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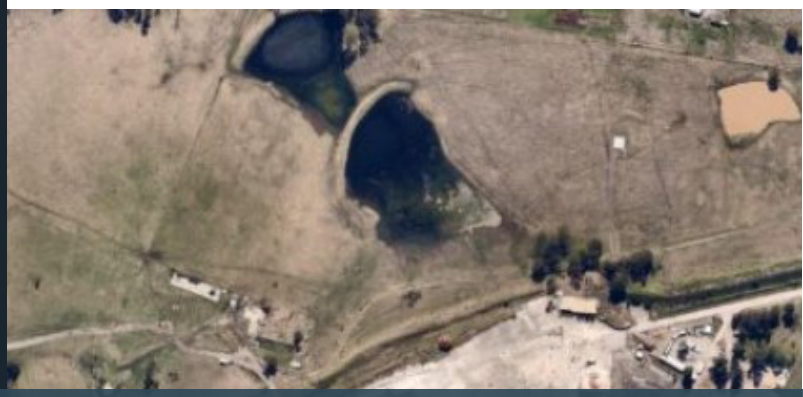
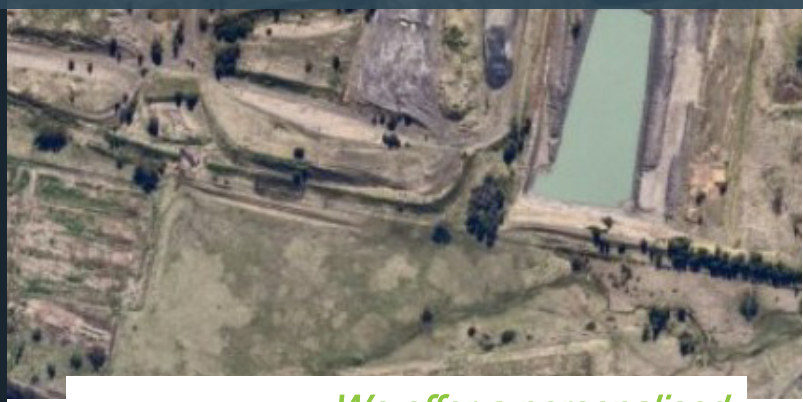


September 2023

Annual Review for Badgerys Creek Clay Mine MP10_0014 Year Ending 4th May 2023



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Project Name	Badgerys Creek Quarry and Brick Making Project
Report Title	Annual Review
Project Address	225-235 Martin Rd Bradfield (Formerly Badgerys Creek), NSW 2556
Application Number of the Project	10_0014
Mining Authorisations	ML1771
Report Commencement Date	5th May 2022
Report Completion Date	4th May 2023
Name of Authorisation Holder	PGH Bricks & Pavers Pty Ltd Triniti 3, Level 5, 39 Delhi Rd, Nth Ryde, NSW 2113
Name of Mine Operator (s)	CSR Limited 39 Delhi Rd Level 6, North Ryde, NSW, 2113, Australia
Name and Contact Details of the Mine Manager	Nelma Arancibia CSR Limited 0424 186 127 narancibia@csr.com.au
Name and Contact Details of the Environmental Representative	Nelma Arancibia CSR Limited 0424 186 127 narancibia@csr.com.au
Name of the Representative of the Authorisation Holder **Title**	Nelma Arancibia CSR Limited 0424 186 127 narancibia@csr.com.au
Signature of the Representative of the Authorisation Holder	
Declaration Date	

Revision Table

Date	Version	Author	Reviewed	Approved
29/08/2023	D0	SK	TO	
04/09/2023	D1	SK	ME	
07/09/2023	F0	SK	ME	
08/09/2023	F1	SK	ME	ME

Contents

Figures

Tables

Appendices

1 Executive Summary

The PGH/CSR Clay Shale mine and associated brickworks located on Martin Road at Bradfield (Formerly Badgerys Creek) NSW has been in shut-down mode since 2012. Plans are now in motion to rehabilitate portions of the site to allow industrial / commercial land use. The site operates under MP10_0014 the State Significant consent for a brickworks and clay/shale mine, with modification 5 approved 19/01/2022 allowing importation of Excavated Natural Material and additional storage for brick making materials.

No extraction activities occurred however previously stockpiled raw materials were dispatched to other plants in the Sydney metropolitan region.

Following de-watering of Pit 3, filling of completed voids with materials for on- and off-site will also commence in the next report period.

There were eight non-compliances as of the SSD consent conditions:

1. Daily truck movements were exceeded on eleven occasions. (Schedule 2 Condition 12)
2. Air quality monitoring results exceeded the annual average for depositional dust at one location, this was reported to DPE and no further action was required. During the reporting period site access was reduced resulting in a longer sampling period for dust monitoring (Schedule 3 Condition 9, 10)
3. Groundwater monitoring was not undertaken quarterly as per Surface Water Management Plan (SWMP) (Schedule 3, Condition 23)
4. Notification of landowners regarding dust exceedances not undertaken (Schedule 4, Condition 1)
5. Dust and truck exceedances were not reported to DPE within 14 days (Schedule 5 Condition 7)
6. Non-compliances were not reported to DPE within 7 days (Schedule 5 Condition 10)
7. The conditions regarding all conditions be complied with is also non-compliant (Schedule 2 Condition 2)

SSD Consent Conditions required to be addressed in this Annual Review are listed in *Table 1*.

Table 1. Annual Review Requirements as per Consent

Schedule No.	Condition No.	Condition	Where Addressed in Report
2	17	PRODUCTION DATA The Applicant must: (a) provide calendar year annual quarry production data to MEG using the standard form for that purpose; and (b) include a copy of this data in the Annual Review.	Section 6.4, Appendix F
3	17A	The Applicant must report on water extracted from the site each year (direct and indirect) in the Annual Review, including water taken under each water licence.	Section 9.4.2.2
3	23B	Dewatering Management Plan 23B. The Applicant must prepare a Dewatering Management Plan for the project to the satisfaction of the Secretary. This plan must: (c) include: • details of: * off-site water transfer or discharge arrangements; and * procedures for monitoring on volumes transferred off-site and reporting on this as part of annual review;	Section 9.4
3	38	Waste The Applicant must:	Section 9.6

Schedule No.	Condition No.	Condition	Where Addressed in Report
		(d) report on waste management and minimisation in the Annual Review, to the satisfaction of the Secretary.	
5	12	Annual Review Prior to recommencing quarrying operations or Fill import, and annually thereafter, the Applicant must submit a review to the Department reviewing the environmental performance of the development to the satisfaction of the Secretary. This review must: (a) describe the development (including any progressive rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year; (b) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against the: • relevant statutory requirements, limits or performance measures/criteria; • requirements of any plan or program required under this consent ; • monitoring results of previous years; and • relevant predictions in the documents listed in condition 3 of Schedule 2; (c) evaluate and report on: • the effectiveness of the air quality and noise management systems; and • compliance with the performance measures, criteria and operating conditions in this consent. (d) identify any non-compliance over the past calendar year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid reoccurrence; (e) identify any trends in the monitoring data over the life of the development; (f) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and (g) describe what measures will be implemented over the current calendar year to improve the environmental performance of the development. The Applicant must ensure that copies of the Annual Review are submitted to Council and are available to the Community Consultative Committee (see condition 8 of Schedule 5) and any interested person upon request.	This report

2 Scope

This report is the Annual Review (MP10_0014) for the Badgerys Creek Clay Mine located at 235 Martin Rd, Bradfield, NSW 2555, in the Liverpool Council Government Area. The site is approximately 17km south of Penrith, as presented in *Figure One*. The site includes water-filled voids, an active mine, and demolished brickworks.

This Report was prepared in accordance with Project Approval conditions MP10_0014 consolidated consent for modification 5. The compliance statuses of the Mining Lease (ML - Appendix B), Environmental Protection Licence (EPL - Appendix C), and Water Access Licence (WAL - Appendix D) has not been assessed during the development of this Annual Review.

2.1 MINE CONTACTS

Table 2. Contact Details

Aspect	Mine and Rehabilitation Manager
Name	Nelma Arancibia
Company	CSR Limited
Address	39 Delhi Road Level 6,
	North Ryde, NSW, 2113
Mobile	0424 186 127
Phone	02 9964 1305
Email	narancibia@csr.com.au

2.2 HISTORY OF OPERATIONS

The site is located at 235 Martin Road, Bradfield, accessible at the end of Martin Road off Elizabeth Drive. Boral Bricks Pty Limited (Boral) owned and operated the Badgerys Creek Quarry and Brick Making Facility at Badgerys Creek for over 30 years.

On 27 September 2011, project approval was issued under Section 75J of the EP&A Act for the ongoing production of bricks and the expansion of the existing quarrying operations. Due to uncertain economic conditions and a downturn in residential housing activity, Boral reviewed its bricks production capacity in NSW. Following this review, Boral 'mothballed' its operations at Badgerys Creek effective from 30 March 2012. Shutting down the site gave Boral the option to review its commercial position at a future stage and, if market conditions and business needs allowed, recommence production.

2.2.1 Modification 1

As many of the conditions of consent were not relevant during the shutdown, Boral applied to modify the Project Approval under Section 75W of the EP&A Act. Modification application (10_0014 Mod 1) requested that post-March 2012 activities be limited to:

- minor maintenance and inspection (e.g. water management, equipment testing);
- operation of the retail display facility; and
- irregular and occasional dispatch of bricks from the inventory remaining on-site.

In 2015, Boral and CSR formed a joint venture brick business called Boral CSR Bricks Pty Ltd. The assets held by the respective companies were transferred into the joint venture. At the end of October 2016, CSR acquired Boral's share of the brick business and with it, the Badgerys Creek Quarry and Brick Making Facility.

2.2.2 Modification 2

The 2011 Project Approval did not allow for the exportation of material extracted on-site, which was required due to recent and forecasted closure of many quarries in the region. Also, although the 2011 Project Approval allowed for the storage of finished brick products in the hard stand storage yard, to the east of the brick factory, this storage area would not be used for the storage of bricks manufactured at the site until planning approval has been granted for the upgrade of the existing brick factory and the upgrade has been completed (Modification 3). In the interim CSR urgently required additional finished product storage capacity in the greater Sydney region and therefore proposed to make use of this site for the temporary storage of finished building products.

