INTEGRA UNDERGROUND

GLENCORE

Air Quality and Greenhouse Gas Management

Plan

Number: INTUG-793190785-48 **Status:** Submitted for Approval **Effective:** TBA
Owner: Environment and Community Manager **Version:** 4.0 **Review:** TBA

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1. Introduction

1.1 Background

This Air Quality and Greenhouse Gas Management Plan (AQGHGMP) is one of a series of Environmental Management Plans that together form the Environmental Management System for the Glencore Integra Underground Mine, herein referred to as Integra Underground.

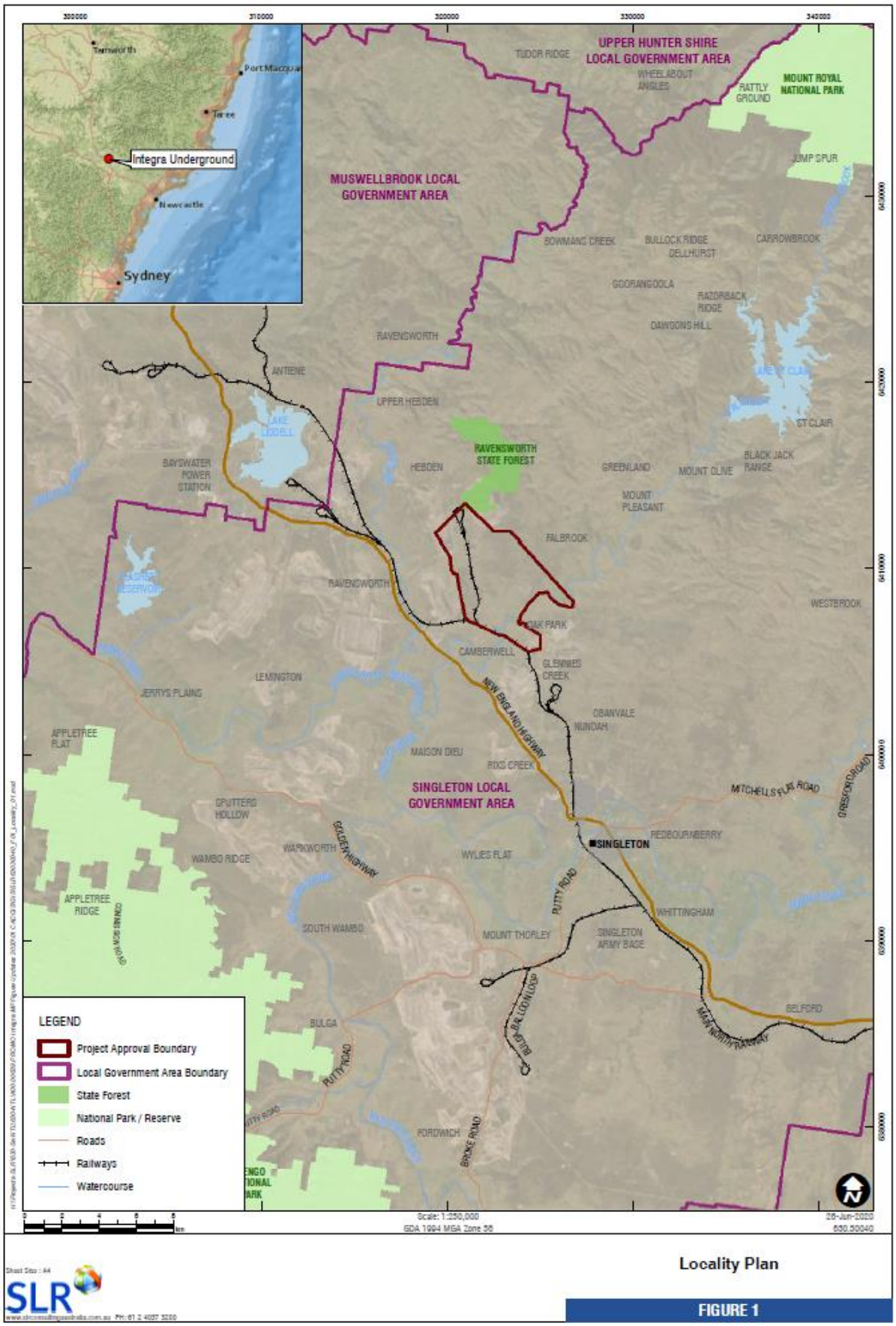
The Integra Underground is approximately 12 km north-west of Singleton, in the Singleton Local Government Area (see **Figure 1**). Underground mining operations are approved at a maximum extraction rate of 4.5 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal until 31 December 2035 under Project Approval PA 08_0101 (as modified). This approval allows longwall mining of the Hebden, Barrett and Middle Liddell seams to produce high quality, semi-hard coking coal for export.

The Integra Underground was formerly a part of the larger Integra Mine Complex. This complex comprised both underground and open cut operations and operated under a single project approval instrument which combined the project approvals for the Integra Underground (PA 08_0101) and Integra Open Cut (PA 08_0102). In late 2015, HV Coking Coal Pty Ltd (HVCC) (a 100% Glencore-owned company) acquired all assets associated with the Integra Underground, which had been placed in care and maintenance in May 2014. Bloomfield Collieries Pty Limited (Bloomfield) purchased the open cut and surface facilities (subsequently re-named the Rix's Creek North Mine).

Following the separate sale of the underground and open cut, the combined project approval was modified to separate the approvals. Following the separation of the approvals Integra Underground operated under PA 08_0101 as modified.

HVCC recommenced underground operations in 2017, with development resuming in February 2017 and longwall extraction resuming in May 2017 in accordance with the Extraction Plan as required under Condition 20 of Schedule 3 of PA 08_0101. An application for a further modification to PA 08-0101 (MOD 7) and accompanying Environmental Assessment (EA) was lodged with the Department of Planning and Environment (now Department of Planning, Industry and Environment, DPIE) in June 2017. Subsequently, approval was granted by DPIE on 15 September 2017. The modification application was made to facilitate the construction of a water pipeline from Integra Underground to the adjacent Mt Owen Glendell Operations and the subsequent use of the pipeline to transfer mine water. The modification enables surplus mine water collected at Integra Underground to be managed at the Mt Owen Glendell Operations and within Glencore's Greater Ravensworth Area Water Sharing Scheme (GRAWSS).

An application for Modification 8 (MOD 8) to PA 08_0101 and accompanying EA was lodged with the DPIE in November 2017. Approval was granted by DPIE on 16 April 2018. MOD 8 allows continuation of longwall mining of the Middle Liddell Seam further to the north of the currently approved longwall panels, along with the construction and operation of ancillary surface infrastructure required to support the mining activities.



Locality Plan

FIGURE 1

1.2 Objectives

This management plan satisfies Schedule 3 Condition 15 of PA 08_0101, which requires the preparation of an AQGHGMP.

- The objectives of this management plan are to:
- describe the air quality management system in place to achieve compliance with the applicable air quality criteria;
- describe the practical mitigation and control measures implemented to minimise the generation of particulate matter emissions (colloquially referred to as dust) arising from the activities on site;
- consider the potential for cumulative issues caused by dust emissions from nearby mining operations;
- identify personnel responsible for the effective implementation of these controls; and
- identify a process of review and improvement.

1.3 Statutory requirements

1.3.1 Project Approval

PA 08_0101 stipulates requirements related to this AQGHGMP. These are summarised in **Table 1–1** below.

Table 1–1 – Relevant Project Approval Conditions

<table>
<tr><th>PA 08_0101 Condition</th><th>Project Approval Condition Description</th><th>Relevant Section of Plan</th></tr>
<tr><td>Schedule 3, Condition 10</td><td>The Proponent must ensure that no offensive odours are emitted from the site, as defined under the NSW Protection of Environment Operations Act 1997.</td><td>Table 3-1</td></tr>
<tr><td>Schedule 3, Condition 11</td><td>The Proponent must implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site to the satisfaction of the Secretary.</td><td>Section 3.2</td></tr>
<tr><td>Schedule 3, Condition 12</td><td>The Proponent must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the project does not exceed or contribute to an exceedance of the criteria listed in Table 9 at any residence on privately-owned land or on more than 25 percent of any privately-owned land.
Table 9 – Air quality criteria
<table>
<tr><th>Pollutant</th><th>Averaging period</th><th colspan="2">Criterion [d]</th></tr>
<tr><td>Particulate matter < 10µm (PM_{10})</td><td>Annual</td><td colspan="2">30µg/m^3 [a]</td></tr>
<tr><td>Particulate matter < 10µm (PM_{10})</td><td>24 hour</td><td colspan="2">50µg/m^3 [b]</td></tr>
<tr><td>Total suspended particulates (TSP)</td><td>Annual</td><td colspan="2">90µg/m^3 [a]</td></tr>
<tr><td>Deposited dust [c]</td><td>Annual</td><td>2g/m^2/month [b]</td><td>4g/m^2/month [a]</td></tr>
</table>
Notes to Table 9:</td><td>Section 3.1</td></tr>
</table>

