.4 | 94 - 216 | 151 | <5 - 157 | 53 |
| SD17 | 7.9 – 8.7 | 8.2 | 599 - 1920 | 1290 | <5 - 31 | 8 |
| DAD4 | 8.2 – 8.8 | 8.3 | 1850 - 2790 | 2336 | <5 - 13 | 7 |
| DAD10 | 7.7 – 8.8 | 8.1 | 71 - 1010 | 636 | <5 - 3750 | 381 |
| DAD13 | 6.9 – 9.2 | 8.2 | 324 - 1130 | 822 | <5 - 14400 | 1219 |
| DAD14 | 7.5 – 8.2 | 7.8 | 659 - 3520 | 1696 | <5 - 307 | 48 |
| DAD19 | 6.9 – 7.6 | 7.23 | 188 - 1220 | 651 | <5 - 108 | 34 |
| DAD20 | 7.9 – 8.1 | 8.0 | 2360 - 3970 | 3405 | <5 - 138 | 29 |

### 7.3.3 Analysis Data Trends and Comparison With EA Predictions

#### 7.3.3.1 Local Streams Monitoring

As shown in **Tables 21** and **22**, the monitoring results during the reporting period did not exceed any of the performance indicators or measures. Results of surface water monitoring during the reporting period are consistent with previous year's monitoring results are in concurrence with the EIS 2012 that concluded "mining operations at the SMC would not jeopardise local or regional water quality".

During the reporting period the Gloucester region continued to experienced increased rainfall following on from the severe drought conditions during 2019. This is reflected in the monitoring results.

#### 7.3.3.2 Mine Water Monitoring

The simulated water quality for the SMC water management system was prepared for the EIS 2012 including a salinity balance. Mine water pH has remained generally near neutral or slightly alkaline for the life of the project. The Stratford Main Pit EC trend has been generally consistent with the simulated EC.

### 7.3.4 Biological Monitoring

As part of SMC's environmental monitoring program, Invertebrate Identification Australasia was commissioned to conduct biological (aquatic ecology – macroinvertebrates) monitoring of the streams near the SMC. Biological monitoring has been conducted each year since the start of mining operations.

Monitoring during this reporting period was conducted in September 2022 and involved sampling from six sites. For the September survey a total of 38 families of aquatic macroinvertebrates were recorded. The report concluded that

"*there are no adverse impacts on the Avon River and its tributaries that are associated with the Stratford Mine complex and its operations*." (Invertebrate Identification Australasia, 2022).

Biological monitoring reports to date have not indicated any significant adverse effects on the aquatic ecosystem as a result of the mine's operations as per predictions made in the environmental assessments.

## 7.4 Groundwater

### 7.4.1 Groundwater Management

A Groundwater Management Plan (GWMP) (WMP Appendix 3) has been prepared to control potential impacts on local and regional groundwater resources and includes a monitoring program to validate and review the groundwater model predictions.

Groundwater characteristics of the mine have been studied prior to and over the life of the SMC and for the SEP EIS. A hydrogeological characterisation of the Gloucester Basin is included in the GWMP.

Groundwater resources within the project area were utilised in the early stages of the Stratford Project, as required, to provide make-up water for the CHPP. Since the mine start-up period, water has not been in deficit and no groundwater harvesting has occurred.

Locally there is little reliance on groundwater bores as a source of water, as agricultural enterprises predominantly rely on surface water sources which are more abundant and generally better quality. There are no high priority groundwater dependent ecosystems (GDEs) identified within the WSP as occurring in the vicinity of the SMC.

Groundwater seepage to the SMC mining areas (open cut pits and voids) is actively dewatered to the mine water storage area as required to facilitate mining activities. Groundwater may also be stored in the inactive open cut pits.

### 7.4.2 Groundwater Monitoring Results and Performance

SCPL monitors a network of groundwater bores in accordance with the GWMP. The groundwater monitoring network includes:

- Stratford Village Bores;
- Stratford Project Bores (GW Series);
- Roseville Series Bores (RB Series);
- BRN Series Bores (MW Series); and
- Stratford Extension Project Bores (F Series).

Further detail on the groundwater monitoring program is included in the GWMP Section 7. The network of monitoring bores will be used to monitor the potential impacts on aquifers, groundwater levels and quality in the vicinity of the SMC. The general location of these bores is shown on **Figure 3** (**Appendix 1**).

***Stratford Village Bores***

Monitoring of the Stratford Village bores, during the reporting period, was undertaken in April 2022 and October 2022. SCPL Germon and Bagnall bores are sampled monthly in accordance with the approved WMP. Full results are included in **Appendix 4**. Sampling is not undertaken at the Stratford village bores when access can't be gain through the landholder. Sampling of the Stratford Village bores was limited during the reporting period predominantly due to denied access and/or resident unavailability.

Sampling to date shows no significant changes in groundwater level or quality and no evidence of impacts from mining operations. The groundwater quality is highly variable, with better quality generally in the shallower bores such as Smith. It is understood that these bores are relatively shallow, and given the lower elevations of the sites are tapping into the shallower alluvial aquifers, as opposed to the deeper groundwater.

Results show that there has been no significant difference in depth to standing water level for the bores gauged to date.

***Stratford Project Bores (GW Series)***

Monitoring of the GW bores was undertaken on a 6-monthly basis in line with the approved GWMP. Monitoring is undertaken for both groundwater depth and water quality. The locations of these bores are shown on **Figure 3** (**Appendix 1**). Full analytical results are also shown in **Appendix 4**.

A summary of monitoring results for the Stratford Project GW bores is provided in **Table 25**.