As the ability to export clay from the Badgerys Creek site and temporarily store finished building products was required as a matter of urgency, CSR lodged a separate modification application (Modification 2) under Section 75W of the EP&A Act for these two activities. CSR obtained planning approval for Modification 2 from DP&E on 5 May 2018.

2.2.3 Modification 3

A review of the business needs forecast an increase in required production at Badgerys Creek. An Environmental Assessment was submitted to propose an:

- Increase in brick production;
- Increase in importation of raw materials;
- Allow continued extraction from Pit 3;
- Increase in laden truck movements;
- And an increase in operational hours.

2.2.4 Modification 4

To address stakeholder requests to facilitate future development associated with the Aerotropolis rezoning of the area due to the construction and development of the Western Sydney Airport (WSA), CSR proposed Modification 4, which broadly consists of dewatering existing voids, continuing the extraction of brick making materials and progressively back filling with Virgin Excavated Natural Materials (VENM) to advance a site able to be used for future industrial development. This modification included changes to the 30-year quarry staging plans and an increase in laden truck movements and hours (for VENM only).

CSR obtained planning approval for modifications 3 and 4 in August 2020.

2.2.5 Modification 5

With the high demand for fill material within the Sydney Metropolitan region due to the number of major infrastructure projects underway, Virgin Excavated Natural Material (VENM) was scarcer than originally anticipated. To allow some flexibility to continue with the project, modification 5 was submitted to allow importation of Excavated Natural Material (ENM) as fill, as well as VENM.

The condition regarding receival storage and dispatch of brickmaking materials was also modified to remove the end date.

This modification was approved in January 2022.

3 Statement of Compliance

Table 3. Statement of Compliance

Were all conditions of the relevant approvals(s) complied with?	
Major Project Approval MP10_0014 (Mod 5)	No

A full list of conditions and compliance status is included in Appendix E.

Table 4. Compliance Status Key

Status	Description
Compliant	The proponent has collected sufficient verifiable evidence to demonstrate that all elements of the requirement have been complied with.
Non-Compliant	The proponent has identified a non-compliance with one or more elements of the requirements.
Not Triggered	A requirement has an activation or timing trigger that has not been met at the phase of the development when the compliance assessment is undertaken, therefore an assessment of compliance is not relevant.

Table 5. Summary of Non-Compliances

Consent No	Compliance Requirement	Development Phase	Evidence and Comments	Status	Where Addressed in this report
Schedule 2 condition 2	Terms of consent	One	Not all conditions of consent are compliant	Non-compliant	This report
Schedule 2 condition 12	Total truck movements	One	Daily truck movements exceeded on eleven occasions	Non-compliant	Section 6.3
Schedule 3 condition 9	Air quality impact assessment criteria	One	Annual average for depositional dust was exceeded at one location	Non-compliant	Section 9.3
Schedule 3 condition 10	Air quality monitoring data	One	Depositional dust gauge sampling period exceedance	Non-compliant	Section 9.3
Schedule 3 condition 23	Groundwater monitoring	One	Quarterly monitoring not undertaken as per SWMP	Non-compliant	Section 9.5
Schedule 4 condition 1	Notification of landowners	One	Affected landowners not contacted regarding dust exceedance	Non-compliant	Section 9.3
Schedule 5 condition 7	Adaptive management	One	Exceedance not reported to DPIE within prescribed timeframe	Non-compliant	This report
Schedule 5 condition 10	Non-compliance notification	One	Exceedance not reported to DPIE within prescribed timeframe	Non-compliant	This report

4 Actions Required from Previous Reports

There are no known actions required as a result of previous reports.

Plan of:	**Annual Review for Badgerys Creek Clay/Shale Mine 2023 - Site Location**	**Location:**	Martin Road, Badgerys Creek NSW	**Source:**	Google OpenStreetMap & nearmap - Image Date 30/03/2023 Zone MGA 56	**Plan By:**	SK/JD
Figure:	**ONE**	**Council:**	Liverpool City Council	**Survey:**	Not Applicable	**Project Manager:**	SK
Version/Date:	V0 17/06/2023	**Tenure:**	ML1771 (Act 1992)	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856	**Office:**	Thornton
Our Ref:	12518_BB_AR2023_Q001_V0_F1	**Client:**	CSR Group Property Ltd	**Contour Interval:**	Not Applicable		

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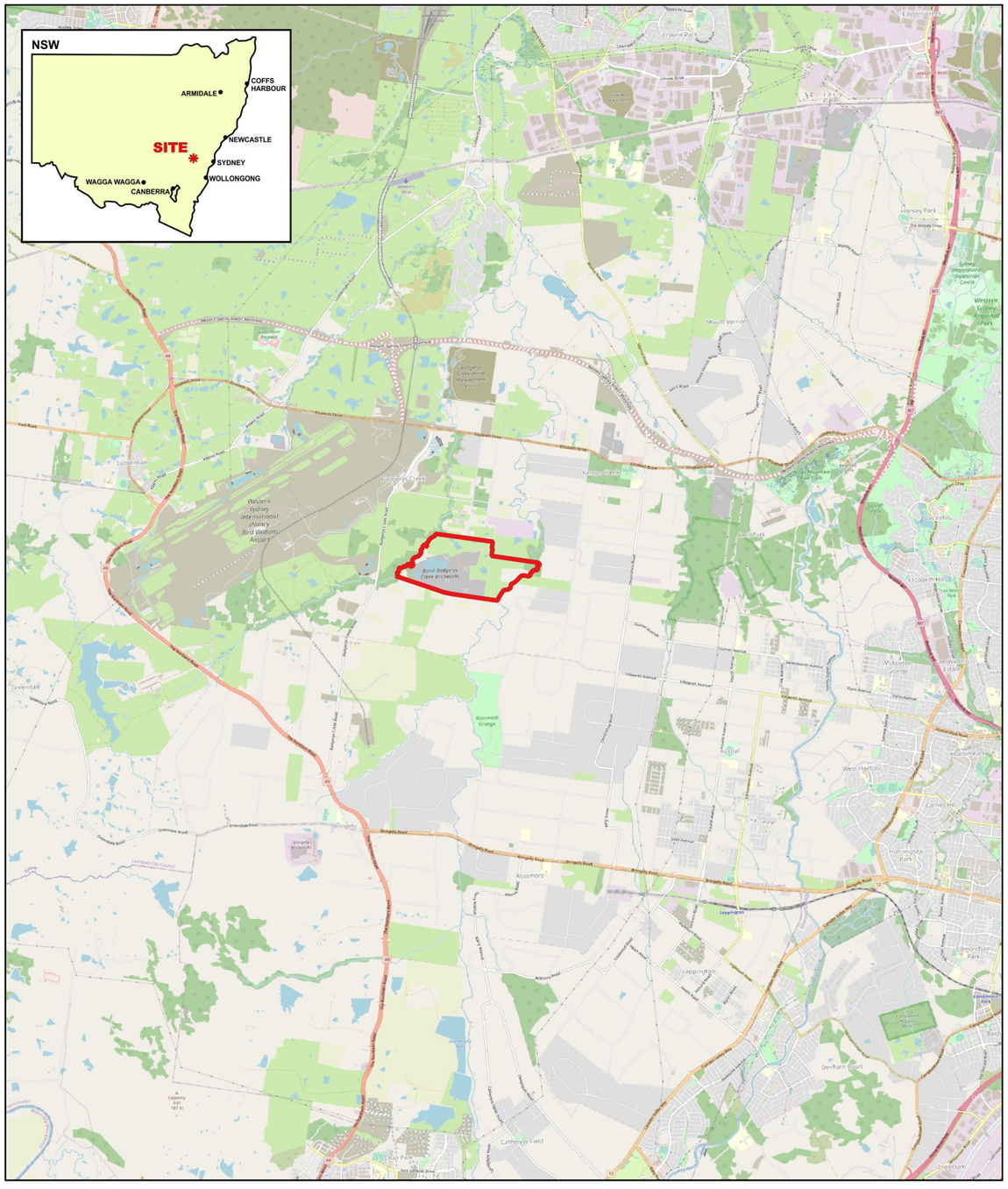

Legend

- Property Boundary
- Authority Boundary (ML1771 (Act 1992))
- Western Sydney Airport
- Creek/Main Drainage Line
- Dam

Plan of:	**Annual Review for Badgerys Creek Clay/Shale Mine 2023 - Site Layout**	**Location:**	Martin Road, Badgerys Creek, NSW	**Source:**	nearmap - Image Date 30/03/20232 Zone MGA 56 & Sixmaps Spatial Data	**Plan By:**	TO/JD		
Figure:	**TWO**	**Council:**	Liverpool City Council	**Survey:**	Client Supplied & ELVIS Spatial Data	**Project Manager:**	SK		
Version/ Date:	V0 17/06/2023	**Tenure:**	ML 1771 (Act 1992)	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856				
Our Ref:	12518_BB_AR2023_Q002_V0_F2	**Client:**	CSR Group Property Ltd	**Contour Interval:**	1m				

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Legend

Feature/Domain

- Property Boundary
- Western Sydney Airport
- Cadastral Information

Road Corridor

- 60m Creek Buffer
- Discharge Point
- Stockpile Removal Commenced During AR Period

- Reconstruction of Basic A Completed October 2022
- Farm Dam
- Creek/Major Drainage Line

- 1m Contour
- 5m Contour

Mining Tenement

- Authority Boundary (ML1771 (Act 1992))

Monitoring Locations

- Weather Station
- HVAS Monitoring Location
- Noise Monitoring Lcoation
- Depositional Dust Monitoring Location
- Surface Water Monitoring Location
- Groundwater Monitoring Location

5 Consents, Leases and Licences

5.1 PROJECT APPROVAL

Badgerys Creek Quarry and Brick Making Project received project approval from the Minister for Planning and Infrastructure in 2011 for application number 10_0014. The approval was modified most recently in January 2022 and conditions are included in Appendix A.

Table 6. Development Approvals

No.	Date Approved	Expires
10_0014	Mod 5 January 2022	27th September 2031 (quarrying activities)

5.2 LAND OWNERSHIP AND LAND USE

The site is freehold land with property descriptions listed below and shown on Figure Two.

- Lots 54-56, DP 3050
- Lots 1-3, DP 1278780

6 Activities During the Reporting Period

6.1 EXPLORATION

There were no exploration activities during the report period.