PA 08_0101 Condition	Project Approval Condition Description	Relevant Section of Plan
	[a] Cumulative impact (i.e. increase in concentrations due to the project plus background concentrations due to all other sources); [b] Incremental impact (i.e. incremental increase in concentrations due to the project on its own) [c] Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1.2003: Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method; and [d] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity which has been endorsed by the EPA and then agreed to by the Secretary. For the purposes of this condition, 'reasonable and feasible avoidance and mitigation measures' includes, but is not limited to, the requirements in conditions 14 and 15 to develop and implement a real-time air quality management system that ensures effective operational response to the risk of exceedance of the criteria.	
Schedule 3, Condition 13	The Proponent must ensure that particulate matter emissions generated by the project do not exceed the criteria in Table 9 at any occupied residence on any mine-owned land (including land owned by adjacent mines), unless: a) the tenant and/or landowner has been notified of any health risks in accordance with the notification under Schedule 4 of this approval; b) the tenant on land owned by the proponent can terminate the tenancy agreement without penalty, subject to giving reasonable notice, and the proponent uses its best endeavours to provide assistance with relocation and sourcing of alternative accommodation; c) air mitigation measures (such as air filters, a first flush roof water drainage system and/or air conditioning) are installed at the residence, if requested by the tenant and landowner (where owned by another mine other than the proponent); d) particulate matter air quality monitoring is undertaken to inform the tenant and landowner (where owned by a mine other than the proponent) of potential health risks; and e) monitoring data is presented to the tenant in an appropriate format, for a medical practitioner to assist the tenant in making an informed decision on the health risks associated with occupying the property, to the satisfaction of the Secretary.	The air quality management measures described in Section 3.1 will be implemented to ensure that this condition is satisfied.
Schedule 3, Condition 14	The Proponent must: a) implement best practice air quality management on site, including all reasonable and feasible measures to minimise the off-site odour, fume and dust emissions generated by the project, including those generated by spontaneous combustion; b) minimise any visible air pollution generated by the project; c) operate an air quality management system on site to ensure compliance with the relevant conditions of this approval; d) minimise the air quality impacts of the project during adverse meteorological conditions and extraordinary events (see note d in condition 12); e) minimise surface disturbance of the site; and f) co-ordinate the air quality management on site with the air quality management of nearby mines (including Ashton, Rix's Creek North, Rix's Creek and the Mount Owen Complex) to minimise cumulative air quality impacts to the satisfaction of the Secretary.	Section 3.1 Section 3.1 This plan This plan Section 3.1 Section 3.1.1
Schedule 3, Condition 15	The proponent must prepare an Air Quality and Greenhouse Gas Management Plan for the project to the satisfaction of the Secretary. This plan must:	This plan

PA 08_0101 Condition	Project Approval Condition Description	Relevant Section of Plan
	a) be prepared in consultation with EPA, and then submitted to the Secretary for Approval;	Consultation with EPA is described in Section 1.4. This AQGHGMP was submitted to the Secretary for Approval on 10 February 2017 (refer to Appendix B). Consultation with government agencies completed for MOD 8.
	b) describe the measures that would be implemented to ensure: • compliance with the air quality criteria and operating conditions of this approval; and • best practice air quality management is being employed;	Section 3.1
	c) describe the air quality management system in detail;	Section 3.1
	d) include an air quality monitoring program that: • uses a combination of real-time monitors and supplementary monitors to evaluate the performance of the project; • includes a protocol for determining any exceedances of the relevant conditions of this approval; • adequately supports the proactive and reactive air quality management system; • includes $PM_{2.5}$ monitoring (although this obligation could be satisfied by the regional air quality monitoring network if sufficient justification is provided); • evaluates and reports on the effectiveness of the air quality management system and the best practice air quality management measures; and	Section 4
	e) include a protocol that has been prepared in consultation with the owners of nearby mines (including Ashton, Rix's Creek North, Rix's Creek and the Mount Owen Complex) to minimise the cumulative air quality impacts of the mines.	Consultation with the owners of nearby mines is discussed in Section 1.4.
	The proponent must implement the approved management plan as approved from time to time by the Secretary.	Noted
Schedule 3, Condition 16	For the life of the project, the proponent must ensure that there is a meteorological station in the vicinity of the site that: a) complies with the requirements in the Approved Methods for Sampling of Air Pollutants in New South Wales guideline; and	Section 4.

PA 08_0101 Condition	Project Approval Condition Description	Relevant Section of Plan
	b) is capable of continuous real-time measurement of temperature lapse rate in accordance with the NSW Industrial Noise Policy or as otherwise approved by the EPA.	
Schedule 5, Condition 2	The Proponent must ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:	This plan
	a) detailed baseline data;	Section 2.1
	b) a description of: the relevant statutory requirements (including any relevant approval, licence or lease conditions); any relevant limits or performance measures/criteria; and the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;	Section 1.3 Section 2.3
	c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	Section 3.1
	d) a program to monitor and report on the: impacts and environmental performance of the project; and effectiveness of any management measures;	Section 4 Section 5
	e) a contingency plan to manage any unpredicted impacts and their consequences;	Section 5.1.2
	f) a program to investigate and implement ways to improve the environmental performance of the project over time;	Section 5.2
	g) a program to regularly review management practices to align with contemporary best practice industry standards;	Section 5.2
	h) a protocol for managing and reporting any: incidents; complaints; non-compliances with the conditions of this approval and statutory requirements; and exceedances of the impact assessment criteria and/or performance criteria; and	Section 4.3 Section 5.1.1
	i) a protocol for periodic review of the plan.	Section 5.2

Table 1-2 includes all obligations that are identified in the Statement of Commitments appended to PA 08_0101.

Table 1–2 – Relevant Statement of Commitments

Desired Outcome	Existing or Proposed Actions	Timing	Relevant Section of Plan
Operations are managed to minimise potential adverse impacts to the environment, residences and the community.	Implement the following air quality control procedures: • Coal handling areas, stockpiles, roads and trafficked area will be maintained in a moist condition using water carts and/or water sprays to minimise wind-blown and traffic-generated dust; • Water sprays will be used at the longwall and development face to control particulates; • All haul roads will have edges clearly defined with marker posts or equivalent to control their locations, especially when crossing large overburden emplacement areas; • Obsolete roads will be ripped and re-vegetated; • Development of minor roads will be limited and the locations of these will be clearly defined; • Minor roads used regularly for access etc will be watered/treated to control dust; • Due to OHS regulations regarding underground air quality, dust generated underground will be minimised. Currently this includes the application of water and/or use of dust suppressants.	Continuous, as required	Air quality control procedures are described in Section 3.1
	HV Coking Coal will continue air monitoring in accordance with the Integra Underground EMS Procedure 002-2, Air Quality Monitoring Program, including monitoring weather conditions, TSP, PM_{10} (using HVAS), real time PM_{10} (using TEOM) and dust fallout.	Continuous	Section 4.1
	The results of the ongoing air quality monitoring program will be communicated to residents in the local community.	Continuous, as required	Section 5.1.1
Manage operations such that greenhouse gas emissions on the environment are minimised and	Fugitive methane emissions will be captured for energy generation where possible. If not feasible, flaring will be adopted, where practicable.	Continuous	Section 3.2
	Greenhouse gas emissions will be estimated and reported annually.	Annual via the NGERs report	Section 5.1.3

Desired Outcome	Existing or Proposed Actions	Timing	Relevant Section of Plan
beneficial use of methane is maximised	Energy and greenhouse gas emission reduction initiatives will be implemented throughout the life of the development, including the following: • The efficiency of all new and upgraded mobile and fixed equipment will be considered during procurement for fuel powered equipment; • Ensuring equipment will be maintained to retain high levels of energy efficiency; • The inventory of emissions developed for this environmental assessment will be maintained; and • Emissions and abatement strategies will be reported annually as part of the internal environmental reporting and National Greenhouse and Energy Reporting obligations and in the AEMR.	Continuous, as required	Section 3.2 of this plan describes the energy and greenhouse gas emission reduction initiatives implemented at Integra Underground.

Table 1–3 includes all obligations that are identified within the Environmental Assessments for MOD 7 and MOD 8 to PA 08_0101.

Table 1–3 – Relevant Commitments from MOD 7 and MOD 8 Environmental Assessments

EA Commitment	Timing	Relevant Section of Plan
MOD 7 - *Integra to Mount Owen Complex Water Pipeline Modification Environmental Assessment* (Hansen Bailey 2017a)		
2. Integra Underground's current dust and noise control practices will be adopted for the Modification.	During pipeline construction and implementation	This plan
MOD 8 – *Longwall Extension Modification Environmental Assessment* (Hansen Bailey 2017b)		
14. The Air Quality and Greenhouse Gas Management Plan will be updated to include mitigation measures relevant to the Modification. The management plan will be updated in consultation with the relevant regulatory authorities.	Following approval of MOD 8	Section 3 Section 1.4

1.3.2 Environment Protection Licence

The Integra Underground operates under Environment Protection Licence (EPL) 3390 for the scheduled activities of Coal Works and Mining for Coal. EPL 3390 does not specify ambient air quality limits; however under Section 4 (Operating Conditions), general conditions are provided, which are listed in **Table 1–4**. Conditions O3.2 and O3.3 were added to EPL 3390 as part of Variation Notice 1588229 dated 26 May 2020, which involved adding contemporary conditions consistent with mining sector EPLs in the Hunter Region of NSW.

Table 1–4 – Environment Protection Licence Condition related to Air Quality

EPL Condition Number	EPL Condition Description	Relevant Section of Plan
O3.1	The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.	Section 3.1 describes the relevant air quality management measures that will be implemented to minimise or prevent the emission of dust from the Integra Underground project area
O3.2	All operations and activities occurring at the premises must be carried out in a manner that will minimise the emission of dust from the premises.	
O3.3	All trafficable areas, coal storage areas and vehicle manoeuvring areas in or on the premises must be maintained, at all times, in a condition that will minimise the generation, or emission from the premises, of wind-blown or traffic generated dust.	