**Table 25 Bores Monitored in Relation to the Stratford Project – 2022**

| Site | Average Depth to Water (m) | Average pH | Average EC (uS/cm) | Average Na (mg/l) | Average Cl (mg/l) | Average Fe (mg/l) | Average SO4 (mg/l) |
|---|---|---|---|---|---|---|---|
| GW1 | 15.05* | 5.3* | 649* | 99* | 176* | 15.5* | 19* |
| GW2 | 11.55 | 6.8 | 4965 | 715 | 1480 | 21.0 | 32.5 |
| GW3 | 1.52 | 6.0 | 3310 | 513 | 895 | 25.8 | 312 |
| GW4 | 0.67 | 6.5 | 14250 | 2130 | 5080 | 2.4 | 99 |
| GW5 | 2.65 | 6.6 | 12050 | 1790 | 4230 | 6.6 | 262 |
| GW7 | 3.01 | 6.4 | 1760 | 253 | 483 | 11.9 | 5.5 |
| GW8 | 8.42* | 5.9* | 3940* | 637* | 748* | 32.2* | 804* |
| BRWN1 | 0.44 | 6.1 | 6075 | 174.5 | 496 | 6075 | 174.5 |

Notes: *One sample only in average calculation

Monitoring for the GW series bores during the reporting period has indicated (when compared to historic data):

- water table levels across all bores were comparable to the previous reporting periods;
- average pH units recorded were similar to historical results across the data set with neutral pH at all bores except GW1 which had an acidic pH as well as GW8 and BRWN1 also showing a slightly acidic pH. This is consistent with baseline data;
- electrical conductivities were generally similar to the historical results;
- water quality parameters had similar average levels to the previous period results and baseline data; and
- GW1 and G8 were dry during the February 2022 sampling period.

***Roseville Pit Bores (RB Series)***

The RB series monitoring is undertaken on a quarterly basis for depth to water quality. The locations of these bores are shown on **Figure 3** (**Appendix 1**).

Monitoring results for the Roseville groundwater bores are provided in **Table 26** below with full analytical results within **Appendix 4**.

**Table 26 Bores Monitored in Relation to Roseville Pit – 2022**

| Bore | Average DTW | Average pH | Average EC | Average SO4 | Average Na | Average Cl |
|---|---|---|---|---|---|---|
| RB1 | 3.5 | 6.8 | 10825 | 35.5 | 1653 | 3830 |
| RB2 | 2.0 | 6.7 | 9480 | 141.5 | 1583 | 3238 |
| RB3 | 11.5 | 3.7 | 4940 | 1269 | 857 | 938 |

Monitoring data recorded during the reporting period indicated:

- prevailing high water table near Avondale creek – particularly for RB1 and RB2.;
- neutral pH at RB1 and RB2; this is consistent with historic monitoring results; An acidic pH at RB3 which is consistent with historical results particularly following dry spells.
- electrical conductivity is consistent with historical data. Average electrical conductivity readings for RB1 and RB2 bores were similar to those of previous reporting periods. Average electrical conductivity readings for RB3 were similar to historical data; and
- water quality parameters had similar average levels to the previous period results and baseline data.

***Bowens Road North Pit Bores (MW Series)***

Monitoring results for the BRN groundwater bores are provided in **Table 27** below with full analytical results within **Appendix 4**.

**Table 27 Bores Monitored in Relation to Bowens Road North Pit – 2022**

| Bore | Average DTW | Average pH | Average EC (uS/cm) | Average SO4 (mg/l) |
|---|---|---|---|---|
| MW3 | ** | ** | ** | ** |
| MW4 | ** | ** | ** | ** |
| MW6 | 6.99 | 6.3 | 231 | 11 |
| MW7 | 8.98 | 5.8 | 1733 | 149 |
| MW8 | ** | ** | ** | ** |
| MW11 | 8.17 | 7.0 | 846 | 27 |
| MW12 | 3.36 | 6.7 | 556 | 13 |
| Griffin | 0.96 | 7.7 | 2018 | 1 |

** Unable to retrieve sample due to dry bore

Monitoring data recorded during the reporting period indicated:

- depth to water measurement generally indicated a similar water table relative to results from previous reporting periods;
- pH results were neutral across all sampled bores except MW7 which has a slightly acidic average pH. Results were consistent with historical data;
- electrical conductivity was consistent with historical data and comparable with those in the previous reporting period; and
- water quality parameters had similar average levels to the previous period results and baseline data.

MW3, MW4 and MW8 were dry and unable to be sampled during the reporting period.

### 7.4.3 Analysis Data Trends and Comparison with EA Predictions

Groundwater monitoring data from the Stratford Project bores during the reporting period demonstrates no significant or measurable change in water table level or groundwater quality that could be attributed to the mining activities across the SMC. These results concur with predictions made in the EIS 2012 and the Groundwater Assessment 2012 that negligible impact on groundwater levels or quality, from mining in the long term is likely. Localised groundwater drawdown is consistent with EIS 2012 predictions.

Groundwater monitoring data from the Roseville Pit Bores during the reporting period demonstrates no significant or measurable change in water table level or groundwater quality that could be attributed to the mining activities across the SMC. These results concur with predictions made in the EIS 2012 and the Groundwater Assessment 2012 that negligible impact on groundwater levels or quality, from mining in the long term is likely.

Groundwater monitoring data from the BRN Pit Bores during the reporting period demonstrates no significant or measurable change in water table level or groundwater quality that could be attributed to the mining activities across the SMC. These results concur with predictions made in the EIS 2012 and the Groundwater Assessment 2012 that negligible impact on groundwater levels or quality, from mining in the long term is likely. Localised groundwater drawdown is consistent with EIS 2012 predictions.

**Assessment of Performance Indicators**

Groundwater monitoring results are assessed against Performance Indicators and Measures as described Section 8 and Table 10 of the GWMP (2021). If data analysis indicates a performance indicator has been exceeded or is likely to be exceeded, an assessment will be made against the performance measure. If a performance measure is determined to have been exceeded, the Contingency Plan will be implemented. Monitoring data for the reporting period assessed against the performance measures and indicators is shown in **Table 28** below.