6.2 CONSTRUCTION

Demolition of the old brick factory commenced in December 2021 and was completed in April 2022. Following the March 2022 NSW floods the western wall of Basin A, adjacent Pit 1, failed and required reconstruction. The capacity of Basin A was increased and a secondary treatment High Efficiency Basin (Basin B surcharge) was also constructed to provide additional surge capacity. These works were completed in October 2022, further information provided in *Appendix H* information supplied to NSW National Resources Access Regulator (NRAR).

6.3 TRUCK MOVEMENTS AND TONNAGES

The consent has limits on extraction, production, receival and dispatch volumes per calendar year and on total truck movements. There has been no importation of fill, nor receipt or dispatch of finished product in the report period.

The intersection upgrade has not yet occurred, and the Development is in Phase 1. There were exceedances of daily truck movements in during the reporting period, as shown in *Table 7* and *Table 8.* Schedule 2, Condition 12 permits 120 truck movements (in and out) between Monday to Friday, or 60 trucks entering and leaving the site. 40 truck movements are permitted on Saturdays, or 20 trucks entering and leaving the site. 40 truck movements are permitted on Sundays but limited to fill importation only. These exceedances were not reported to the Department.

Table 7. Truck Movement Exceedance Weekdays in the Report Period

Date	Day	Sum of Laden Trucks	Limit Laden Trucks Saturday
27/06/2022	Monday	67	60

Table 8. Truck Movements Exceedances Saturdays in the Report Period

Date	Day	Sum of Laden Trucks	Limit Laden Trucks Saturday
25/06/2022	Saturday	30	20
16/07/2022	Saturday	22	20
20/08/2022	Saturday	26	20
27/08/2022	Saturday	36	20
15/10/2022	Saturday	25	20
29/10/2022	Saturday	28	20
19/11/2022	Saturday	39	20
4/02/2023	Saturday	30	20
11/02/2023	Saturday	31	20
22/04/2023	Saturday	37	20

Table 9. Extraction, Production and Material Movements in the Report Period

Activity	Limit (Tonnes per Calendar Year)	Volume 5/5/2022 to 4/5/2023
Extraction from Pit 3	420,000	0
Receive raw materials for brickmaking	215,000 (Phase 1)	0
Dispatch raw materials	275,000	84,365
Brick Production	300,000	0
Dispatch finished building products	330,000	0

Table 10. Raw Materials Dispatched in the Report Period

Month	Raw Materials Dispatch (Tonnes)	Laden Trucks
May 2022	**26**	**2**
Demolition	26	2
June 2022	**11,936**	**332**
MS1000 / Apricot Shale	2,722	76
MS1149 / Badgerys Creek Brown Shale	9,214	256
July 2022	**3,198**	**89**
MS1149 / Badgerys Creek Brown Shale	3,198	89
August 2022	**19,445**	**540**
MS1000 / Apricot Shale	4,824	134
MS1056 / Orange Clay	1,743	48
MS1149 / Badgerys Creek Brown Shale	12,878	358
September 2022	**557**	**15**
MS1056 / Orange Clay	557	15
October 2022	**4,454**	**124**
MS1000 / Apricot Shale	993	28
MS1056 / Orange Clay	2,449	68
MS1149 / Badgerys Creek Brown Shale	1,012	28
November 2022	**14,347**	**399**
MS1056 / Orange Clay	4,118	114
MS1130-Sita Cream Shale	4,522	126
MS1149 / Badgerys Creek Brown Shale	5,707	159
December 2022	**5,370**	**149**
MS1149 / Badgerys Creek Brown Shale	5,370	149
February 2023	**20,070**	**558**
MS1000 / Apricot Shale	4,829	134
MS1056 / Orange Clay	4,553	126
MS1149 / Badgerys Creek Brown Shale	10,688	297
April 2023	**4,961**	**138**
MS1000 / Apricot Shale	342	10
MS1056 / Orange Clay	3,448	96
MS1149 / Badgerys Creek Brown Shale	1,170	33
Total	**84,365**	**2,345**

6.4 MINING OPERATIONS

No mining was undertaken during the reporting period. The proposed works for the next reporting period are displayed on Figure Three. Schedule 2 Condition 17(b) of the consent requires the annual quarry production data as submitted to Department Regional NSW - Mining, Exploration and Geoscience (MEG) to be included in the Annual Review, see Appendix F.

Phase 1 is expected to take more than 5 years, and includes the following activities:

- Dewatering of Pits 2 and 3 to Pit 1
- Dewatering of Pit 1, with use of water for:
    - Onsite processes under WAL 24346
    - Transfer to Western Sydney Airport under agreement (underway)
    - Discharge to local creeks under EPL 684
- Importation of Virgin Excavated Natural Materials (VENM) or Excavated Natural Material (ENM) to fill Pits 1 and 2
- Progressive backfilling of Pit 3 with VENM/ENM
- Construction activities associated with planned rehabilitation works.

Operations on the site occur within the hours shown in *Table 11*.

Table 11. Hours of Operation

Activity	Days	Permissible Hours
Quarrying operations (excluding truck arrival, loading and dispatch)	Monday to Saturday Sundays or Public Holidays	7:00 am to 6:00 pm At no time
Brickmaking Activities	Monday to Sunday	24 hours
Raw materials truck arrival and dispatch	Monday to Friday Saturday Sunday and Public Holidays	6:00 am to 10:00 pm 6:00 am to 6:00 pm At no time
Finished Products truck arrival and dispatch	Monday to Friday Saturday Sunday and Public Holidays	5:00 am to 10:00 pm 6:00 am to 6:00 pm At no time
Fill importation truck arrival and dispatch	Monday to Friday Saturday Sunday Public Holidays	7:00 am to 6:00 pm 7:00 am to 6:00 pm 9:00 am to 6:00 pm At no time
Cash Sales	Monday to Friday Saturday Sunday and Public Holidays	6:00 am to 6:00 pm 6:00 am to 6:00 pm At no time
Sales Selection and Display Centre	Monday to Sunday	8:00 am to 5:00 pm
Maintenance	At any time provided activities are not audible at a privately-owned residence	

6.5 MAINTENANCE

Maintenance activities on the site this report period included contractors accessing the site to collect samples for environmental monitoring.

7 Incidents

No incidents have been recorded resulting from project-related activities during the reporting period. No further action is required.

8 Complaints

One complaint was lodged from a neighbour to the EPA in November 2022 regarding dust leaving the quarry site. CSR have installed a new dust gauge in the vicinity of Lawson Road, closer to the neighbouring property in question. See *Section 9.3.3.2* for results. CSR noted in a response to the EPA that dust was not being emitted from the quarry site based on the activities and weather station records for the site, see Appendix I. No further action is required.

Plan of:	**Annual Review for Badgerys Creek Clay/Shale Mine 2023 - Proposed Works Phase One (0-5 Years)**	**Location:**	Martin Road, Badgerys Creek, NSW	**Source:**	nearmap - Image Date 30/03/2023 Zone MGA 56, Sixmaps Spatial Data & Figure 3.1 Mod 4 EIS	**Plan By:**	SK/JD
Figure:	**THREE**	**Council:**	Liverpool City Council	**Survey:**	Not Applicable	**Project Manager:**	SK
Version/ Date:	V1 01/09/2023	**Tenure:**	ML 1771 (Act 1992)	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856		
Our Ref:	12518_BB_AR2023_Q003_V1_F3	**Client:**	CSR Group Property Ltd	**Contour Interval:**	Not Applicable		

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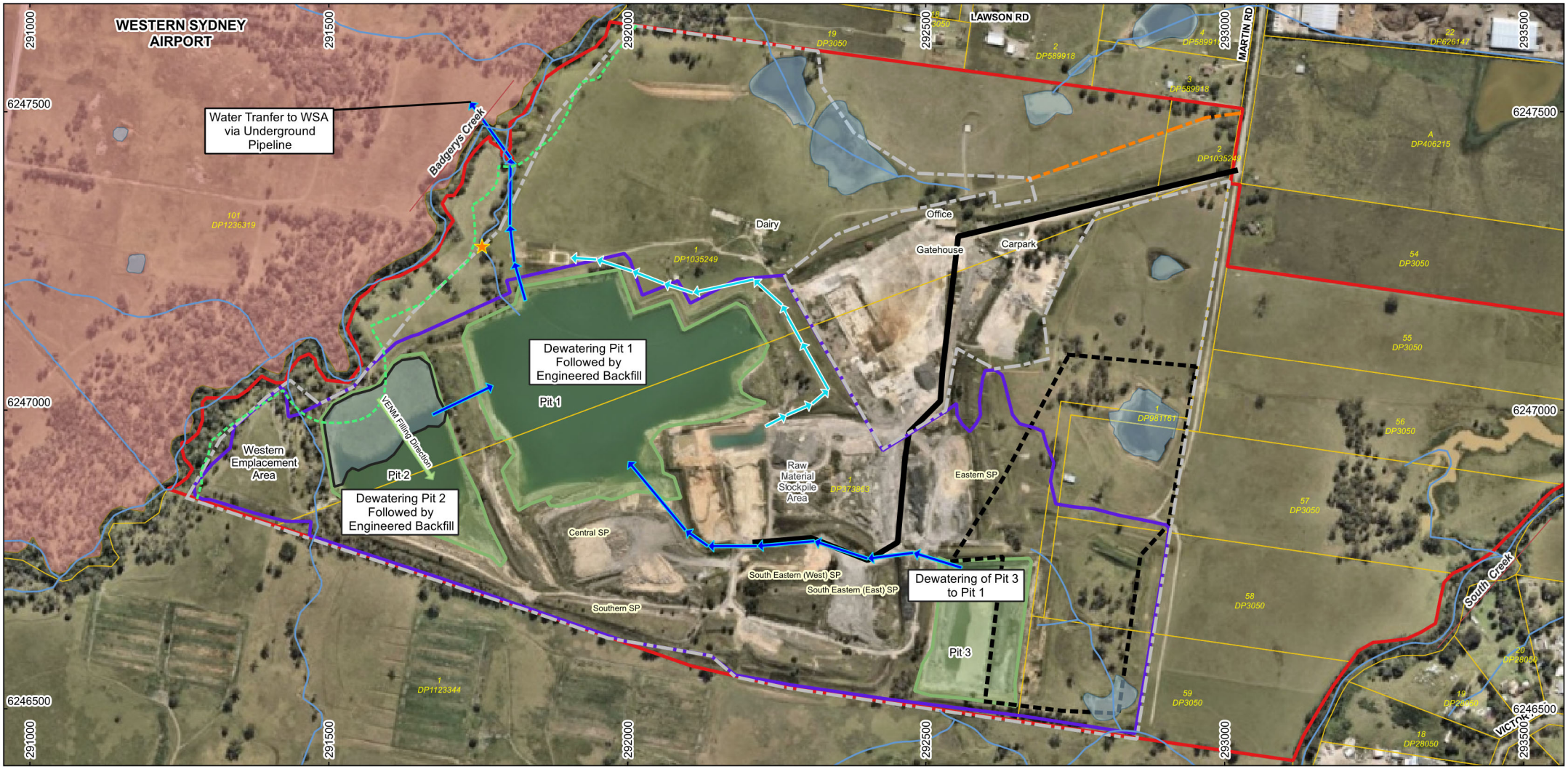