1.4 Consultation regarding this document

As per condition 15 (a) of Schedule 3 of PA 08_0101, the AQGHGMP has been prepared in consultation with the NSW Environment Protection Authority (EPA). This included discussions at the EPA offices in Newcastle on 5 October 2016, regarding a variation to the EPL following the sale of the underground and open cut operations and the subsequent split of the project approvals. It was agreed that air quality monitoring requirements for the underground operation would be removed from the EPL. A copy of the correspondence with the EPA is provided in **Appendix A.**

In addition, this AQGHGMP has also been prepared in consultation with the owners of nearby mines (including Ashton, Rix's Creek North, Rix's Creek and the Mt Owen Glendell Operations (also a Glencore owned operation, referred to in PA 08_0101 as Mt Owen Complex)) so that cumulative air quality impacts of the mines were adequately considered.

This AQGHGMP was reviewed and updated following approval of MOD 8 (see **Section 1**). The *Longwall Extension Modification Environmental Assessment* (Hanson Bailey 2017b) contains details of the consultation undertaken in relation to MOD 8.

A copy of the DPIE approval of the AQGHGMP is in **Appendix B**.

2. Planning

2.1 Baseline data to support PA 08_0101

Integra Underground operates in close proximity to a number of mining operations, including Ashton, Rix's Creek North, Rix's Creek and Mt Owen Glendell Operations. These operations are potential sources of atmospheric emissions. Other potential sources of emissions in the locality include vehicle movements on sealed and unsealed roads, vehicle exhaust and rail emissions, windblown dust from open areas, bushfires and agricultural activities.

In order to provide an understanding of the existing air quality environment, during the completion of the Environmental Assessment for the Integra Underground, air quality monitoring data was sourced by PAE Holmes (2012) from relevant monitoring locations within Integra Underground's monitoring network. The baseline air quality monitoring network is illustrated on **Figure 2**.

Dust deposition was monitored by Integra Underground using deposition gauges at ten locations in the vicinity of the project area. Data collected from the ten gauges over a ten year period between July 1999 and April 2009 is summarised below in **Table 2–1**.

Table 2–1 – Annual Average Dust Deposition Data – 1999 to 2008 (g/m^2/month)

Monitoring period	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11
July 1999 to June 2000	2.2	1.3	2.2	1.2	1.9	**4.7**	1.6	1.6	2.0	3.3
July 2000 to June 2001	2.6	1.9	2.8	1.8	1.7	**4.7**	1.7	1.8	2.1	2.7
July 2001 to June 2002	2.2	2.8	2.2	1.9	1.8	**4.3**	2.2	2.4	2.2	3.0
July 2002 to June 2003	1.9	1.9	2.5	1.5	1.6	**4.1**	2.3	2.3	2.6	2.8
July 2003 to June 2004	1.7	3.8	2.4	1.7	1.6	3.6	2.1	2.1	2.6	3.1
July 2004 to June 2005	1.9	1.6	1.9	1.2	1.4	2.7	2.3	1.9	2.0	2.6
July 2005 to June 2006	2.3	1.4	1.9	1.9	1.7	2.8	2.5	2.1	1.8	2.8
July 2006 to June 2007	3.0	1.9	1.3	1.6	1.8	3.4	2.7	2.8	2.1	3.0
July 2007 to June 2008	2.3	3.2	1.5	1.1	2.1	3.8	1.9	2.4	2.0	3.8
July 2008 to June 2009	1.9	2.2	1.6	1.8	1.4	**5.6**	2.4	3.0	2.5	3.9
Average over all data	2.2	2.2	2.0	1.6	1.7	4.0	2.2	2.2	2.2	3.1

Source: Holmes Air Sciences (2009)

Notes: Figures in bold indicate an exceedance of the NSW DECC criterion (4 g/m^2/month)

The data in **Table 2–1** shows that the annual average dust deposition level was above the EPA 4 g/m^2/month dust deposition criteria at one monitoring site (D7) in five of the historical reporting periods. No other monitoring sites reported annual average dust deposition levels greater than the aforementioned criteria.

Total suspended particulates (TSP) and particulate matter less than 10 micrometres in diameter (PM_{10}) concentrations were measured at three locations in the vicinity of the project area. Data collected from the three locations over an eight year period from 2001 to 2008 is summarised below in **Table 2–2**.

Table 2–2 – PM_{10} and TSP Annual Average Concentration Data (µg/m^3)

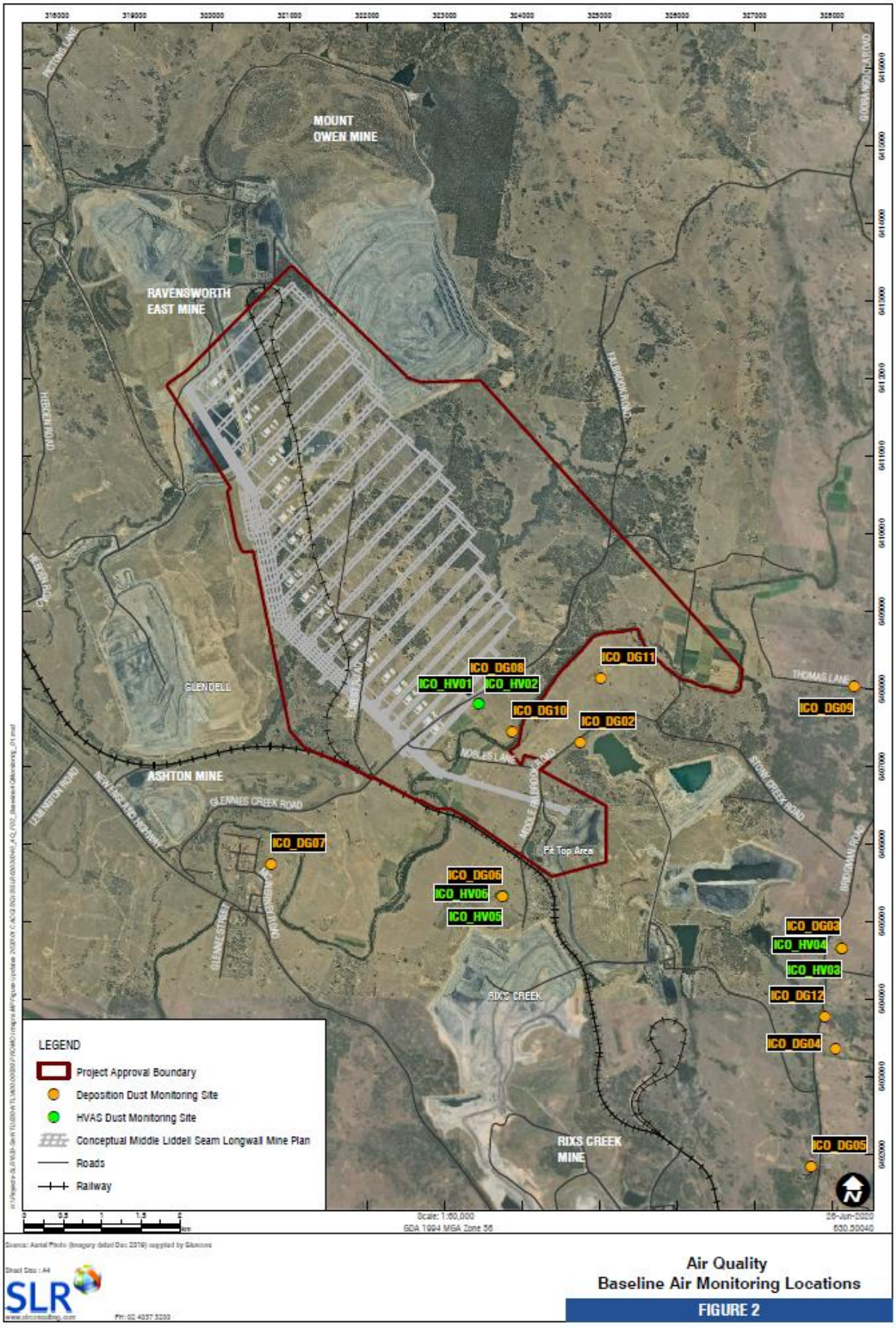
Year	HV1 - Lamkin		HV2 - Dulwich		HV 3 - Hardy	
	PM10	TSP	PM10	TSP	PM10	TSP
2001	No data	35	No data	88	No data	56
2002	No data	49	No data	96	No data	74
2003	No data	45	No data	88	No data	56
2004	No data	44	No data	88	No data	52
2005	23	48	No data	89	23	47
2006	17	37	No data	88	20	56
2007	20	46	No data	112	24	64
2008	21	48	No data	127	22	63
Source: Holmes Air Sciences (2009)						

The data in **Table 2–2** shows that the TSP concentrations measured at HV2 between 2001 and 2008 were higher than those measured at HV1 and HV3. The TSP concentrations measured during this period were generally lowest at HV1.

PM_{10} concentrations for 2007 and 2008 were also measured at six locations in vicinity of the Ashton Mine, which is located south-west of Integra Underground. Data collected from these locations is summarised below in **Table 2–3**. The data in **Table 2–3** shows that the annual average PM_{10} concentrations were below the relevant criteria (30µg/m^3).