**Table 28 Groundwater Monitoring Performance Outcomes – 2022 Reporting Period**

| Performance Measure | Specific Performance Indicators | Data Analysis to Assess against Performance Indicators | Monitoring | | | Cascading Trigger Levels | Assessment of Performance Indicator and Performance Measure | Relevant Management and Contingency Measures |
|---|---|---|---|---|---|---|---|---|
| | | | Sites | Parameters | Frequency | | | |
| No more than a negligible impact on water levels in groundwater bores on privately-owned land as a result of the SMC. | No groundwater related notification received | If a notification is received, an investigation will be conducted to determine if the SMC has resulted in a greater than negligible change in water levels in the Stratford Village bores. | NA | Notification | When received | Notification Received.<br><br>Investigation (monitoring) confirms that the SMC has resulted in a greater than negligible change in water levels in the Stratford Village bores (refer below).<br><br>**Low Risk (Negligible) Outcome**: No more than two successive monthly readings at MW12 or SCPL bore are below the P20 groundwater level (116.8 mAHD and 114.8m AHD, respectively).<br><br>**Moderate Risk Trigger:** More than two successive monthly readings at MW12 or SCPL bore are below the P20 groundwater level (116.8 mAHD and 114.8m AHD, respectively) and the equivalent P20 historical groundwater levels have not been exceeded at other shallow control sites (e.g. dry conditions or other anthropogenic changes are not prevalent).<br><br>**High Risk Trigger:** More than two successive monthly readings at MW12 and SCPL bore are below the P5 groundwater level (116.3 mAHD and 114.4m AHD, respectively) and the equivalent P5 historical groundwater levels have not been exceeded at control sites (e.g. dry conditions or other anthropogenic changes are not prevalent). | No notifications received.<br><br>Analysis of the monitoring data indicates no statistically significant change in water levels at MW12 and SCPL bores.<br><br>A similar trend was observed in the reference sites.<br><br>No further requirement for assessment of Performance Measure. | Continue monitoring |
| | No significant decline in groundwater level at MW12 (Mine Site) or SCPL Bore (Stratford Village). | An investigation will be conducted to determine if the SMC has resulted in a greater than negligible change in water levels in the Stratford Village bores. | MW12 (Control Site: MW11)<br><br>SCPL Bore (Control Sites: Germon & Bagnall) | Groundwater level | Monthly (MW12, MW11 & SCPL Bore)<br><br>Monthly (Germon & Bagnall) | | | |

**Table 28 (cont'd) Groundwater Monitoring Performance Outcomes – 2022 Reporting Period**

| Performance Measure | Specific Performance Indicators | Data Analysis to Assess against Performance Indicators | Monitoring | | | Cascading Trigger Levels | Assessment of Performance Indicator and Performance Measure | Relevant Management and Contingency Measures |
|---|---|---|---|---|---|---|---|---|
| | | | Sites | Parameters | Frequency | | | |
| No impact on regional groundwater quality that reduces the beneficial use as a result of the SMC. | No lowering of the beneficial use category (based on groundwater quality) at a groundwater production bore as a result of the SMC. | Each bore to be assigned a beneficial use category based on EC (refer Table 8 of GWMP).<br>If data analysis indicates the performance indicator has been exceeded, the performance measure will be assessed to determine if there has been a reduction in regional groundwater quality that has lowered the beneficial use. | SCPL Bore (Control Sites: Germon & Bagnall) | EC (field) | Monthly | **Low Risk (Negligible) Outcome**: No more than two successive monthly readings at the SCPL bore are outside the applicable beneficial use category range based on EC.<br><br>**Moderate Risk Trigger**: More than two successive monthly readings at the SCPL bore are outside the applicable beneficial use category range (based on EC) and the equivalent beneficial use categories at the control sites have not been lowered.<br><br>**High Risk Trigger:** More than two successive monthly readings at the SCPL bore are outside the applicable beneficial use category range (based on EC) and the equivalent beneficial use categories at the control sites have also been lowered. | Beneficial use categories (SWMP Section 5.1.3 Table 8):<br>SCPL bore - 3 Irrigation<br>Germon - 3 Irrigation<br>Bagnall - 2 Marginal Potable<br><br>Analysis of the monitoring data indicates no more than one (1) readings at the SCPL bore was outside the applicable beneficial use category range based on EC (i.e. 3 Irrigation).<br><br>Average results at SCPL Bore during the reporting period show average EC to be lower than 7,800µS/cm upper level for irrigation beneficial use category (i.e. 4 Saline).<br><br>No results are available for comparison at either of the control sites as both bores are now disused.<br><br>No significant change identified at any other monitoring bores.<br><br>No evidence of a reduction in regional groundwater quality that has lowered the beneficial use. | Continue monitoring at SCPL Bore.<br><br>Update GWMP and establish replacement control sites for Baganll and Germon. |

### 7.4.4 Groundwater Inflows to Open Cut Mining Operations

Groundwater seepage inflows to mining voids is directed and collected in pit sumps along with rainfall and surface water runoff and seepage through backfilled pit areas. Water levels and water quality analysis of the pit sumps is undertaken on a monthly basis. The volumes of water extracted from the pit sumps is recorded where practicable.

The water quality monitoring results for the open cut pits during the reporting period is included in **Section 7.3.2.2** of this report.

A site water balance review is undertaken on an annual basis to monitor the status of inflows (including groundwater inflows to open pits), storage and consumption. The site water balance review includes an assessment of the measured groundwater inflows (groundwater take) compared to the predicted/modelled groundwater inflow. This is also compared to the groundwater licence extraction entitlements. A summary of the 2022 site water balance review is included in **Section 7.1.2** of this report.

The measured groundwater inflows at the SMC during 2022 where well below the annual licenced extraction limits and also remain below the predicted/modelled groundwater inflow rates.