Legend

Feature/Domain

- Property Boundary
- Lot Boundary(Cadastral)
- Road Corridor
- Noise Barrier
- VENM Haul Route
- Western Sydney Airport

Water Management Features

- Creek/Main Drainage Line
- Discharge Point
- 60m Creek Buffer
- Water Transfer to WSA
- Water Transfer
- Pit Dam
- Farm Dam

Mining Features

- Authority Boundary (ML1771 (Act 1992))
- Mod 3 & 4 Consent Pit 3 Extraction Area
- VENM Emplacement Phase 1
- Emplaced Material Extraction
- Area of Disturbance

Plan of:	**Annual Review for Badgerys Creek Clay/Shale Mine 2023 - Water Management**	**Location:**	Martins Road, Badgerys Creek, NSW	**Source:**	nearmap - Image Date 30/03/2023 Zone MGA 56, Sixmaps Spatial Data & SURPAC Modelling	**Plan By:**	SK/JD
Figure:	**FOUR**	**Council:**	Liverpool City Council	**Survey:**	Client Supplied & ELVIS Spatial Data	**Project Manager:**	SK
Version/ Date:	V0 17/06/2023	**Tenure:**	ML 1771 (Act 1992)	**Projection:**	GDA2020/MGA Zone 56 EPSG:7856		
Our Ref:	12518_BB_AR2023_Q004_V0_F4	**Client:**	CSR Group Property Ltd	**Contour Interval:**	1 Metre		

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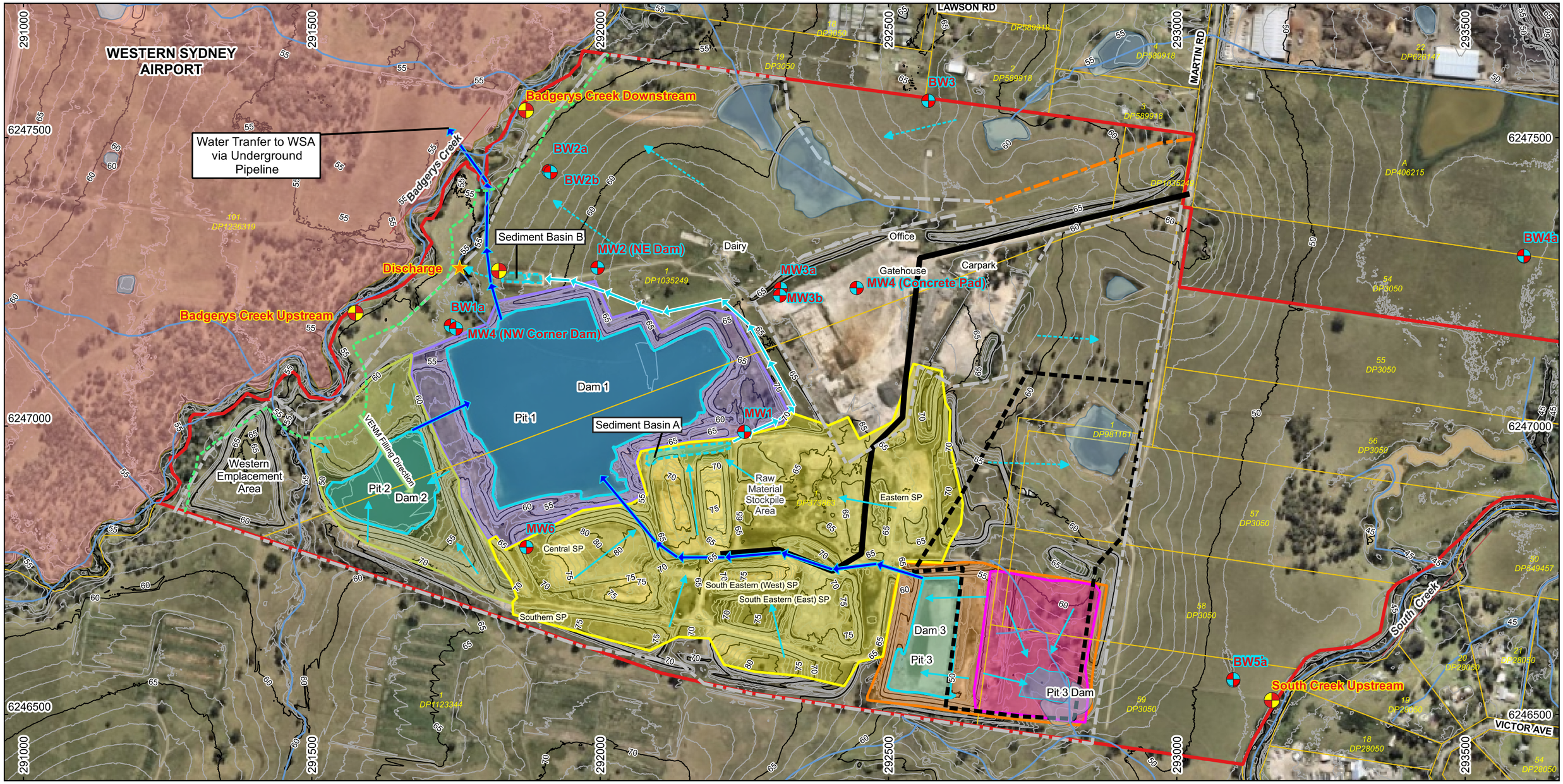


Legend

Water Management Features

- Discharge Point
- 60m Creek Buffer
- Creek
- Water Transfer to WSA
- Water Transfer
- Clean Water Flow
- Dirty Water Flow
- Farm Dam
- Pit Dam

Monitoring Locations

- Surface Water Monitoring Location
- Groundwater Monitoring Location

Mining Tenement

- ML1771 (Act 1992)

Feature/Domain

- Property Boundary
- Western Sydney Airport
- Lot
- VENM Haul Route
- Mod 3 & 4 Consent Pit 3 Extraction Area
- 1m Contour
- 5m Contour

Catchments

- Stockpile Area Catchment
- Pit 1 Catchment
- Pit 2 Catchmnent
- Pit 3 Catchment
- Pit 3 Stage 1

Note: Catchment Areas sourced from High Definition Design Pty Ltd Drawing HD283 R3 Option 2 (HD01 R3)

9 Environmental Management and Performance

The location of monitoring points is provided on Figure Two.

9.1 CLIMATE SUMMARY

A weather station was installed in December 2016.

9.1.1 Relevant Statutory Requirements and Performance Criteria

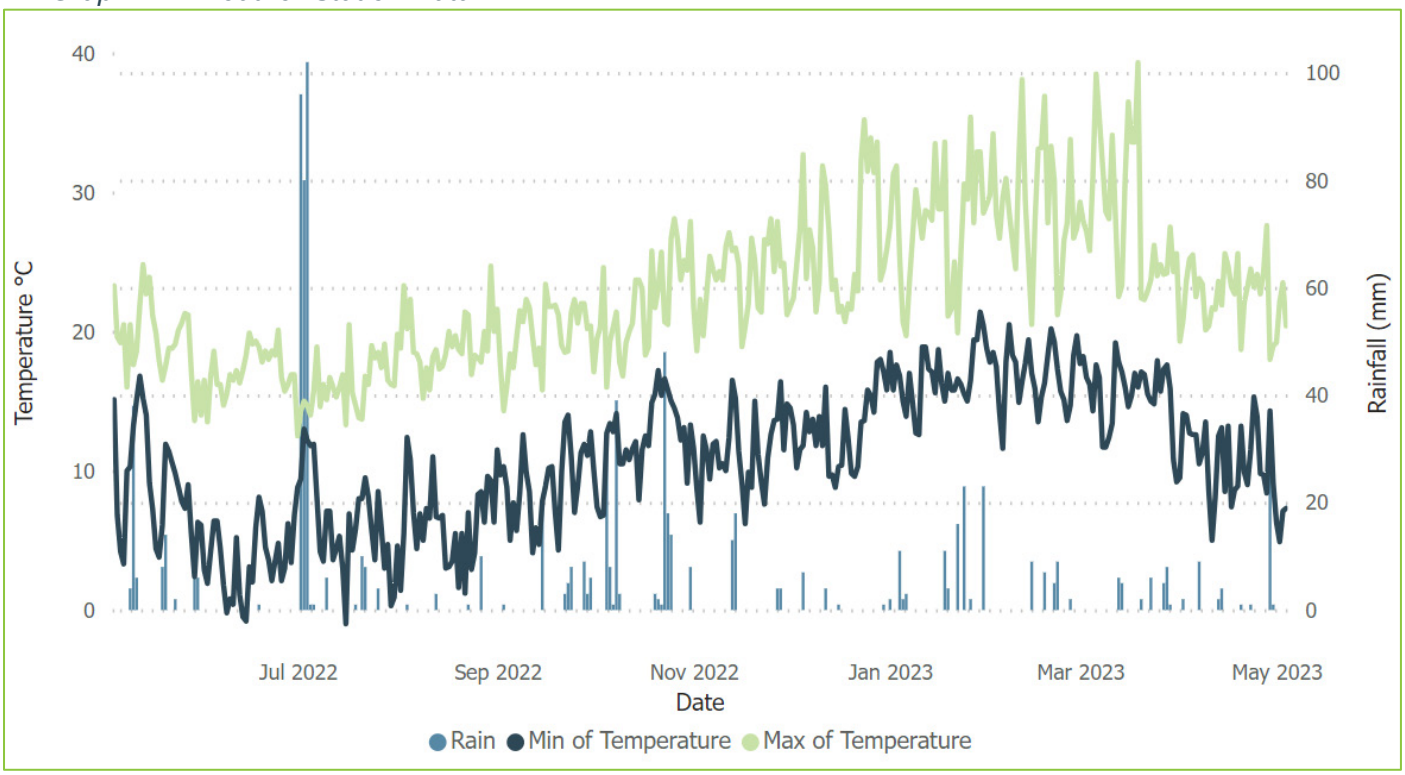
Consent conditions require that meteorological monitoring is undertaken primarily to determine when noise criteria apply. Monitoring is also required in order to minimise air quality impacts under adverse conditions. More specifically Condition 14 of Schedule 3 requires meteorological monitoring. The monitoring station must comply with the following guidelines and policies.