Table 2–3 – PM_{10} Annual Average Concentration Data (µg/m^3)

Site number	2007	2008
1	28.1	25.8
2	23.7	18.2
3	25.6	21.1
4	23.2	21.7
7	24.5	21.4
8	21.8	25.0
Source: Holmes Air Sciences (2009) **Notes:** NSW DECC criterion = 30 µg/m^3		


MOUNT
OWEN MINE
RAVENSWORTH
EAST MINE
GLENDELL
ASHTON MINE
RIXS CREEK
RIXS CREEK
MINE
Pit Top Area
ICO_DG01
ICO_DG02
ICO_DG03
ICO_DG04
ICO_DG05
ICO_DG06
ICO_DG07
ICO_DG08
ICO_DG09
ICO_DG10
ICO_DG11
ICO_DG12
ICO_HV01
ICO_HV02
ICO_HV03
ICO_HV04
ICO_HV05
ICO_HV06
LEGEND
Project Approval Boundary
Deposition Dust Monitoring Site
HVAS Dust Monitoring Site
Conceptual Middle Liddell Seam Longwall Mine Plan
Roads
Railway
Scale: 1:60,000
GDA 1994 MGA Zone 56
Air Quality
Baseline Air Monitoring Locations
FIGURE 2

2.2 Operational monitoring 2008 to 2019

A summary of the air quality monitoring undertaken between 2008 and 2019 is provided in **Sections 2.2.2** and **2.2.3** below. This includes the period from initial project commencement, during the care and maintenance phase and re-commencement of operations.

2.2.1 Dust deposition

Average annual dust deposition levels recorded by Integra Underground from 2008 to 2018 were below the EPA 4 g/m^2/month dust deposition criteria.

During 2019, the annual average depositional dust results were above the 4 g/m^2/month criteria at monitoring location IDG 1 and IDG7. Further investigation of this result was carried out. Integra Underground was estimated to have contributed up to 0.7 g/m2/month to the measured 5.6 g/m2/month at IDG1, and up to 0.1g/m^2/month to the measured 4.7 g/m^2/month at IDG7. This result demonstrates compliance with the "incremental impact" criteria from the Project Approval of 2 g/m^2/month. In addition, the data did not indicate that Integra Underground was the cause of exceedances of the "total impact" criteria (4 g/m^2/month) in the absence of the calculated contributions from Integra Underground.

No other monitoring sites reported annual average dust deposition levels greater than the aforementioned criteria.

2.2.2 TSP and PM10

Average annual TSP and PM_{10} concentrations recorded by Integra Underground since 2008 have been below the EPA TSP (90µg/m^3) and PM_{10} (30µg/m^3) annual criteria, respectively. One exception was the 2018 TSP annual average result at monitoring point TSP 1, which was above the criterion. It was determined that Integra Underground operations did not contribute to these high levels. Daily exceedances that may have contributed to this high annual average have been considered.

2.3 Performance measures and criteria

Under Schedule 3, Condition 12 of PA 08_0101, Integra Underground must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the mine does not or contribute to exceedance of the criteria listed in PA 08_0101 at any residence on privately-owned land or on more than 25% of any privately-owned land.

For the purposes of this condition, 'reasonable and feasible avoidance and mitigation measures' includes, but is not limited to, the requirements in Schedule 3, Conditions 14 and 15 of PA 08_0101, to develop and implement a real-time air quality management system that ensures effective operational response to the risk of exceedance of the criteria. Detailed information on the air quality management system at Integra Underground is provided in Section 3 and Section 4 of this AQGHGMP.

The primary objectives of this AQGHGMP were developed based on the conditions listed within PA 08_0101 and the specific air quality criteria that these conditions define. **Table 2-4** lists these primary objectives and their associated performance indicators.

Table 2–4 AQGHGMP Objectives and Performance Indicators

Objectives	Requirement	Performance Indicator	Target
Compliance with legislative requirements.	No offensive odours emitted from the site.	Number of odour complaints regarding Integra Underground activities received.	Zero
	Particulate matter emissions generated by Integra Underground do not cause an exceedance of the air quality impact assessment criteria listed in PA 08_0101 at any residence on privately-owned land or on more than 25% of any privately owned land.	Air quality monitoring data does not exceed impact assessment criteria.	**24-hour average** PM_{10}≤ 50 mg/m^3(incremental) **Annual average** TSP ≤ 90 mg/m^3(cumulative) PM_{10}≤ 30 mg/m^3(cumulative) Dust deposition: ≤ 4 g/m^2/month (cumulative) ≤ 2 g/m^2/month (incremental)
Mitigate air quality impacts on neighbouring residents, sensitive receptors and public roads.	Minimise air quality complaints from the community.	Number of air quality complaints from the community.	Zero
Air quality impacts not to exceed EA predictions.	Comparison of measured air quality with EA.	Long term trend in measured data, considering seasonal trends and new developments and excluding extraordinary events.	No measured air quality concentrations greater than EA predictions.
Ensure all current best practice measures, where practical and feasible, are considered and adopted to minimise dust.	Strategies within the AQGHGMP are comparable to established best practice.	Dust management measures in place.	Dust management measures meet or exceed best practice.
Implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions.	Minimise release of greenhouse gas emissions.	New/improved measures adopted.	Annual diesel and electricity consumption targets.

2.4 Potential Impacts

Key operational activities at Integra Underground include:

- longwall development within the Middle Liddell seam using continuous miners;
- longwall mining within the Middle Liddell seam. The approval for MOD 8 allows mining within LW15 to 20;
- extraction of coal to a maximum of 4.5 Mtpa of ROM coal;
- subsidence monitoring and remediation as per the approved Integra Underground Extraction Plan;
- storage of ROM coal at the pit top and haulage of ROM coal to the Rix's Creek North Coal Handling and Preparation Plant (CHPP);
- operation of workshop and administration areas;
- ventilation and gas management; and
- on site water management.

Due to the underground nature of the mine, generation of dust emissions as a result of Integra Underground's operations will generally be limited to the following key dust generating sources (refer to **Figure 3**):

- the haulage of coal from the ROM coal stockpile to the project boundary. Bloomfield operations (i.e. Rix's Creek North) manage the ROM coal stockpile and the haulage of coal to the Rix's Creek North CHPP via internal haul roads and haul trucks; and
- windblown dust from pit top areas and the ventilation infrastructure area.

Minor dust sources will include the following activities:

- exploration activities;
- gas drainage works;
- ventilation works;
- subsidence remediation works; and
- construction activities.

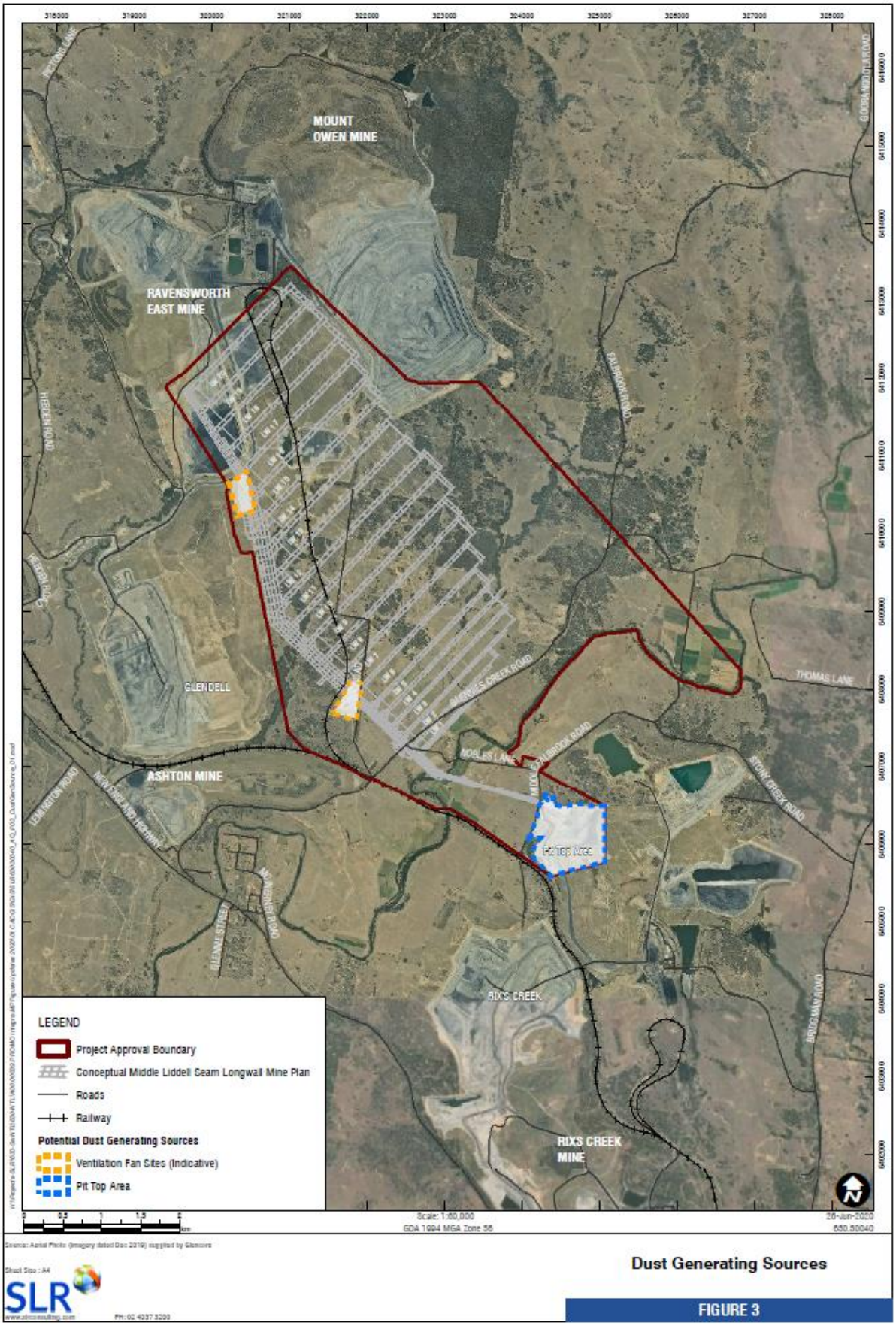
Integra Underground operates in close proximity to a number of mining operations, including Ashton, Rix's Creek North, Rix's Creek and Mt Owen Glendell Operations which are potential sources of atmospheric emissions. Other potential sources of emissions in the locality include vehicle movements on sealed and unsealed roads, vehicle exhaust and rail emissions, windblown dust from open areas, bushfires and agricultural activities.