SCPL is currently developing the detailed mine closure planning in accordance with the Rehabilitation Management Plan, which includes refinement of the final landforms and other closure strategies. Following this, further updates to both the post-mining groundwater model and site water balance will be required.

# 8.0 REHABILITATION

Rehabilitation of disturbed land at SMC has previously been undertaken in accordance with the approved Mining Operations Plan and Rehabilitation Management Plan (MOP, 2020) required under the Mining Lease conditions and SSD-4966.

A Rehabilitation Management Plan (RMP) was prepared by SCPL to satisfy the requirements of the SMC ML conditions and Development Consent (SSD-4966) in July 2022.

An amendment to the *Mining Regulation 2016* under the *Mining Act 1992*, commenced on 1 July 2021. The amendment provided new standard rehabilitation conditions for mining leases which replaces existing mining lease conditions. The RMP replaces the SMC Mining Operations Plan (MOP)/RMP (1 January 2021 to 31 December 2023). The RMP is available on the Stratford Coal website.

An Annual Rehabilitation Report and Forward Program (ARRFP) has also been prepared and submitted for SMC which provides details of the scheduled surface disturbance and rehabilitation activities at the SMC from 1 July 2022 to 30 June 2025.

Condition 5, Schedule 2 of the SMC's Development Consent (SSD-4966) authorises mining operations to be carried at the SMC until 31 December 2025. As the SMC progresses towards the end of its approved mine life, operations and activities at the SMC over the next four years will progressively change to reflect this. SCPL has revised relevant EMPs to reflect the current stage of operations and to describe anticipated mine closure activities and describe the change to environmental impacts, mitigation measures and monitoring programs at the SMC for the mine closure phase. A summary of the rehabilitation objectives, performance indicators and completion criteria relevant to the SMC rehabilitation domains is provided in the RMP. Plan 1 in the RMP shows the conceptual final landform, relevant primary domains and secondary rehabilitation domains.

## 8.1 Buildings and Infrastructure

Buildings and infrastructure at the SMC have been utilised during the life of the operations, the infrastructure areas are currently active.

The existing infrastructure and services at the SMC will continue to be utilised throughout the life of the mining operations.

No buildings or infrastructure were constructed or demolished during the reporting period. No decommissioning of infrastructure is scheduled during the next reporting period. Building and infrastructure decommissioning is further addressed in the **Section 8.6** Mine Closure.

## 8.2 Rehabilitation of Disturbed Land

Rehabilitation of disturbed areas is undertaken progressively and concurrently with ongoing mining operations. Rehabilitation planning, management, stage plans and implementation is described in the RMP.

The SMC rehabilitation progress is generally in accordance with the planned activities described in the RMP 2022 Plan 3A to Plan 3D – Life of Mine Rehabilitation Schedule. The current (June 2022) total mine footprint area (disturbance) is 758.15 hectares.

**Table 29** presents a summary of the rehabilitation undertaken at the SMC up to the current reporting period. The current mining areas and rehabilitation as of 30 June 2022 are shown in Figure 4 in **Appendix 1**.

**Table 29 Rehabilitation Status**

| Mine Area Type | Previous RP (actual hectares) | Current RP (actual hectares) | Next RP (forecast hectares) |
|---|---|---|---|
| Total Mining Lease | 1580 | 1580 | 1580 |
| Total Mine Footprint – Surface Disturbance | 757.4 | 758.15 | 758.15 |
| Total Active Disturbance | 481 | 478.93 | 486.9 |
| Rehabilitation – Land Preparation | 31.8 | 5.23 | 41.7 |
| Ecosystem and Land use Development | 0 | 0 | 0 |
| Ecosystem and Land Use Development | 227.7 | 228.8 | 228.8 |
| Rehabilitation Completion | 0 | 0 | 0 |

Note: The rehabilitation and disturbance boundaries have been realigned and the areas recalculated for the provision of the RMP. This includes the disturbance of previously rehabilitated land.

### 8.2.1 Rehabilitation Resources

Topsoil resources are managed in accordance with the RMP Section 6.2.4. No topsoil stripping was undertaken during the reporting period. No further disturbance is proposed for mining activities at SMC.

The site topsoil balance is updated annually to track the recovery and usage of topsoil and to ensure adequate resources are available for rehabilitation of disturbed areas at the SMC. The latest topsoil balance was updated in December 2022 as no topsoil stripping has been undertaken since. At December 2022, an estimated 401,578 cubic metres of topsoil was held in various stockpiles at the SMC. This would provide for rehabilitation of approximately 401 ha to the nominal topsoil depth of 100mm. The current area of disturbance which will require topsoil (i.e. not including final void areas (estimated 138ha) or permanent water bodies (estimated 32ha)) is 326 ha. Hence, the SMC currently holds sufficient topsoil resources to complete all rehabilitation works.

Existing topsoil stockpiles will continue to be managed to maintain soil viability until they are all utilised as part of the rehabilitation program at the SMC.

### 8.2.2 Rehabilitation Maintenance

During the reporting period maintenance activities focussed on the improvement of pasture rehabilitation across the Stratford waste emplacement and included slashing and the removal of woody acacia regrowth. Slashing was also undertaken on the rehabilitated Roseville waste emplacement and BRN waste emplacement in preparation for planting activities. Weed control has been undertaken across all rehabilitation areas targeting lantana, blackberry, wild tobacco and Giant Parramatta grass.

Recommendations to undertake additional tubestock planting in targeted areas of the native rehabilitation to improve biodiversity and stem density as stated in **Section 8.3** are scheduled for the next reporting period.

## 8.3 Rehabilitation Monitoring

SCPL undertakes a monitoring program of rehabilitation areas in accordance with the RMP. The annual rehabilitation monitoring program includes the areas designated for agriculture (grazing) and native ecosystem final land uses. The monitoring program includes visual monitoring, ecosystem function analysis and fauna monitoring.