- Approved Methods for Sampling of Air Pollutants in New South Wales guideline; and
- Capable of continuous measurement of stability class in accordance with the NSW Industrial Noise Policy.

9.1.2 Climate Monitoring Trends

The report period has been colder than average, and rainfall has been a lot higher. July 2022 received nine times the monthly average rainfall. A summary of the weather output from the weather station is available on request.

Graph 1. Weather Station Data



9.2 NOISE

There are consent conditions requiring compliance with noise levels during quarrying operations and storage yard activities. Since none of these activities have occurred, these conditions are not triggered and no noise monitoring has been undertaken. The noise monitoring program is expected to commence once other activities on site such as fill importation commence, as per the approved Noise Management Plan (NMP).

The noise management system is effective for the current stage of the operation.

9.3 AIR QUALITY

9.3.1 Performance Criteria

The consent and Air Quality Management Plan specifies the following Air Quality Criteria to be met at any residence on privately owned land:

Table 12. Air Quality Criteria

Parameter	Criteria^	Units	Averaging Period	Source
Total Suspended Particulates (TSP)	90*	$\mu g/m^3$	Annual	Sched 3 Cond 9
PM_{10}	50#	$\mu g/m^3$	24 hours	Sched 3 Cond 9
PM_{10}	30*	$\mu g/m^3$	Annual	Sched 3 Cond 9
Insoluble Solids (Deposited Dust)	4*	g/m^2/month	Annual	Sched 3 Cond 9
Insoluble Solids (Deposited Dust)	2#	g/m^2/month	Annual	Sched 3 Cond 9

* Cumulative impact (i.e. increase in concentrations due to the project plus background concentrations due to all other sources).

Incremental impact (i.e. increase in concentrations due to the project alone, with zero allowable exceedances of the criteria over the life of the project.

^Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Secretary in consultation with EPA.

Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, *AS/NZS3580.10.1: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter -Deposited Matter - Gravimetric Method.*

There are air quality limits in the EPL, however they relate to the stack emissions monitoring of the brickworks which is now demolished, and therefore not relevant to this reporting period.

9.3.2 Predictions

An air quality assessment undertaken for the modified project by specialist air quality consultants (Todoroski Air Sciences, Feb 2019) predicts no exceedances of relevant criteria during Pit 3 extraction operations.

The following table summarises the predictions made for the Pit 3 extraction operations at the closest sensitive receptors.

Table 13. Air Quality Predictions

Sensitive Receptor	Nearest Air Quality Monitoring Location	PM2.5 (µg/m3)	PM10 (µg/m3)	TSP (µg/m3)	Insoluble Solids (g/m2/month)
R5	D4, HVAS	7.3	17.7	62.9	2.8
R9	D1	7.4	18.3	65.5	2.9
R12a	D2	7.1	17	60.6	2.7

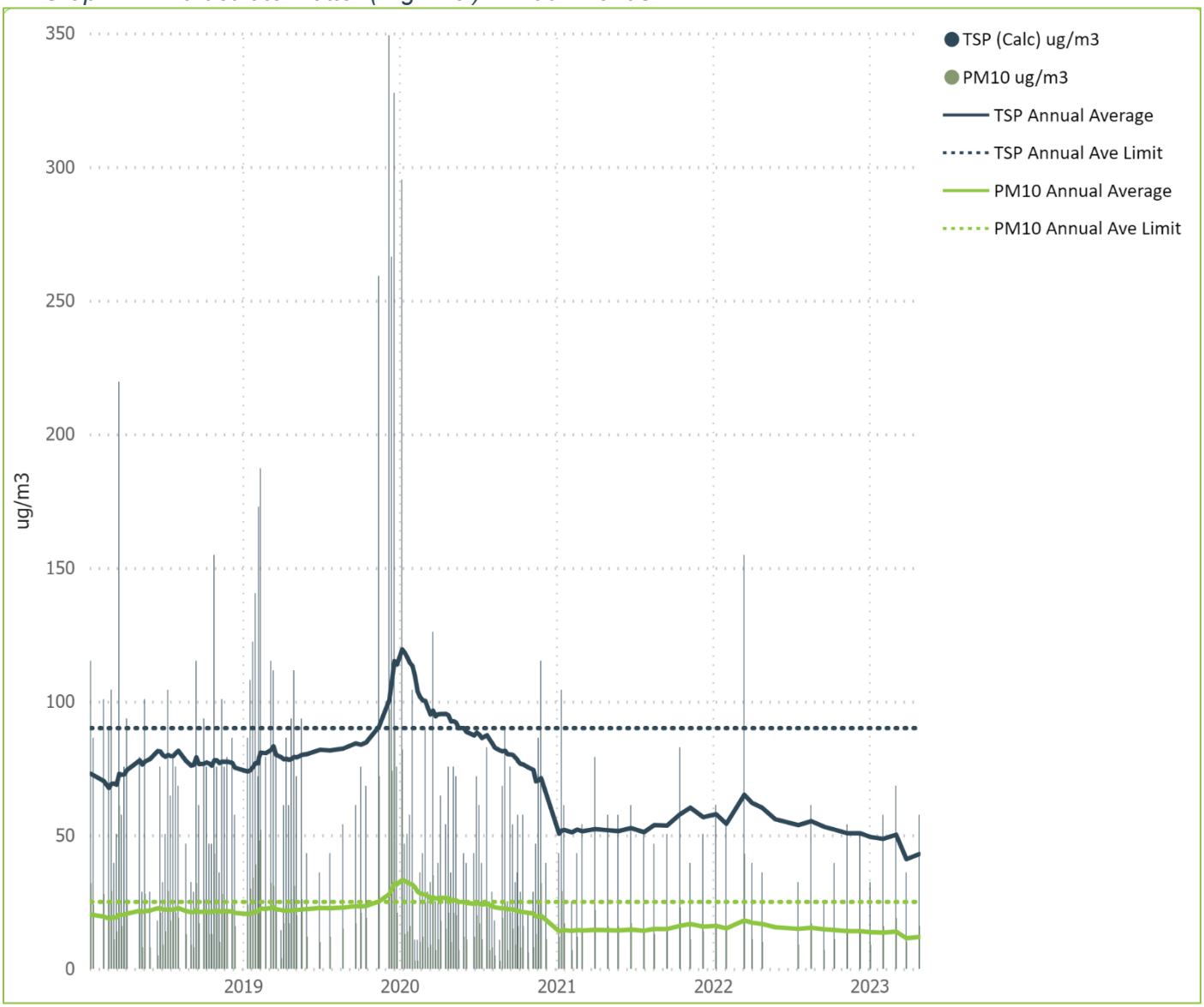
9.3.3 Monitoring Results

Monitoring results obtained to date can be considered localised background levels as there have been no activities on site.

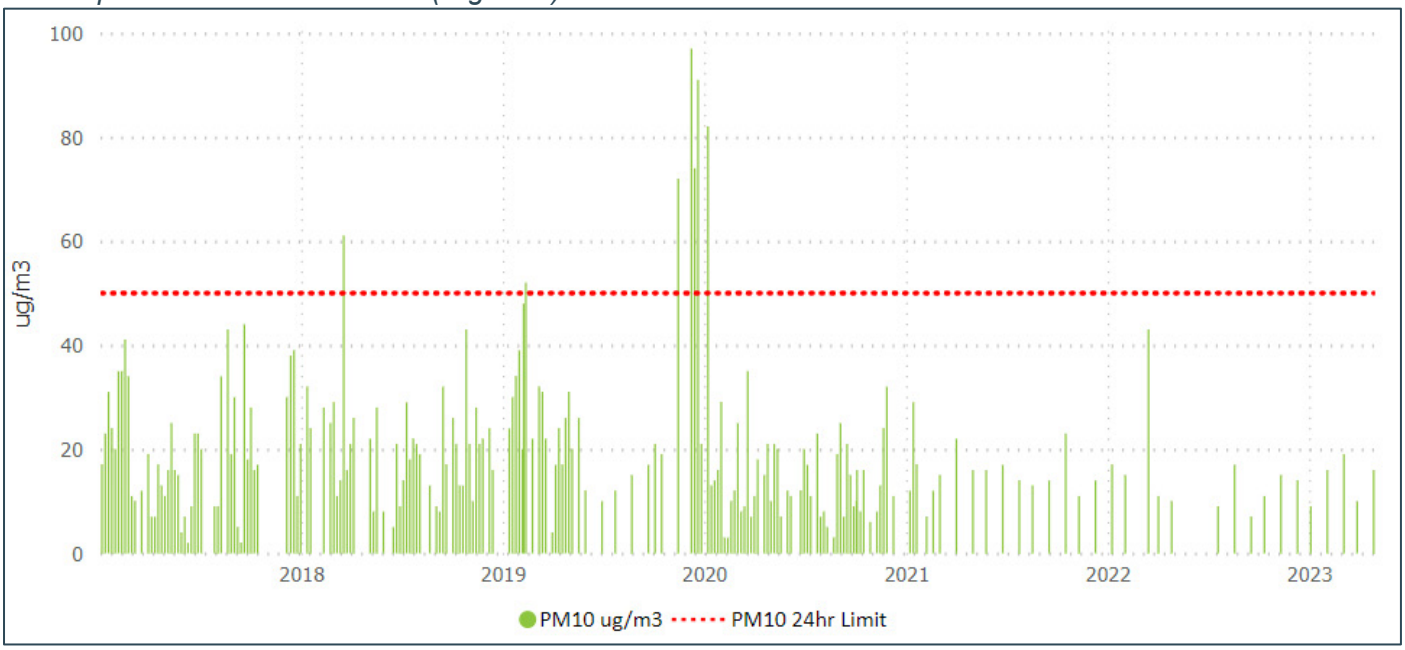
9.3.3.1 Particulate Matter

A High Volume Air Sampler with a PM_{10} inlet was installed on the site in December 2016. There were no exceedances of either the 24 hour or Annual Average Particulate Matter less than 10 microns (PM_{10}) criteria within the report period. Total Suspended Particulates (TSP) is calculated from the PM10 using the ratio described in the Air Quality Management Plan (AQMP) and trends are shown in the graphs below. This calculated result did not exceed the Annual Average limit for TSP in this report period. Particulate Matter is also measured in "real time" using a portable Dustrax instrument. This instrument gives an output every minute for PM Total, PM 2.5 and PM 10 and is monitored for compliance by the site environmental manager. A longer sampling period between May and August 2022 occurred due to heavy rainfall causing reduced site access.