Prior to any surface disturbance works at Integra Underground, the potential for dust generation is considered and appropriate mitigation measures are implemented.

The *Longwall Extension Modification Environmental Assessment* (Hansen Bailey 2017b) predicted that both the construction and operational dust associated within MOD 8 would be low, and is expected to result in similar dust levels generated by existing operations at Integra Underground. All minor surface disturbances will be managed in accordance with Integra Underground's *Exploration Activities and Minor Surface Infrastructure Management Plan*.

Hansen Bailey (2017b) estimated the annual average greenhouse gas emission for Integra Underground operations to be 667,495 tCO_2e, 86% of which is attributed to fugitive emissions from the extraction of coal. This annual average represents 0.5% of total NSW emissions for financial year 2016/17 (the most recent year that data is available).

In relation to spontaneous combustion, which is another potential source of air emissions, the underground operation has no history of spontaneous combustion underground or within the surface facilities. Notwithstanding, Integra Underground have developed a Spontaneous Combustion Management Procedure to manage this issue as required.



3. Implementation

3.1 Air Quality Management Measures

As discussed is **Section 4**, air quality in the vicinity of Integra Underground's operations is managed via a combination of:

- ambient air quality monitoring;
- meteorological monitoring; and
- site management measures.

To satisfy the relevant commitments made in previous Environmental Assessments for the Integra Underground (refer to **Table 1-3**), the following proactive and reactive air quality management measures will continue to be implemented as part of Integra Underground's ongoing operations:

- coal handling areas, roads and trafficked area will be maintained in a moist condition using a water carts, water sprays and/or chemical stabilisers to minimise wind-blown and traffic-generated dust. The water cart will be prioritised to areas of highest dust generation potential, which will be based on visual inspections;
- restricting vehicle speeds on unsealed roads that have not been treated with water or chemical stabilisers;
- prior to the commencement of longwall operations (secondary extraction), the location and operation of water sprays will be reviewed and water sprays implemented where deemed necessary to control dust emissions. There is currently limited water sprays onsite and additional water sprays may be required on the surface infrastructure such as conveyors;
- minimisation of disturbance areas;
- obsolete roads will be ripped and re-vegetated;
- development of minor roads will be limited and the locations of these will be clearly defined;
- minimising double handling of material; and
- minimising dust generated underground. This will include the application of water and/or use of dust suppressants.

Table 3-1 provides further detail on the preventative measures in place at Integra Underground and responsible personnel to manage air quality.

The air quality monitoring network is described in **Section 4.1**.

Table 3-1 Air quality preventative measures

Source	Control Measures	Responsibility	Timing
Methane Gas	Maximise capture of pre-drained and post-drained (goaf) gas for transfer to Glennies Creek Power Station or flaring.	Technical Services Manager	At all times
Spontaneous Combustion	Minimise the length of time coal is held in stockpiles	Technical Services Manager	In the event of coal being stockpiled by Integra Underground
	Inspecting coal stockpiles for signs of spontaneous combustion	Technical Services Manager	As required
Gas Flaring	For goaf gas that is not transferred to Glennies Creek Power Station, maximise flaring and minimise free venting	Technical Services Manager	At all times
Ventilation Air	Minimise methane content of ventilation air by maximising the capture of goaf gas to transfer to Glennies Creek Power Station or flaring.	Technical Services Manager	At all times
Odour	Minimise use of odorous substances with potential for offsite odour effects.	Environment and Community Manager	At all times
Vegetation Clearing	Limit of vegetation clearing is clearly and accurately marked.	Project Manager	As required
	The clearing of vegetation is undertaken only within the designated area(s).	Project Manager	As required
Soil stripping and stockpiling	Tracks used by topsoil stripping equipment during the loading and unloading cycle are watered. The limit of soil removal and the soil stockpile areas are clearly marked. Minimises soil stripping when soil moisture is low. Cover crop is sown over soil stockpiles retained for more than 3 months. Soil stripping occurs only within the defined limits (both in area and depth). Topsoil stockpiles are no higher than 3 m Minimise soil handling and compaction.	Project Manager	As required
Access tracks	Development of access tracks will be limited	Environment and Community Manager	As required

Source	Control Measures	Responsibility	Timing
	Obsolete roads will be rehabilitated.	Environment and Community Manager	As required
Air Quality Management Plan and Monitoring Program	Operate in accordance with the AQGHGMP and implement procedures contained within this management plan.	All Employees	Ongoing
	The air quality and meteorological monitoring equipment is maintained and results are routinely analysed.	Environment and Community Manager (in consultation with Mt Owen Glendell Operations)	In accordance with the Air Quality Monitoring Program
	Receive, respond and report any complaints in relation to air quality.	Environment and Community Manager	As required
	Report exceedances of air quality monitoring limits in accordance with the PA 08_0101.	Environment and Community Manager	As required
	Provide training to all relevant employees and contractors in environmental awareness, legal responsibilities, and air quality control methods.	Environment and Community Manager	As required
	Report all complaints to the Integra Underground Environmental and Community department	All employees	As required

3.1.1 Cumulative Air Quality Management

To satisfy Condition 14 of Schedule 3 of PA 08_0101, Integra Underground coordinates with nearby mines to minimise cumulative air quality impacts. The nearby Mt Owen Glendell Operations is a 100% Glencore owned company. A collaborative relationship has been developed between Mt Owen Glendell Operations and Integra Underground to co-ordinate best practice air quality management across these sites and minimise cumulative air quality impacts. Integra Underground has also prepared a protocol in consultation with Ashton, Rix's Creek, Mt Owen and Glendell to minimise cumulative air quality impacts. This includes a quarterly meeting with environment & community representatives of all of the mines.

As mentioned in **Section 2.3**, sources of dust emissions (and hence contribution to cumulative impacts) at Integra Underground are limited due to the underground nature of the mine, and that ROM stockpiles and the CHPP used to process Integra Underground's coal are within the ownership and control of Bloomfield's open cut operations.

Notwithstanding, to satisfy Condition 14 of Schedule 3 of PA 08_0101, a number of measures are in place to coordinate with nearby mines in relation to managing and minimising air quality impacts.. This includes operating a combined Community Consultative Committee (CCC) for the Integra Underground and Mt Owen Glendell Operations, where monitoring data is reported to the CCC members for both sites. Integra Underground also has access to the extensive air quality and noise monitoring network of the Mt Owen Glendell Operations.

3.2 Greenhouse Gas Management Measures

Key sources of greenhouse gas emissions at Integra Underground are:

- fugitive emissions from coal extraction;
- combustion of diesel from equipment/plant;
- combustion from flares;
- fugitive emissions from post-mining activities; and
- consumption of electricity from the grid.

The construction of ancillary surface infrastructure at Integra Underground will also be a minor source of greenhouse gas emissions due to vegetation clearing (loss of carbon sink), fuel consumption and embedded emissions in construction materials.

Integra Underground currently transfers methane gas to the Glennies Creek Power Station for beneficial use in electricity generation, which reduces greenhouse gas emissions from operations. Surplus gas that cannot be converted to electricity is managed through flaring, which converts methane to carbon dioxide (a less potent greenhouse gas).

As recommended by Hansen Bailey (2017b), Integra Underground will continue to improve energy efficiency through mitigation measures such as:

- installation of variable speed drives on pumps in the underground mining areas;
- management of compressed air leaks;
- speed reductions on underground conveyors;
- lighting efficiency measures (low energy fittings and management improvement);
- utilising plant and equipment that is energy efficient; and

- provide training to personnel regarding the efficient use of plant and equipment, including proper maintenance of equipment to retain high levels of energy efficiency.

3.3 Training and Communication

Generic induction training is provided to all employees and contractors through the GCAA *Generic Induction* and the *Integra Underground Site Familiarisation*. This induction training includes a discussion of the Environmental Management Plans in place at Integra Underground, including the AQGHGMP.

From time to time, workforce communication days and toolbox talks allow for discussion of the objectives and requirements of the Environmental Management Plans.

4. Measurement and Evaluation

4.1 Air Quality Monitoring

To ensure that air quality management is occurring consistently with the objectives of this AQGHGMP, air quality monitoring will be undertaken.

Air quality monitoring is currently being conducted at the locations identified in **Figure 4**. As shown in **Figure 4**, Integra Underground's air quality monitoring network includes:

- three tapered element oscillating microbalances (TEOMs),
- one depositional dust gauges; and
- one high volume air sampler (HVAS).

The locations of the depositional dust gauges and HVAS were determined based on the Australian Standard *AS3580.1.1:2016 Ambient Air – Guide for the siting of sampling units.*

Within the air quality monitoring network, the following parameters are measured:

- Particulate matter < 10µm (PM_{10})
- Particulate matter < 2.5µm ($PM_{2.5}$)
- Total suspended particulates (TSP)
- Deposited dust

Further details on the locations, parameters measured, monitoring frequencies and methods of each of the monitoring stations used by Integra Underground is provided in **Table 4-1** below.

The locations of each monitoring site align with an existing site already within the Mt Owen Glendell Operations monitoring network, thus eliminating the need for additional monitoring locations and enabling Integra Underground to use the long term trends from these established sites to assess their performance.