***Visual Monitoring***

Rehabilitation monitoring includes a visual assessment:

- monitoring of soil erosion status and the effectiveness of erosion control methods;
- assessing germination success and vegetation establishment (diversity and abundance);
- usage of habitat enhancement features;
- the presence of weeds or feral animals; and
- mine landform runoff water quality.

The visual monitoring provides an early identification of areas requiring remedial planting or other maintenance works to maintain rehabilitation progress. The rehabilitation reports provide a list of maintenance recommendations predominantly relating to erosion control, weeds control and vegetation management and enhancement.

***Ecosystem Function Analysis***

In-depth monitoring and assessment of the quality and ecological value of native ecosystem rehabilitation will be required prior to lease relinquishment. This assessment will be conducted using Ecosystem Function Analysis (EFA). EFA aims to measure the progression of rehabilitation areas towards self-sustaining ecosystems. EFA has been incorporated into the overall SMC rehabilitation monitoring program to provide an assessment of ecosystem functionality (refer to Section 8 of the RMP).

The EFA is comprised of the following components:

- Landscape Function Analysis (LFA);
- vegetation dynamics; and
- habitat complexity.

EFA Analogue Transects have been established in proximal areas to the SMC which represent the varying landscapes (i.e. slopes and aspects) and target communities planned for each rehabilitation area.

The rehabilitation transects were assessed again in June 2022 as part of the eighth annual round of monitoring in accordance with Section 8 of the RMP. Conclusions and recommendations from the 2022 Stratford Mining Complex Rehabilitation EFA Monitoring Report (Wedgetail Project Consulting, 2022) are discussed in the Annual Biodiversity Report (**Appendix 9**). A brief overview is outlined below:

- native flora revegetation at the SMC has met with a mix of results. Several areas have been successfully revegetated with native flora (Stratford Waste Emplacement, BRN Waste

Emplacement and Avon North Waste Emplacement)

- where revegetation has been less successful, canopy species in particular are in very low numbers (Bowens Road North Waste Emplacement)
- exceptions to the above include a section of the BRN Waste Emplacement where the southerly aspect may have influenced the success of the revegetation without the presence of dense overstorey species
- aspect or shallower topsoil may also be a factor in the less successful rehabilitation areas and that increasing plant density on these west facing slopes may just lead to higher plant mortality rather more successful revegetation
- woody weeds are an ongoing issue for these areas and require control works before these weeds increase their density to such an extent that they prevent development and maturation of the native flora in these areas
- pasture rehabilitation has been successful for a number of years now and with the previous on-going grazing of cattle a demonstration of its success.

***Fauna Monitoring***

Fauna usage of the native ecosystem rehabilitation areas is monitored and documented over time. Fauna monitoring is conducted every three years to assess the success of the rehabilitation and revegetation activities in providing habitat for a range of vertebrate fauna. The surveys include an assessment of habitat complexity, species richness and abundance.

Recent fauna surveys conducted over the SMC rehabilitation areas, Biodiversity Offset Areas and Biodiversity Enhancement Areas indicate that these areas provide habitat for a range of native vertebrate fauna, including birds, mammals, reptiles and frogs.

Fauna monitoring is undertaken every three years and was last undertaken in November 2022. A total of 166 species of vertebrate were recorded, comprising 15 frogs, 13 reptiles, 100 birds and 38 mammals most of which were native (Annual Biodiversity Report (**Appendix 9**).

### 8.3.1 Threats to Rehabilitation Completion

The SMC RMP Section 4 establishes the rehabilitation objectives and completion criteria for the rehabilitation of the SMC. Section 10 of the RMP includes a description of intervention and adaptive management for threats to achieving the rehabilitation completion criteria. SCPL has successfully undertaken rehabilitation activities at the SMC since 1997 with the results of rehabilitation monitoring continuing to inform the effectiveness of rehabilitation methods and requirements for contingency measures.

The 2012 ERA (SP Solutions, 2012), 2020 Rehabilitation Risk Assessment (CKC, 2020) (RMP Section 3.1) and the 2021 Closure & Rehabilitation Risk Assessment (IEMA, 2021) identified potential issues and risks associated with rehabilitation and mine closure at the SMC. These risks/threats to rehabilitation are outlined in the rehabilitation trigger, action, response plan (TARP) in the RMP Table 10 (Section 10) along with actions that will be undertaken to mitigate these risks.

## 8.4 Rehabilitation Trials and Research

SCPL has extensive experience in both native woodland/forest revegetation and agricultural pasture rehabilitation, with successful rehabilitation areas completed over the past 20 years at both the Stratford and Duralie mine sites. Learnings from the rehabilitation works undertaken onsite to date

along with industry best practice guidelines are employed in the methodology for new rehabilitation areas.

Rehabilitation trials have been also undertaken in the Duralie Coal Mine Biodiversity Offset Areas. These trials have provided learnings and methods for the rehabilitation and biodiversity offset work at SMC.

## 8.5 Rehabilitation Targets

The rehabilitation targets reported in the previous AR, have been replaced and outlined in the new RMP.

The rehabilitation targets and proposed rehabilitation schedule over the life of the SMC are described in Section 6.1 of the RMP. The rehabilitation target is a cumulative total of 525.3ha. Year 1 of the 2023 SMC Forward Program targets 0ha, year 2 targets 36.78ha and year 3 targets 94.43ha.

## 8.6 Mine Closure Planning

Condition 5, Schedule 2 of the SMC's Development Consent (SSD-4966) authorises mining operations to be carried at the SMC until 31 December 2025. Accordingly, SCPL is planning for the commencement of the mine closure phase after the cessation of mining operations. During the reporting period a new RMP was prepared consistent with the requirements of the Resources Regulator Operational Rehabilitation Reform. The new RMP incorporates a Mine Closure Plan for the SMC consistent with the Mine Closure Planning Program described in Section 8 of the MOP.