Graph 2. Particulate Matter (High Vol) Annual Trends



Graph 3. Particulate Matter (High Vol) 24 hour trends

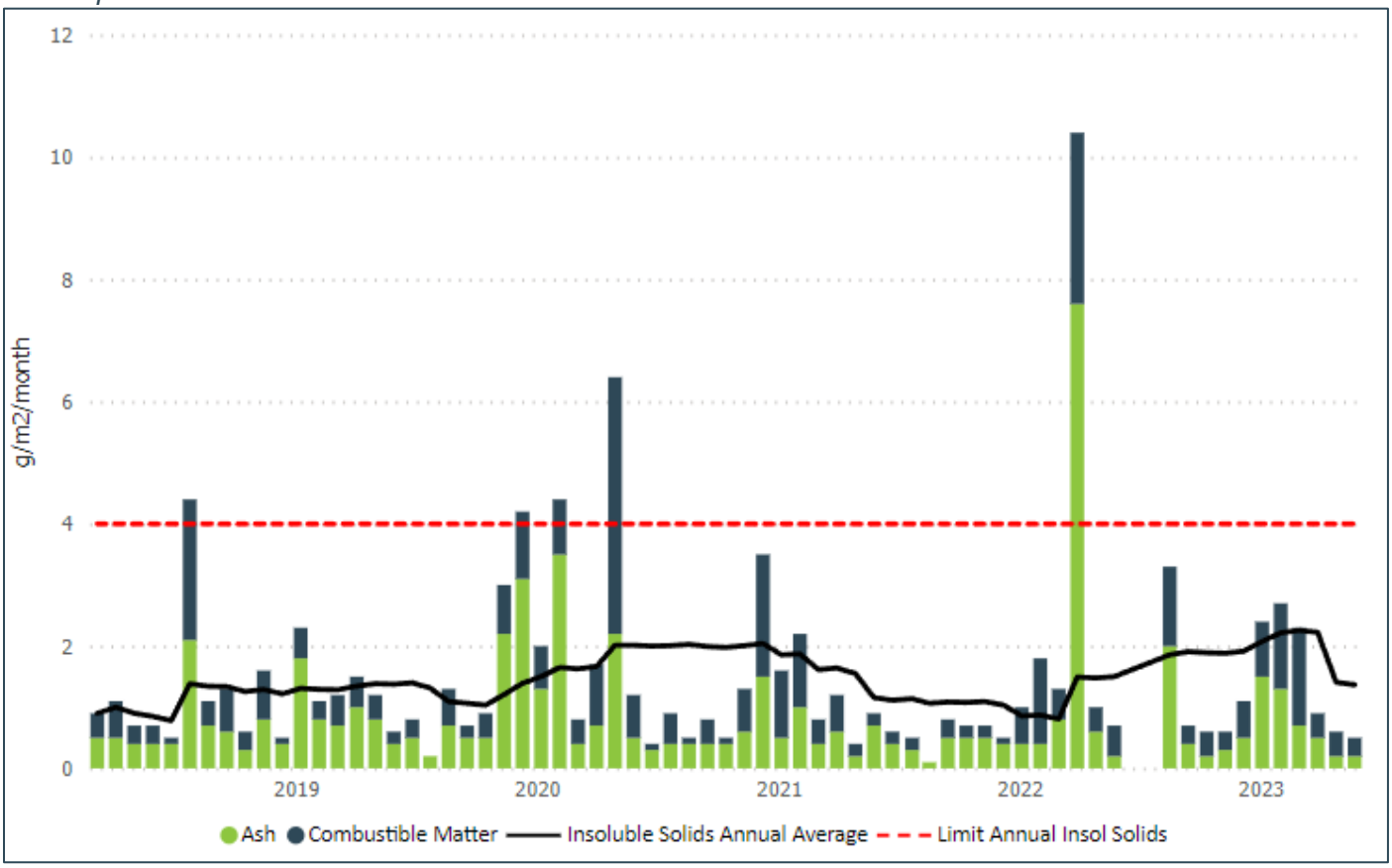


9.3.3.2 Depositional Dust Gauge Monitoring

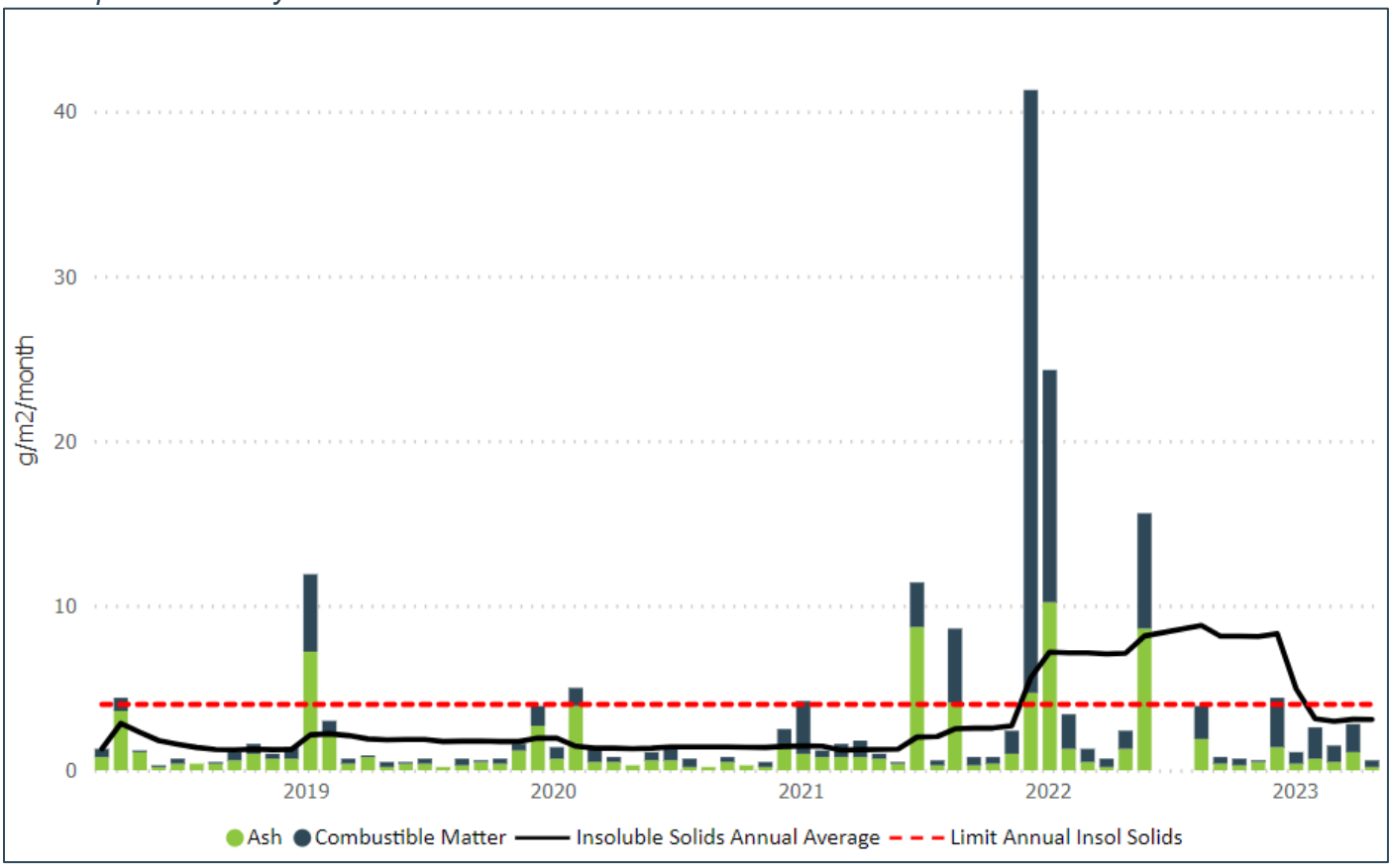
Air-borne dust is monitored using static depositional dust gauges. Results for five dust gauges (locations shown in Figure Two) up to May 2023 are included in Appendix F. Trends are shown on the following graphs and high results summarised in Table 14. Dust Gauge D5 West was installed February 2023 to address a complaint received from a resident on Lawson Road. The dust gauge located at D2 Hay Shed exceeded the Annual Average Limit from December 2021 due to high results in November and December 2021, and May 2022 but returned to below the limit in January 2023. None of the monthly high results are attributable to nuisance dust, but rather increased insect activity and are not attributable to the project and are therefore compliant. DPE were informed of the exceedance of and returning of annual average compliance in July 2023, see *Appendix I*. Landowners were not notified and the notification to DPE was outside of the 7 day prescribed timeframe resulting in non-compliances of Schedule 4 Condition 1 and Schedule 5 Condition 7 and Schedule 5 Condition 10.

A longer sampling period between May and August 2022 occurred due to heavy rainfall causing reduced site access. This contributed to a non-compliance of Schedule 3 Condition 10.