Integra Underground also uses data from the Glendell meteorological monitoring station (refer to **Figure 4**), as agreed with the EPA. The Glendell monitoring station satisfies the requirements of Condition 16; Schedule 3 of PA 08_0101, and has been programmed to continuously record the following meteorological parameters:

- wind speed;

- wind direction;
- air temperature;
- relative humidity;
- rainfall;
- barometric pressure; and
- sigma theta (a measure of horizontal wind direction fluctuations).

The monitoring network described above enables Integra Underground to quantify the performance of its AQGHGMP and assess its impacts on air quality at private receivers due to both its own operations and cumulative impacts with other mining operations in the vicinity. Nearby mining operations that may contribute to cumulative air quality impacts include Ashton, Rix's Creek North, Rix's Creek and Mt Owen Glendell Operations.

Across 2017 and 2018, Integra Underground investigated high recorded levels at TEOM 1 and TSP 1 and identified these levels to not be attributable to Integra Underground. TEOM 1 and TSP 1 are located to the north east of Integra Underground operations and not within prevailing winds range. Subsequently, Integra Underground reviewed the air quality monitoring network in 2018 resulting in the removal of TEOM 1 and TSP 1 from the network. Other TEOM locations remain in the network within prevailing wind range. TSP 2 was added to the air quality monitoring network as it was identified to be more representative of Integra Underground operations.

In 2020, the dust deposition monitoring locations were reviewed. This review considered the potential dust sources, potential impact on air quality conditions and the dust deposition criteria prescribed in PA 08_0101. Based on this review, the revised dust deposition monitoring locations include IDG2 and the remaining monitoring locations are no longer part of Integra Underground's air quality monitoring network. The Integra Underground air quality monitoring network is surrounded by an extensive air quality monitoring network operated by Glencore and the mining industry in the Hunter Valley. The Upper Hunter Air Quality Monitoring Network also operates monitoring locations for key air quality indicators in the local and surrounding areas (Jacobs, 2020).

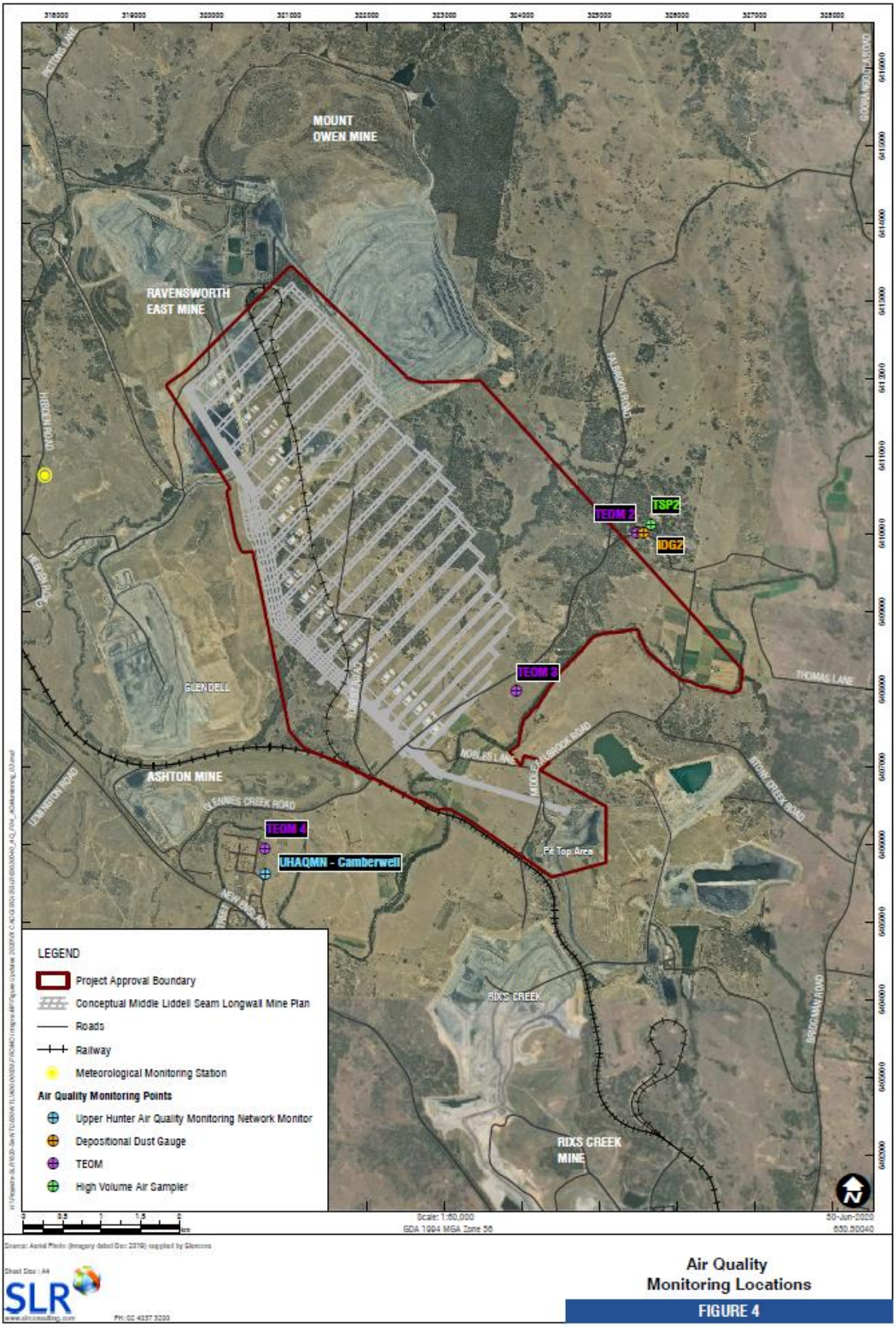

MOUNT
OWEN MINE
RAVENSWORTH
EAST MINE
HEBDEN ROAD
GLENDELL
ASHTON MINE
GLENNIES CREEK ROAD
LEMINGTON ROAD
TEOM 2
TSP2
DG2
TEOM 3
TEOM 4
UHAQMN - Camberwell
Pit Top Area
MIDDLE ROAD
NOBLES LANE
THOMAS LANE
STONE CREEK ROAD
BROADMEADOW ROAD
RIXS CREEK
RIXS CREEK
MINE
LEGEND
Project Approval Boundary
Conceptual Middle Liddell Seam Longwall Mine Plan
Roads
Railway
Meteorological Monitoring Station
Air Quality Monitoring Points
Upper Hunter Air Quality Monitoring Network Monitor
Depositional Dust Gauge
TEOM
High Volume Air Sampler
Scale: 1:60,000
GDA 1994 MGA Zone 56
30-Jun-2020
SLR
Air Quality
Monitoring Locations
FIGURE 4

Table 4-1: Integra Underground Air Quality Monitoring Locations, Frequency and Method

Monitor Reference	Location (MGA)		Parameters Measured					Monitoring Frequency	Method
	Easting (m)	Northing (m)	Deposited Dust	TSP (HVAS)	PM10 (HVAS)	PM10 (TEOM)	PM2.5 (TEOM)		
HVAS TSP 2	325660	6410114						24-hours every six days	AS 3580.9.3:2015: Methods for sampling and analysis of ambient air, Determination of suspended particulate matter – total suspended particulate matter (TSP) high volume sampler gravimetric method
IDG 2	325564	6410005						Monthly	AS/NZS 3580.10.1:2016 Methods for Sampling and Analysis of Ambient Air, Determination of Particulates—Deposited Matter—Gravimetric method
TEOM 2	325564	6410005						Continuous	AS 3580.9.8:2008 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM_{10} continuous direct mass method using a Tapered Element Oscillating Microbalance analyser
TEOM 3	323926	6407963						Continuous	AS 3580.9.8:2008 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM_{10} continuous direct mass method using a Tapered Element Oscillating Microbalance analyser
TEOM 4	320686	6405942						Continuous	AS 3580.9.8:2008 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM_{10} continuous direct mass method using a Tapered Element Oscillating Microbalance analyser

4.2 Greenhouse Gas Monitoring

The parameters monitored for greenhouse gas reporting include electricity and diesel usage from underground operations, methane emissions from underground mining operations, methane sent to the Glennies Creek Power Station (operated by EDL) and ROM coal production. A summary of the frequency of greenhouse gas monitoring and the personnel responsible is presented in **Table 4-2**.

Table 4-2 Greenhouse Gas Monitoring

Parameter Monitored	Frequency	Person Responsible
Electricity usage	Monthly	Environment and Community Manager or delegate
Diesel	Monthly	Environment and Community Manager or delegate
Methane emissions	Monthly	Ventilation Officer
Methane used for power generation	Monthly	Ventilation Officer
ROM coal production	Monthly	Mine Manager
SF6	Annually	Environment and Community Manager or delegate
Waste Water Treatment	Annually	Environment and Community Manager or delegate

Greenhouse gas monitoring will take place for the duration of the mining operation. Should mining operations at Integra Underground cease temporarily, e.g. due to changes in market demand, greenhouse gas monitoring may be suspended until the recommencement of operations.

4.3 Community Complaints

In accordance with the Integra Underground *Environmental Management Strategy*, all complaints received are recorded and lodged in the complaint register. Information recorded includes the following: date and time the complaint was logged;

- personal details provided by the complainant;
- nature of the complaint;
- action taken regarding the complaint, or if no action was taken, the reason why; and
- follow-up contact with the complainant.

A summary of all complaints will be reported in the Annual Review.