The mine closure planning program developed for the SMC includes a schedule of all technical and/or environmental assessments that are required to undertake final rehabilitation once open-cut mining at the SMC has ceased. The technical assessments identified in the Mine Closure Planning Program have been informed by the key risks and risk reduction strategies associated with rehabilitation and mine closure of the SMC.

The majority of the assessments/studies required by the Mine Closure Planning Program have been completed progressively. The remaining components of the program will continue to be developed in accordance with the RMP.

SCPL has revised relevant EMPs to reflect the current stage of operations and to describe anticipated mine closure activities and describe the change to environmental impacts, mitigation measures and monitoring programs at the SMC for the mine closure phase.

The Mine Closure Planning Program components and completion status/schedule for each component is provided in Appendix 1 of the RMP. The subsections below provide progressive updates on the key mine closure planning requirements for the SMC and the actions completed during the reporting period. Further information can be found within the Stratford RMP.

### 8.6.1 Final Landform Designs

The proposed final landforms for the SMC would include a combination of pasture and native ecosystem consistent with the surrounding environment. This would also include final voids and wildlife corridors.

The rehabilitation objectives for the final landforms requires final landform designs which sustain the intended post-mining land use. Final landforms are to be consistent with and complement the topography of the surrounding region to minimize the visual prominence of the final landforms in the

postmining landscape. Final landforms are to incorporate design relief patterns and principles consistent with natural drainage.

SCPL have continued to develop the detailed final landform designs consistent with the conceptual rehabilitation strategy in the EIS 2012 and rehabilitation objectives in the Development Consent. The RMP also includes detail regarding the rehabilitation implementation requirements and the conceptual final rehabilitated landform for the SMC.

As required by the Mine Closure Planning Program, numerous technical assessments have commenced based on the refined final landform design, including a Geotechnical Assessment of the final voids, final void water balance and final void water quality review, and a revised site water balance. A stability assessment and erosion modelling will also be required to be undertaken for the final landform design.

### 8.6.2 Final Void Management

The SMC final landform will include partially backfilled final voids located at Roseville West Pit, Avon North Open Cut, and Stratford Main Pit. SCPL is required to rehabilitate the final void to ensure the landform is safe, stable and non-polluting. The final void design aims to minimise the overall extent of the final void as much as is reasonably feasible and within the Project Approval constraints.

The refined final landform of Roseville West, Avon North and Stratford Main Pit voids is described in the SMC Mine Closure Plan and Schedule (Appendix 1 of the RMP) and depicted in Plan 1 of the RMP.

### 8.6.3 Water Management

The rehabilitation and post-mining water management strategy is described in the SEP EIS 2012.

***Site Water Balance***

A site water balance has been prepared for the SEP EIS by a suitably qualified and experienced person (Gilbert & Associates, 2012). A revised post-mining site water balance is currently being undertaken to reflect the refined final landform and final void designs, including all surface water inflows and outflows.

***Water Infrastructure***

Minor water management structures and sediment control dams will be decommissioned and rehabilitated or retained as farm water dams in consultation with relevant regulatory authorities and private landholders (if applicable).

Sediment dams downstream of the waste rock emplacements will be maintained until the revegetated surface is stable and the runoff water quality is suitable for release off-site. The stability of the landform will be determined by rehabilitation monitoring.

Decommissioning of water management infrastructure and on-site irrigation system infrastructure will commence following cessation of mining activities on 31 December 2025. Pumps and pipelines will be removed from site unless required for the final land use. A Detailed Decommissioning Strategy is detailed in the SMC Mine Closure Plan and Schedule (Appendix 1 of the RMP).

Retained water infrastructure will include Stratford East Dam, permanent up-catchment diversion structures (associated with final voids) and some irrigation structures.

Post-mining, the Stratford East Dam will be retained for future agricultural (grazing) use, use by a public authority and/or environmental benefit.

A number of up-catchment diversions associated with the catchments reporting to the final voids will be permanent structures that would remain post-mining.

Infrastructure that is retained will be determined in consultation and is further described in the SMC Mine Closure Plan and Schedule (Appendix 1 of the RMP).

### 8.6.4 Rehabilitation Resources

Topsoil resources are managed in accordance with the RMP Section 6.2.1. To ensure suitable and adequate topsoil resources are available for final rehabilitation, a site topsoil balance is undertaken annually and the volume compared to the total remaining disturbed area requiring rehabilitation. Annual reporting of the site soil balance and rehabilitation performance is provided in Section 8.2.1 of this report.

No topsoil stripping is planned during the next reporting period. The site topsoil balance will be updated if further soil stripping and placement activities are completed.

### 8.6.5 Contaminated Lands Assessment

A contaminated land assessment will be completed during the next reporting period as operations at SMC approach closure. The assessment would include, but not be limited to, decontamination of areas such as those impacted by carbonaceous material (e.g. coal spillage, coal storage), by hydrocarbon spillage (e.g. workshops, fuel storage areas) or by sedimentation (e.g. dams which have directly received pit water).

The Contaminated Lands Assessment will provide recommendations for the development of a Remediation Action Plan, that will inform future contamination clean-ups.

All contamination areas will be remediated as recommended in the Remediation Plans, which are expected to involve excavation of the contaminated materials and disposal at an off-site licensed facility or treated on-site subject to relevant approvals being obtained. The remediation of any identified contaminated land would be undertaken in conjunction with the Infrastructure Decommissioning Strategy.

### 8.6.6 EMPs, Post-Closure Monitoring and Maintenance Program

The development of the post-closure monitoring and maintenance program is described in Section 11 of the SMC Mine Closure Plan and Schedule (RMP, Appendix 1).