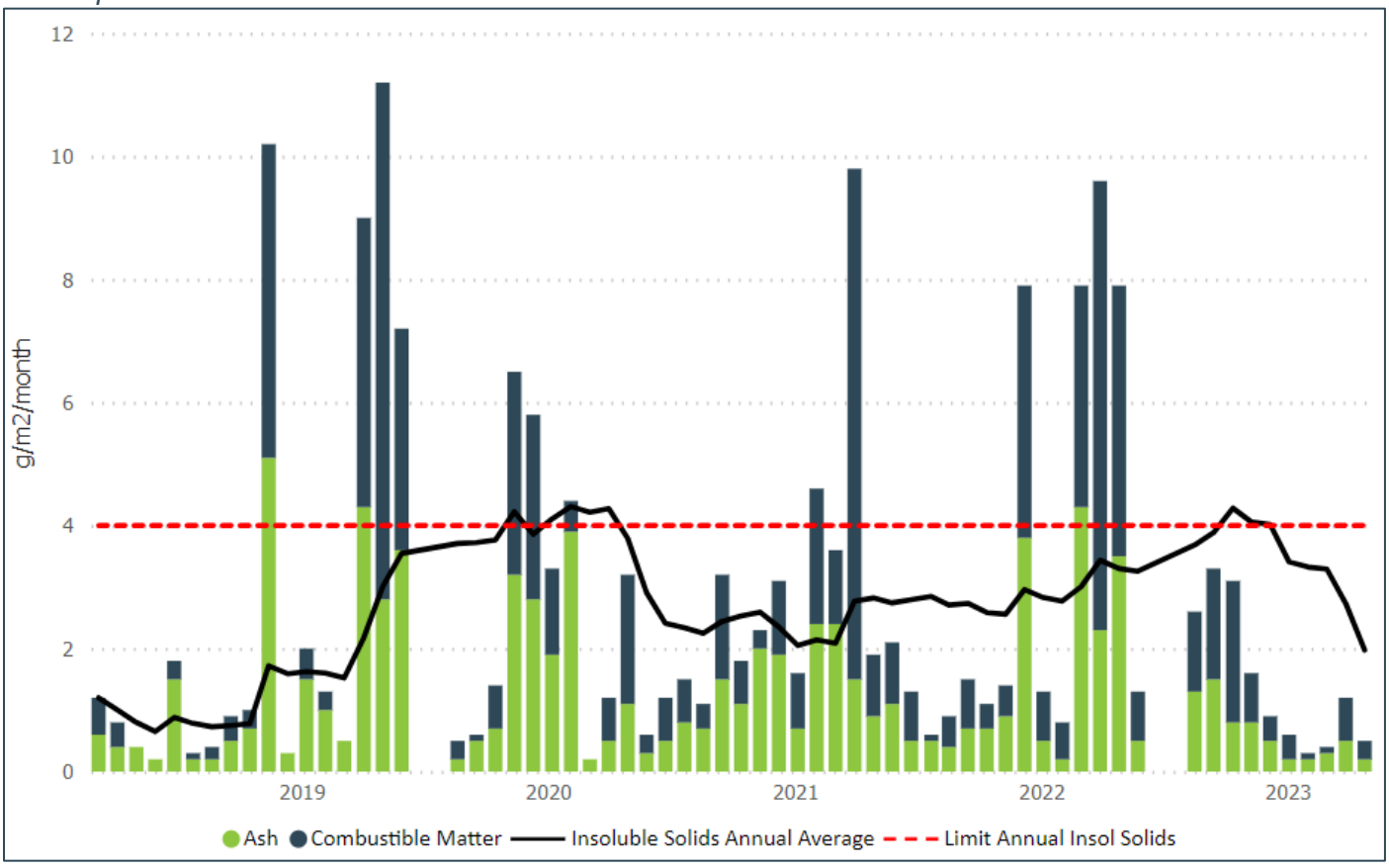
Graph 4. D1 Martin Rd Dust Trends



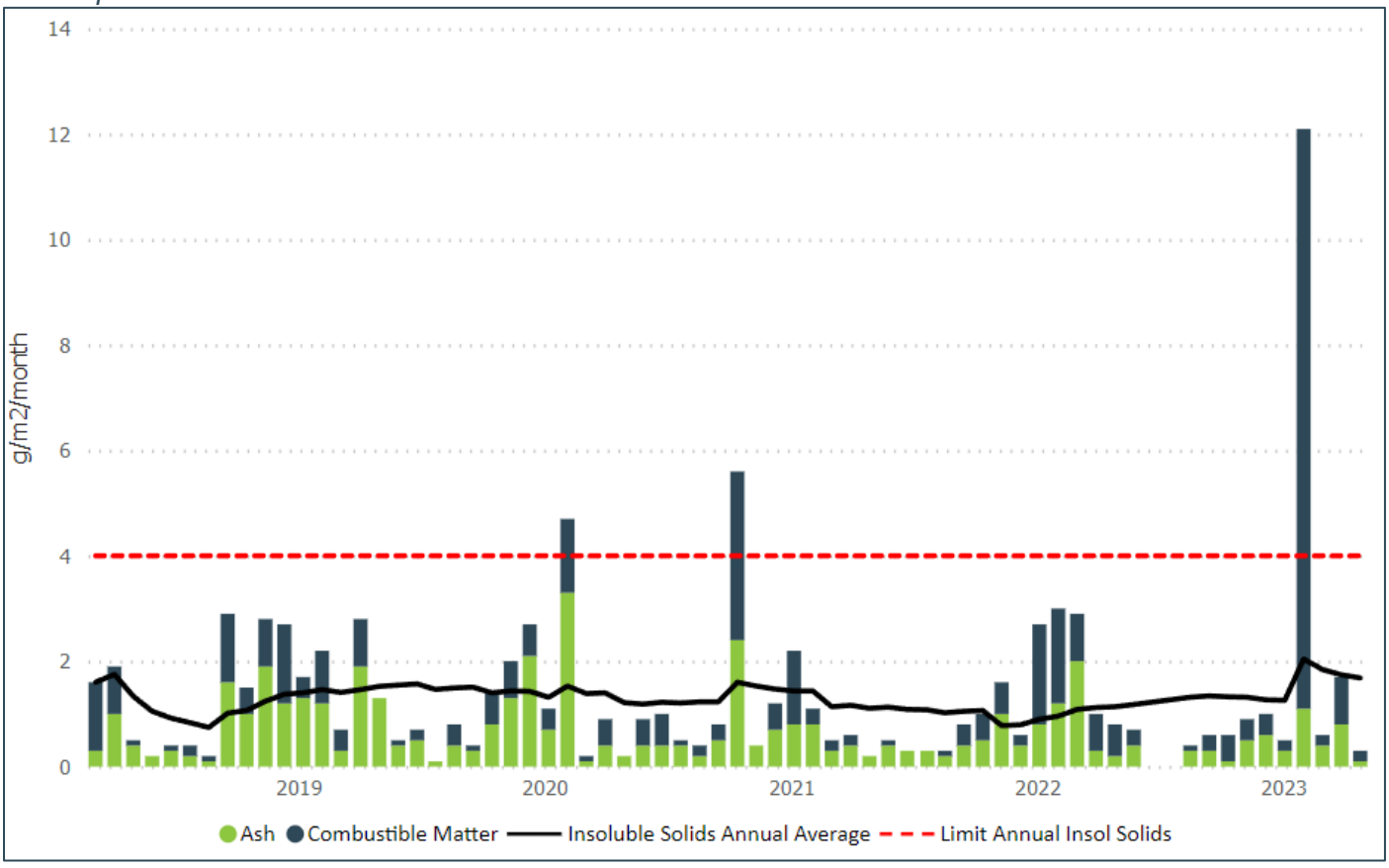
Graph 5. D2 Hay Shed Dust Trends



Graph 6. D3 Bundwall Dust Trends



Graph 7. D4 Old House



Graph 8. D5 West

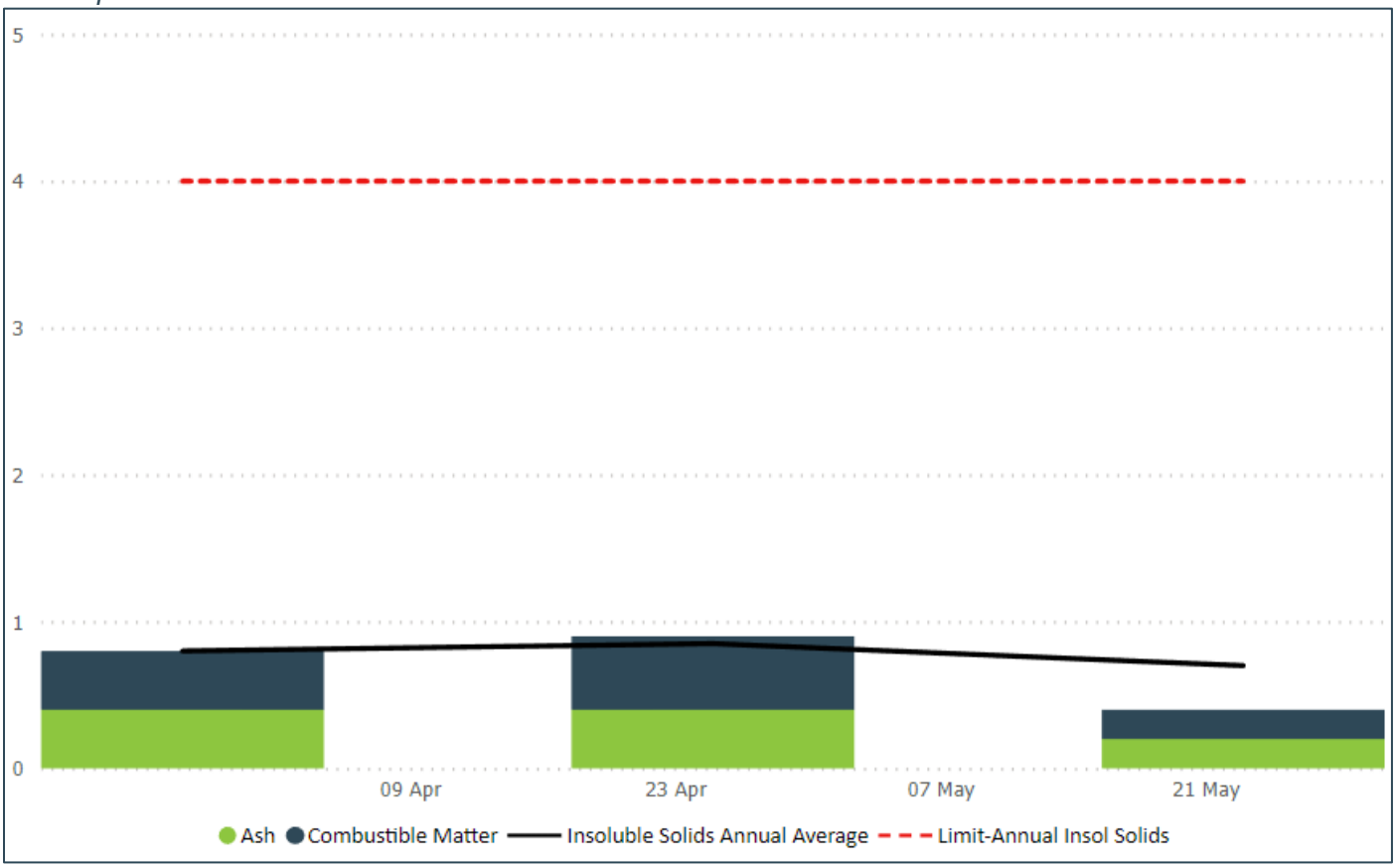


Table 14. Monthly Depositional Dust High Results

Date On	Date Sampled	Location	Insoluble Solids	Sampling Comments
Tuesday, 26 April 2022	Tuesday, 24 May 2022	D2 Hay Shed	15.60	Insects, vegetation, bird droppings, algae
Tuesday, 8 November 2022	Tuesday, 6 December 2022	D2 Hay Shed	4.40	Insects, minor algae
Tuesday, 3 January 2023	Tuesday, 31 January 2023	D4 Old House	12.10	Major insects

9.3.3.3 Stack Monitoring

Stack monitoring in accordance with EPL conditions was not undertaken as the building was demolished.