5. Review and Improvement

5.1 Reporting

5.1.1 Air Quality Reporting

Air quality monitoring results and interpretations will be reported annually in the Annual Review in accordance with Schedule 5, Condition 11 of PA 08_0101. The Annual Review will also outline trends in air quality results and the effectiveness of the air quality management system. The evaluation of effectiveness will consider Integra Underground and industry factors, such as: comparison to air quality predictions, implementation of mitigation measures and inclusion of best practice management measures.

A summary of air quality monitoring results will also be made publicly available on the Integra Underground website in accordance with Schedule 5, Condition 10 of PA 08_0101.

The results of the ongoing air quality monitoring program will be communicated to the local community during CCC meetings. As discussed in **Section 3.1.1**, a combined CCC is run for the Integra Underground and Mt Owen Glendell Operations. Minutes from CCC meetings are publicly available online.

5.1.2 Exceedance Reporting Protocol and Contingency Plan

Notwithstanding the limited sources of dust at Integra Underground given the underground nature of the site, operational procedures have been developed to respond to identified exceedances of air quality criteria.

When an exceedance is identified via results from the air quality monitoring system, the operational response will involve the following steps:

- the potential source of the exceedance, including whether it is as a result of Integra Underground activities, will be investigated using meteorological data and results from the other air quality monitors in the network; and
- based on the outcomes of this investigation, where necessary the dust source will be controlled via practical means (for example, water cart priority changed to focus on the dust source causing the exceedance).

If air quality monitoring results identify an exceedance of the air quality impact assessment criteria (refer to **Section 2.2**), Integra Underground will notify the DPIE in accordance with Schedule 5, Condition 9 of PA 08_0101.

Additionally, in accordance with Schedule 4, Condition 3 of PA 08_0101, in the event an exceedance of the air quality impact assessment criteria is identified, Integra Underground will notify any affected landowners/tenants as soon as the monitoring results are available, and provide regular monitoring results until the results show that the operation is complying with the relevant criteria.

In the event of an exceedance of any relevant criteria in Condition 12, Schedule 3, Integra Underground will send a copy of the NSW Health fact sheet entitled “Mine Dust and You” (as may be updated from time to time) to the affected landowners and/or existing tenants of the land (including tenants of any mine-owned land).

In addition to reporting required by PA 08_0101, incidents resulting or having the potential to result in material harm to the environment (as defined by Section 147 of the *Protection of the Environment*

Operations Act 1997) may require initiation of the Integra Underground *Pollution Incident Response Management Plan* (PIRMP).

5.1.3 Greenhouse Gas Reporting

HVCC, through its parent entity (GCAA), reports annually on the performance of Integra Underground as required under the Commonwealth *National Greenhouse and Energy Reporting (NGER) Act 2007*.

The NGER report will contain:

- energy usage;
- energy production; and
- greenhouse gas emissions.

5.2 Plan Review

This AQGHGMP will be reviewed (and revised if necessary) in accordance with the requirements of Schedule 5 Condition 6 of PA 08_0101.

Revisions of this AQGHGMP consider industry best practice standards.

The monitoring data will be reviewed as collected and at strategic milestones in the mine life, including Annual Review reporting periods. The AQGHGMP will be modified as required to reflect changes to the mine plans, monitoring results, or in response to stakeholder comments. Any modifications will be made only after consultation with DPIE.

6. Accountabilities

The general roles and responsibilities of staff at Integra Underground in respect of this AQGHGMP are presented in **Table 6–1**.

Table 6-1 – Roles and responsibilities

Role	Accountabilities for this document
Operations Manager	• Provide adequate resources for the implementation of this management plan.
Environment and Community Manager or delegate	• Review and implement this management plan. • Liaise with relevant internal and external stakeholders in relation to air quality. • Inform the relevant internal stakeholders of incidents or non-compliances. • Notify the relevant regulatory agencies of any incidents or non-compliances. • Implement training relevant to this management plan. • Update monitoring data on the Integra Underground website. • Coordinate maintenance, replacement and repair of monitoring equipment as required in a regular and/or timely manner; • Coordinate regular inspections to check air quality monitoring units are operating effectively to assess dust emissions; • Effective maintenance of monitoring records on site; and • Review air quality monitoring data against criteria as per the specified frequency of management plans.
All Managers	• Implementation of this plan via site procedures for mining operations
All personnel	• Comply with all requirements of this management plan.

7. Document Information

Relevant legislation, standards and other reference information will be regularly reviewed and monitored for updates and will be included in any future revisions to this AQGHGMP. Related documents listed in **Section 7.1** below provide the linkage and source to develop and maintain compliance information relevant to the AQGHGMP.

7.1 Related Documents

Related documents, listed in **Table 7-1** below, are documents directly related to or referenced from this document. Internal procedures have not been reviewed or endorsed by DPIE and Glencore is responsible for verifying these procedures are in accordance with this management plan and generally in accordance with PA 08_0101.

Table 7-1 – Related documents

Number	Title
GCAA	
GCAA HSEC PCL 0026	*11.10 Air Quality Management*
Integra Underground	
INTUG – 793190785-45	Environmental Management Strategy
INTUG – 793190785-49	Exploration Activities and Minor Surface Infrastructure Management Plan

7.2 Reference Information

Reference information, listed in **Table 7-2** below, is information that is directly related to the development of this document or referenced from within this document.

Table 7-2 – Reference information

Reference	Title
Holmes Air Sciences (2009)	*Air Quality Assessment: Integra Open Cut Project.* Prepared for URS Australia Pty Ltd by Holmes Air Sciences.
AS3580.1.1 :2016	*Ambient Air – Guide for the siting of sampling units.*
AS 3580.9.3:2015	*Methods for sampling and analysis of ambient air, Determination of suspended particulate matter – total suspended particulate matter (TSP) high volume sampler gravimetric method.*
AS 3580.9.8:2008	*Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM_{10} continuous direct mass method using a Tapered Element Oscillating Microbalance analyser*
AS/NZS 3580.10.1:2016	*Methods for Sampling and Analysis of Ambient Air, Determination of Particulates—Deposited Matter—Gravimetric method*
Hansen Bailey (2017a)	Integra to Mount Owen Complex Water Pipeline Modification Environmental Assessment for Glencore Coal Pty Ltd
Hansen Bailey (2017b)	Integra Underground Mine Longwall Extension Modification Environmental Assessment for HV Coking Coal Pty Ltd
Hanson Bailey (2018)	Integra Underground Mine Longwall Extension Modification Response to Submissions for HV Coking Coal Pty Limited
Jacobs (2020)	Review of Integra Underground Air Quality Monitoring

7.3 Change Information

Full details of the document history are recorded in the document control register, by version. A summary of the current change is provided in **Table 7-3** below.

Version	Date	Review team (consultation)	Change Summary
1.0	October 2016	Mark Robinson (Integra Underground)	New document for Integra Underground
2.0	March 2017	Mark Robinson (Integra Underground) Chloe Piggford (Integra Underground) Nicole Armit (EMM) David Richards (EMM) Bart Downe (EMM)	Revised and updated document following comments from DPIE.
3.0	June 2018	Sophie Nicholas and Chris Jones (SLR) Chloe Piggford (Integra Underground)	Update to reflect Modification 8 of PA 08_0101
3.1	July 2019	Keith Simkin (Integra Underground) Anthony Billings (Integra Underground) Louise Hibbert (SLR)	Update to include cumulative response protocol, and update of location of TSP2.
3.2	June 2020	Chloe Piggford (Integra Underground) Keith Simkin (Integra Underground)	Review of dust deposition monitoring locations and resulting changes. Administrative changes, including transfer to new document template.

Appendix A - External Consultation Records

From: Natasha Ryan <Natasha.Ryan@epa.nsw.gov.au>
Sent: Tuesday, 15 November 2016 10:34 AM
To: Robinson, Mark (Integra Underground - AU)
Cc: Michael Howat
Subject: Integra Underground Management Plans

Dear Mr Robinson

Reference is made to your email dated 8 November 2016 in respect of HV Coking Coal Pty Limited (wholly owned by Glencore) recommencement of mining operations at Integra Underground (Integra) and to the management plans titled:

- *Integra Underground Glencore Noise Management Plan dated 3 November 2016;*
- *Integra Underground Glencore Air Quality and Greenhouse Gas Management Plan dated 3 November 2016;* and
- *Integra Underground Glencore Water Management Plan dated 3 November 2016*, prepared by Glencore.

The Environment Protection Authority (EPA) encourages the development of such plans to ensure that proponents have met their statutory obligations and designated environmental objectives. However, EPA does not review these documents as our role is to set environmental objectives for environmental/conservation management, not to be directly involved in the development of strategies to achieve those objectives.

The EPA has not reviewed these reports and accordingly offers no comments in relation to

them. If you wish to discuss the matter further please contact Michael Howat on 02 49086819.

Yours sincerely

Natasha Ryan
A/Head Regional Operations - Hunter
North Branch, NSW Environment Protection Authority
+61 2 49086833

natasha.ryan@epa.nsw.gov.au www.epa.nsw.gov.au @EPANSW
Report pollution and environmental incidents 131 555 (NSW only) or +61 2 9995 5555

If you are sending a non compliance report or official report please send all correspondence to hunter.region@epa.nsw.gov.au attention: Natasha Ryan

From: Mark.Robinson@glencore.com.au [mailto:Mark.Robinson@glencore.com.au]
Sent: Tuesday, 15 November 2016 9:59 AM
To: Natasha Ryan <Natasha.Ryan@epa.nsw.gov.au>
Cc: Michael Howat <Michael.Howat@epa.nsw.gov.au>; Rebecca Scrivener <Rebecca.Scrivener@epa.nsw.gov.au>
Subject: FW: Integra Underground

Natasha,

Further to my discussions with Michael and Rebecca could you please provide a response to the request to review management plans below?