Over the next reporting period, SCPL will revise EMPs to reflect the current stage of operations and to describe anticipated mine closure activities and describe the change to environmental impacts, mitigation measures and monitoring programs at the SMC.

SCPL will refine its monitoring and maintenance programs in consultation with the relevant government agencies during the mine closure planning phase. Amendments to the monitoring programs during the post- closure phase will be reflected in further environmental management plan revisions. It is expected that the residual monitoring programs will be undertaken for approximately ten years following mine closure.

Post-closure maintenance activities will continue until the specific completion criteria has been met and confirmation has been received from the relevant authority.

### 8.6.7 Stakeholder Consultation, Community & Human Resources Strategies

The Mine Closure Planning Program includes requirements for the development of the following strategies:

- Stakeholder Consultation Strategy
- Human Resources Strategy

The above strategies are described conceptually in Section 4.2 of the RMP. The strategies have been further developed and incorporated into the Mine Closure Plan and Schedule. SCPL will continue to consult with relevant government agencies and the community throughout the mine life and during mine closure.

# 9.0 COMMUNITY

## 9.1 Community Engagement

During 2022, SCPL continued to foster positive relationships with the local community through engagement and ongoing support provided to a range of community groups and events. SCPL is committed to a policy of regular liaison with the local community and strives to maintain positive relationships with stakeholders. SCPL's community objectives aim to:

- ensure employees and contractors are informed about SCPL's policies and are made aware of their environmental and community responsibilities in relation to SCPL's activities;
- inform the community of SCPL's activities and consult with the community in an open and honest fashion in relation to SCPL's projects; and
- address complaints/conflicts and consult to achieve mutually acceptable outcomes.

Community/Stakeholder related activities undertaken during the reporting period include:

- Yancoal Vacation and Cadet student placements
- Community Support Program
- Education Support Fund; and
- direct engagement with nearby landholders.

SCPL continued to provide the community with information on its website (www.stratfordcoal.com.au). Information available included project approvals, CCC meeting minutes, community complaint records, environmental monitoring information, environmental audits, EMPs and Annual Reviews.

SMC maintains a 24-hour Community Information Hotline (1300 658 239). This Hotline is available in order to receive any complaints, compliments, information requests and to assist with creating a direct line to speak with a Mine Representative.

## 9.2 Community Consultive Committee

The Stratford Coal Community Consultative Committee (CCC) was established in 1995 and operates under the guidance of the NSW DPE. Meetings were held quarterly during 2022 and provide a forum for open discussion between the community, Council, the Company and other stakeholders on issues relating to the mine's operations, environmental performance and community engagement.

The Community Consultative Committee (CCC) for the SMC is currently comprised of:

- an independent Chairperson;
- five (5) local community representatives;
- two (2) local government representatives (MidCoast Council); and
- three (3) SCPL representatives.

The CCC was formed in accordance with Schedule 5, Condition 6 of SSD-4966. The CCC operates in such a manner as to satisfy the *Community Consultative Committee Guidelines - State Significant Projects* (DPE, 2019) and to the satisfaction of the Secretary of the DPE.

During the reporting period, quarterly meetings were held in February, May, August and November 2022. Items raised and/or discussed during these CCC meetings include but are not limited to:

- mine closure and rehabilitation;

- potential post mining land uses;
- local employment opportunities
- community funding; and
- progress at the mine and the Stratford Extension Project;

A site inspection was conducted prior to the November 2022 CCC meeting. Areas inspected included Stratford East Pit, Avon North Pit, Pasture Rehabilitation areas and Roseville West Pit.

An Annual Report for the Stratford Coal CCC was prepared by the Chair and submitted to DPE on 23 February 2022 (**Appendix 7**).

## 9.3 Environmental Complaints

SCPL manages complaints received at the SMC in accordance with the protocol established in the Environmental Management Strategy (EMS). SCPL aims to address all complaints/conflicts and consult to achieve mutually acceptable outcomes. In accordance with the conditions of SSD-4966, SCPL is required to establish and maintain a complaint handling and response procedure. SCPL operates a system to receive, handle, respond to and record complaints or information requests relating to operation of the SMC which is described in the EMS.

Complaints may be received in any form. SCPL operates a dedicated Community Information Hotline (1300 658 239) 24 hours per day.

Complaints (by category) received by SMC over the last 5 reporting years are shown in **Table 30**:

**Table 30 Community Complaints Summary**

| Complaint Category | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|
| Noise | 4 | 1 | 28 | 12 | 2 |
| Blasting | 0 | 4 | 6 | 4 | 1 |
| Air Quality | 0 | 0 | 2 | 1 | 1 |
| Water | 0 | 0 | 0 | 0 | 0 |
| Lighting | 0 | 0 | 6 | 4 | 2 |
| Visual | 0 | 0 | 0 | 0 | 0 |
| Train | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 1 | 0 | 0 |
| **Total Complaints** | **4** | **5** | **43** | **19*** | **3*** |

*Note some complaints included multiple categories

A summary of complaints received during 2022 is below:

- the total number of complaints received during the reporting period was three (3) with the total number of complainants being two (2)
- complaints were related to noise, blasting, lighting and air quality
- the total number of complaints decreased during the reporting period.

During the 2022 reporting period the SMC continued full scale operations. Operations at SCPL includes mining operations 7 days per week and typically between the hours of 6:30am am 1:00am, albeit there is no evening/night shift on weekends. The total number of complaints received during 2022 decreased from the previous reporting period and was similar to the years prior to resuming full scale operations.

SCPL continues to implement mitigation measures described in the EMPs and identify improvements to reduce the overall level of offsite emissions/impacts. SCPL continues to engage with complainants to achieve mutually acceptable outcomes.

A full complaints listing is provided in **Appendix 7** and includes details of SCPL's responses to complaints. A summary of complaints by category is provided in the relevant sections of the report.

# 10.0 INDEPENDENT ENVIRONMENTAL AUDIT

An Independent Environmental Audit (IEA) was not required during the reporting period. The previous IEA of the SMC was conducted in December 2020 by Ken Holmes of Barnett & May, in accordance with SSD-4966 Schedule 5, Conditions 9 and 10. The purpose of the audit was to review compliance over the audit period 2018-2020 with the conditions and obligations of the SMC environmental licences, approvals and management plans. This was the first IEA undertaken in accordance with SSD-4966.

The SMC 2020 IEA (Barnett & May, 2020) was submitted to DPE on 2 March 2021 and is available on the Stratford Coal website.

The next Independent Audit is scheduled to be completed by December 2023.

# 11.0 INCIDENTS & NON-COMPLIANCES

Activities at the SMC continue to be carried out in accordance with Development Consent SSD-4966 for the SEP. Additionally, activities at the SMC are undertaken in accordance with EPL 5161 and the SMC Mining Leases.

A protocol for managing incidents and non-compliances is included in the SMC EMS.

A statement of compliance is included in **Section 1** of this report. During the reporting period there was a total of two (2) incident/non-compliances in accordance with SSD-4966 at the SMC. There was also one (1) incident/non-compliance in accordance with EPL 5161. A summary of the non-compliances with Development Consent SSD-4966 and EPL 5161 during the reporting period are included in **Table 3**.

All incidents/non-compliances at the SMC are reported and recorded in Yancoal's compliance management system. The severity of the incident will determine the level of investigation required. The reporting of incidents to regulators is conducted in accordance with the EMS, Condition 7, Schedule 5 of SSD-4966 and the POEO Act and PIRMP where applicable.

All incidents recorded in **Table 3** were ranked as low risk. One of the incidents was determined to have triggered the POEO Act and the PIRMP.

- 8/03/2022 – Spill of mine related water from SMC sediment SD16 following receipt of rainfall exceeding dam design capacity.

The above incident was notified to the relevant authorities immediately and written incident reports were submitted within 7 days in accordance with SSD-4966 and the PIRMP.

# 12.0 ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

SCPL will continue mining operations in accordance with Development Consent SSD-4966 for the Stratford Extension Project during 2023.

The following environmental targets have been set for the next 12 months:

- mining and progressive rehabilitation activities will be implemented in accordance with the timing in stage plans in the SMC RMP and Forward Program;
- review and, if necessary, update the EMPs to the satisfaction of the Secretary of DPE to ensure suitable management plans are in place for the SEP;
- continue developing the detailed Mine Closure Plans in accordance with the mine closure planning schedule in the RMP for the SMC;
- progress biodiversity offset works in accordance with the BMP including full implementation of the revegetation works;
- continue to meet the environmental management, monitoring and reporting requirements in accordance with the Development Consents conditions; and
- maintain low level of complaints and non-compliances.

# 13.0 REFERENCES


- Barnett & May (2020). *SMC 2020 Independent Environmental Audit*
- CK Consultants Pty Ltd (CKC) (2020). *Stratford Mining Complex Rehabilitation & Mine Closure Risk Assessment*
- Department of Planning, Industry and Environment (2015). *Annual Review Guidelines*
- Department of Planning and Environment (2019). *Community Consultative Committee Guidelines – State Significant Projects*
- Environmental Geochemistry International Pty Ltd (EGi) (2012). *Geochemical Assessment of the Stratford Assessment Project*
- EPA (2014). *Waste Classification Guidelines Part 1: Classifying Waste*
- Gilbert and Associates (2012). *Stratford Extension Project Surface Water Assessment for Stratford Coal Pty Ltd, Gloucester*
- Integrated Environmental Management Australia (IEMA) (2021). *Stratford Mining Complex: Closure & Rehabilitation Risk Assessment: Summary of Key Risks and Controls*
- Invertebrate Identification Australasia (2022). *Biological Monitoring of the Stratford Mining Complex for Stratford Coal Pty Ltd, Gloucester*
- NSW Minerals Council (2000). *Technical Paper – Particulate Matter and Mining: Interim Report*
- Safe Production Solutions Pty Ltd (SP Solutions) (2012). *Stratford Extension Project Environmental Risk Assessment*
- Stratford Coal Pty Ltd (2023). *Stratford Mining Complex (Stratford Extension Project) Biodiversity Management Plan*
- Stratford Coal Pty Ltd (2018). *Stratford Mining Complex (Stratford Extension Project) Life of Mine Rejects Disposal Plan*
- Stratford Coal Pty Ltd (2018a). *Stratford Mining Complex (Stratford Extension Project) Squirrel Glider Management Plan*
- Stratford Coal Pty Ltd (2021). *Stratford Mining Complex (Stratford Extension Project) Air Quality Management Plan*
- Stratford Coal Pty Ltd (2021a). *Stratford Mining Complex (Stratford Extension Project) Water Management Plan*
- Stratford Coal Pty Ltd (2021b). *Stratford Mining Complex (Stratford Extension Project) Blast* Management Plan
- Stratford Coal Pty Ltd (2021c). *Stratford Mining Complex Mining Operations Plan and Rehabilitation Management Plan*
- Stratford Coal Pty Ltd (2022). *Stratford Mining Complex (Stratford Extension Project) Noise Management Plan*

- Stratford Coal Pty Ltd (2022a). *Stratford Mining Complex Rehabilitation Management Plan*
- Stratford Coal Pty Ltd (2022b) *Stratford Coal Mine Pollution Incident Response Management Plan*
- Stratford Coal Pty Ltd (2022c). *Stratford Mining Complex (Stratford Extension Project) Heritage Management Plan*
- Stratford Coal Pty Ltd (2022d). *Stratford Mining Complex Annual Biodiversity Report 2022*
- Stratford Coal Pty Ltd (2012) *Stratford Extension Project Environmental Impact Statement* (EIS)