We are keen to get these MP's to Department of Planning this week so a response today or tomorrow is much appreciated. An email response is OK if that helps timing.

Kind regards

Mark Robinson
Integra Underground
Glencore

Telephone: +61 2 65774205
Mobile: 0439 131 585

From: Robinson, Mark (Integra Underground - AU)
Sent: Tuesday, 8 November 2016 4:07 PM
To: 'michael.howat@environment.nsw.gov.au'; Michael.howat@epa.nsw.gov.au
Cc: Watson, John (Hunter Valley - AU); Smith, Kelly (Integra Underground - AU)
Subject: Integra Underground

Michael,

As discussed, HV Coking Coal Pty Limited (wholly owned by Glencore) has recently announced the recommencement of mining operations at Integra Underground (Integra).

The approved management plans for Integra have been updated to account for the change in the ownership and proposed recommencement of operations for the development and extraction of LW13-14 in 2017-2018. Development is planned to commence 1 January 2107 with longwall extraction planned to commence in May 2017.

The updated management plans to be developed in consultation with the EPA under the Integra Project Approval are attached for your departments review i.e.

- Water Management Plan
- Air Quality and Green House Gas Management Plan
- Noise Management Plan

I would be pleased to meet to outline the content of the attached management plans if required and please call if you have any questions.

Integra is seeking feedback on the attached plans as soon as possible so we can send management plans to Department of Planning to obtain approval in November 2016.

Kind regards

Mark Robinson
Integra Underground
Glencore

Telephone: +61 2 65774205
Mobile: 0439 131 585

DOC18/416819-07, EF15/21093

HV Coking Coal Pty Limited
PO Box 534
SINGLETON NSW 2330

By email: chloe.piggford@glencore.com.au

Attention: Ms Chloe Piggford

22 June 2018

Integra Draft Management Plans

Dear Ms Piggford,

Reference is made to your email dated 22 June 2018 to the Environment Protection Authority ("EPA") in relation to Integra Undergrounds Environment Management Plans titled:

- Integra Underground Glencore Water Management Plan Doc INTUG-793190785-68;
- Integra Underground Glencore Air Quality and Greenhouse Gas Management Plan Doc INTUG-793190785-48; and
- Integra Underground Glencore Noise Management Plan Doc INTUG-263795162-21.

The EPA encourages the development of such plans to ensure that proponents have met their statutory obligations and designated environmental objectives. However, EPA does not review these documents as our role is to set environmental objectives for environmental/conservation management, not to be directly involved in the development of strategies to achieve those objectives.

The EPA has not reviewed these plans and accordingly offers no comments in relation to it.

If you have any further questions on this issue, please contact me on 02 4908 6833.

Yours sincerely

NATASHA RYAN
Operations Officer - Hunter
Environment Protection Authority

Phone 131 555
Phone 02 4908 6800
Fax 02 4908 6810
TTY 133 677
ABN 43 692 285 758
PO Box 488G
Newcastle
NSW 2300 Australia
117 Bull Street
Newcastle West
NSW 2302 Australia
info@epa.nsw.gov.au
www.epa.nsw.gov.au

Appendix B – AQGHGMP Approval

Planning Services
Resource Assessments
Contact: Matthew Sprott
Phone: 8217 2054
Email: matthew.sprott@planning.nsw.gov.au

Chloe Piggford
Environment and Community Manager
Integra Underground
PO Box 320
Singleton NSW 2330

Dear Ms Piggford

Integra Underground Mine (PA 08_0101) – Management Plans

I refer to your letter of 8 December 2016 requesting the Secretary's approval of a number of management plans required under the conditions of approval for PA 08_0101, prior to the recommencement of operations at the Integra Underground Mine.

The Department notes that Glencore is seeking to pursue the staged recommencement of operations at the mine, commencing with the development of first workings for Longwalls 13-14 in February 2017 and progressing to longwall extraction in May 2017.

The Department has now completed its assessment of the final draft versions of the following management plans submitted via email on 10 February 2017:

- Air Quality and Greenhouse Gas Management Plan (condition 15, Schedule 3);
- Noise Management Plan (condition 9, Schedule 3);
- Biodiversity Management Plan (condition 32, Schedule 3);
- Heritage Management Plans for Aboriginal and non-Aboriginal heritage (condition 33, Schedule 3); and
- Exploration Activities and Minor Surface Infrastructure Management Plan (condition 41, Schedule 3).

The Department is satisfied that the above plans include appropriate management measures and adequately address the requirements of the project approval, for the purposes of developing first workings for Longwalls 13-14 of the Integra Underground Mine. However, the Department considers that these plans would benefit from further refinement to the description of the approved longwall layout, clarification of the flora and fauna species and vegetation communities overlying the project area and additional specificity around the measures that would be implemented through trigger action response plans to address the likely impacts of the development.

Consequently, I wish to advise that the Secretary conditionally approves the above plans for the purposes of developing the first workings for Longwalls 13-14. Glencore is required to consult further with the Department regarding the refinement and subsequent approval of these plans prior to the commencement of longwall extraction at the site.

Please ensure the effective date on the cover page of the above plans is revised to reflect the date of this letter. Once finalised please place a copy of the approved plans on your website.

If you wish to discuss this matter further, please contact Matthew Sprott at the details listed above.

Yours sincerely

Howard Reed 17.2.17
Howard Reed
Director Resource Assessments
as the Secretary's nominee

Department of Planning and Environment
Level 22, 320 Pitt Street Sydney NSW 2000 | GPO Box 39 Sydney NSW 2001 | T 1300 305 695 | **www.planning.nsw.gov.au**

Planning Services
Resource Assessments
Contact: Robyn Skinner
Phone: 6575 3409
Email: robyn.skinner@planning.nsw.gov.au

Chloe Piggford
Environment and Community Manager
Integra Underground
PO Box 320
Singleton NSW 2330

Dear Ms Piggford,

Integra Underground Mine (PA 08_0101) – Management Plans

This letter refers to the following management plans for the Integra Underground Project that were submitted to the Department for approval on 27 March 2017:

- Air Quality and Greenhouse Gas Management Plan (condition 15 of Schedule 3);
- Noise Management Plan (condition 9 of Schedule 3); and
- Exploration Activities and Minor Surface Infrastructure Management Plan (condition 41 of Schedule 3).

The Department notes these revised plans were submitted after the Department issued a conditional approved on 17 February 2017. The Department has since reviewed the revised plans and considers they now adequately address the full requirements of the relevant conditions. Consequently, the Secretary approves the above plans dated 27 March 2017.

Once finalised please place a copy of the approved plans on your website and forward a copy to the Department.

If you wish to discuss this matter, please contact Robyn Skinner on 6575 3409.

Yours sincerely,

Howard Reed 28·3·17
Howard Reed
Director Resource Assessments
as nominee of the Secretary

NSW GOVERNMENT Planning & Environment

Planning Services
Resource Assessments
Contact: Jack Murphy
Phone: 8217 2016
Email: jack.murphy@planning.nsw.gov.au

Ms Chloe Piggford
Environmental and Community Manager
Integra Underground

Email: chloe.piggford@glencore.com.au

Dear Ms Piggford,

Integra Underground Project (08_0101)
Environmental Management Plans

I refer to your email dated 7 September 2018, submitting a revised environmental management strategy and revised environmental management plans for the Integra Underground Project. The Department has reviewed the following documents:

- Heritage Management Plan dated September 2018 (condition 33, Schedule 3);
- Air Quality and Greenhouse Gas Management Plan dated September 2018 (condition 15, Schedule 3);
- Biodiversity Management Plan dated September 2018 (condition 32, Schedule 3);
- Environmental Management Strategy dated September 2018 (condition 1, Schedule 5);
- Water Management Plan dated September 2018 (condition 31, Schedule 3);
- Construction Traffic Management Plan dated September 2018 (condition 42, Schedule 3);
- Noise Management Plan dated September 2018 (condition 9, Schedule 3); and
- Exploration Activities and Minor Surface Infrastructure Management Plan dated September 2018 (condition 41, Schedule 3).

The Secretary has approved the above documents. Please ensure finalised copies of these documents are made available on the company's website.

Should you have any enquiries in relation to this matter, please contact Jack Murphy.

Yours sincerely,

Howard Reed 10·9·18
Director
Resource Assessments
as nominee of the Secretary

Planning, Industry & Environment

Planning and Assessment
Energy and Resource Assessments
Name: Bailey Williams
Phone: 8275 1306
Email: bailey.williams@planning.nsw.gov.au

Mr Keith Simkin
Environment and Community Manager
Integra Underground – Glencore

By email: keith.simkin@glencore.com.au

Dear Mr Simkin

Integra Underground Project (MP 08_0101)
Review of Management Plans

I refer to your email dated 28 June 2019, seeking the Secretary's approval of three updated management plans for the Integra Underground Project (MP 08_0101), including the:

- Air Quality and Greenhouse Gas Management Plan (dated September 2018) (condition 15 of Schedule 3);
- Noise Management Plan (dated September 2018) (condition 9 of Schedule 3); and
- Environmental Management Strategy (dated September 2018) (condition 1 of Schedule 5).

The Department has reviewed these plans and considers that they address the relevant conditions of consent. As such, the Secretary has approved these plans. Please ensure that final untracked copies of these documents are provided to the Department by 1 August 2019 and are uploaded to the company's website.

Should you have any enquiries in relation to this matter, please contact Bailey Williams on the details listed above.

Yours sincerely

Howard Reed 26-7-19
Howard Reed
Director, Resource Assessments
as nominee of the Planning Secretary