9.3.4 Effectiveness of Air Quality Management System

The D2 Hay Shed insoluble solids annual average of 8.79 g/m2/month is the only known exceedance of the air quality criteria in the report period but was not due to project (*Table 12 Table 14*) and the site has reduced to below air quality criteria in January 2023. The effectiveness of the air quality system is adequate for the activities undertaken in the report period.

9.4 SURFACE WATER

9.4.1 Performance Criteria and Predictions

9.4.1.1 EPL Criteria

The EPL requires discharge water to be monitoring continuously during discharge via inline instrumentation for Electrical Conductivity, pH and Turbidity, see *Table 15*. Dissolved Aluminium is required to be tested monthly if discharging.

Table 15. EPL Water Discharge Criteria

EPA ID	Type	Location Description	Pollutant	Limit
3	Discharge to waters and water quality monitoring	Outlet from Sediment Basin B as described in 'Water Pollution Impact Assessment for Discharge of Stormwater Runoff from Disturbed Areas at PGH Badgerys Creek (Version 2)', PGH Bricks, 04/02/2021	pH Turbidity Conductivity Diss Aluminium	6.5 – 8.5 50 NTU <0.055mg/L

9.4.1.2 Surface Water Management Plan Criteria

From the Surface Water Management Plan (SWMP), baseline criteria for assessment of performance of the Site with regard to the on-site water management system as well as potential off-site impacts on water quality and stream health are shown in Table 16. The off-site performance criteria and trigger values for water quality and stream health reflect the degraded environmental values in Badgerys Creek (AECOM, 2010). There were no specific water quality predictions made in the approval documents.

Table 16. Surface Water Trigger Levels and Performance Criteria

Aspect	Trigger Level	Performance Criteria
Water Management System		
Industrial Water Use	Trigger levels for industrial water use in accordance with brick plant process design (to be developed).	Industrial process water meets processing plant design requirements (to be developed).
Discharge	pH: 6.5 – 8.5 Turbidity: 50 NTU Electrical Conductivity: Reported only Dissolved Aluminium: 0.055mg/L	Discharged water meets EPL criteria.
Creeks and Other Water Bodies		
Water Quality in Creeks**	Total Phosphorus: 1.0mg/L Filterable reactive phosphate: 0.35mg/L Oxides of nitrogen: 0.18mg/L Ammonium: 0.48mg/L Dissolved Oxygen: 85 – 110 % saturation Total Nitrogen: 8.7mg/L pH: 6.5 – 8.0 Conductivity: 3,200µS/cm	No exceedance of the 95% confidence interval for baseline monitoring results for Badgerys Creek.
Stream Health	Visual baseline to be established in close vicinity to the following points: • Confluence of Badgerys Creek tributary and Badgerys Creek; • 100 m upstream of the confluence point of Badgerys Creek tributary and Badgerys Creek • 100 m downstream of the confluence point of Badgerys Creek tributary and Badgerys Creek Establish transect for assessment of changes to channel morphology, including geo-referenced photo point monitoring at each of the three above points Condition assessment of riparian vegetation to establish baseline photo point monitoring at each of the three above points	No significant variation from baseline identified in biannual spring and no significant observed variation from baseline vegetation condition identified in biannual spring and autumn monitoring

*Note: Values are extracted from ANZECC (2000) default trigger values for slightly disturbed ecosystems in South-East Australia.)

** Value derived from baseline monitoring data for the 95% confidence interval for expected conductivity results (see the SWMP for details).

9.4.2 Monitoring Results

9.4.2.1 Discharges

There have been several discharges during the report period, with the inline monitor recording Electrical Conductivity, pH and Turbidity continuously during discharge. Results supplied are given below.

Table 17. Dissolved Aluminium in Discharge Samples

Date Sampled	Sample ID	Aluminium Dissolved mg/L
23/05/2023	Discharge Point	<0.05
17/01/2023	W1	0.09

9.4.2.2 Water Extracted

Schedule 2 Condition 17A requires that all water extracted from the site either direct or indirect must be reported in the Annual Review. Procedures for monitoring on volumes transferred off-site are required to be included in the Annual Review under Schedule 3 Condition 23B.

The site reports that 595,378 KL of water was transferred to the Western Sydney Airport under the Enforceable Undertaking. No water has been extracted or taken under the water licence (Appendix D), and all discharges have occurred in accordance with the EPL.

9.4.2.3 Creek Monitoring

Badgerys and South Creeks have been monitored to assist with baseline values. There have been two discharges to the creeks. Results are given in the tables and graphs below.

Graph 9. Badgerys Creek Monitoring Trends – Physical Attributes

Graph 10. Badgerys Creek Monitoring Trends – Nutrients

Table 18. Creek Water Results

Creek Water Summary for Report Period

5/05/2022 4/05/2023

Units are mg/L except where noted

Sample Description	No of Samples	Min of pH	Average of pH	Max of pH	Min of Electrical Conductivity uS/cm	Average of Electrical Conductivity uS/cm	Max of Electrical Conductivity uS/cm	Min of Dissolved Oxygen	Average of Dissolved Oxygen	Max of Dissolved Oxygen
South Creek Upstream	10	7.2	7.4	7.6	681	1,415	2,400	4.7	7.4	9.8
South Creek Downstream	10	7.2	7.4	7.6	676	1,375	2,290	4.0	7.0	10.2
Badgerys Creek Upstream	10	7.2	7.5	8.2	319	1,525	2,500	4.3	8.2	14.5
Badgerys Creek Downstream	10	7.2	7.4	7.6	329	1,477	2,410	3.4	6.7	11.9
Badgerys Creek Confluence	10	7.1	7.5	8.2	318	1,501	2,440	3.8	7.5	14.2

Sample Description	No of Samples	Min of NOx as N	Average of NOx as N	Max of NOx as N	Min of Ammonia as N	Average of Ammonia as N	Max of Ammonia as N	Min of Total Nitrogen	Average of Total Nitrogen	Max of Total Nitrogen
South Creek Upstream	10	0.400	1.629	4.200	0.00	0.04	0.19	0.7	2.2	4.7
South Creek Downstream	10	0.060	1.001	3.000	0.00	0.09	0.36	0.7	1.7	5.0
Badgerys Creek Upstream	10	0.000	0.078	0.530	0.00	0.03	0.19	0.2	0.7	1.8
Badgerys Creek Downstream	10	0.000	0.058	0.300	0.00	0.07	0.31	0.3	0.6	1.3
Badgerys Creek Confluence	10	0.000	0.055	0.300	0.00	0.04	0.21	0.2	0.6	1.7

Sample Description	No of Samples	Min of Total Phosphorus	Average of Total Phosphorus	Max of Total Phosphorus
South Creek Upstream	10	0.20	0.31	0.61
South Creek Downstream	10	0.10	0.24	0.63
Badgerys Creek Upstream	10	0.08	0.14	0.30
Badgerys Creek Downstream	10	0.06	0.10	0.20
Badgerys Creek Confluence	10	0.06	0.14	0.30

9.5 GROUNDWATER

9.5.1 Performance Criteria

9.5.1.1 Groundwater Levels

The proponent will not extract any extractive materials or carry out any work in the extraction area below 35 m below the pre-existing natural surface of the ground, other than construction of approved bores or in-pit sumps. The depth of extraction will be confirmed annually via survey.

A total of 12 standpipe piezometers are monitored to augment baseline data.

9.5.1.2 Groundwater Quality

Groundwater quality testing and criteria was informed by the Alluvial Aquifer Assessment and was approved as an Appendix in the SWMP. It includes testing of groundwater monitoring bores, in-pit collected waters, and surface creek waters so that collected sources can be estimated. Parameters currently being monitored to augment baseline data include:

- pH, EC and total dissolved solids (TDS);
- Major cations and anions; and
- Dissolved metals (Aluminium, Arsenic, Chromium, Copper, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Zinc, Boron, Iron).

9.5.2 Predictions

9.5.2.1 Groundwater Inflow and Dewatering of Aquifers

The draft Alluvial Aquifer Assessment (Groundwater Exploration Services January 2019) predicted that;

> *'Combined temporal seepage into the various separate pit excavations from the prediction model are shown in Figure 4-15. The punctuated nature of increases in seepage rates is partly a function of the drain implementation and the time stepping used within the model. However, it is anticipated that short term increases in seepage rates would occur as new excavation areas are opened. Predicted rates indicate the inflows increase slightly from current static inflow rates into Pit 1 and peaking at approximately 31 ML/yr in Year 16 as multiple excavations are open. A gradual decline following Year 16 to approximately 9 ML/year at the completion of mining activities on site. The decline reflects the progressive backfilling of completed pits and the associated recovery that occurs. Inflows continue to decline following project completion until static conditions prevail at approximately 7 ML/yr similar to the current modelled conditions associated with Pit 1.'*

Graph 11. Predicted Groundwater Inflows
(Figure 4-15 of draft Alluvial Aquifer Assessment)

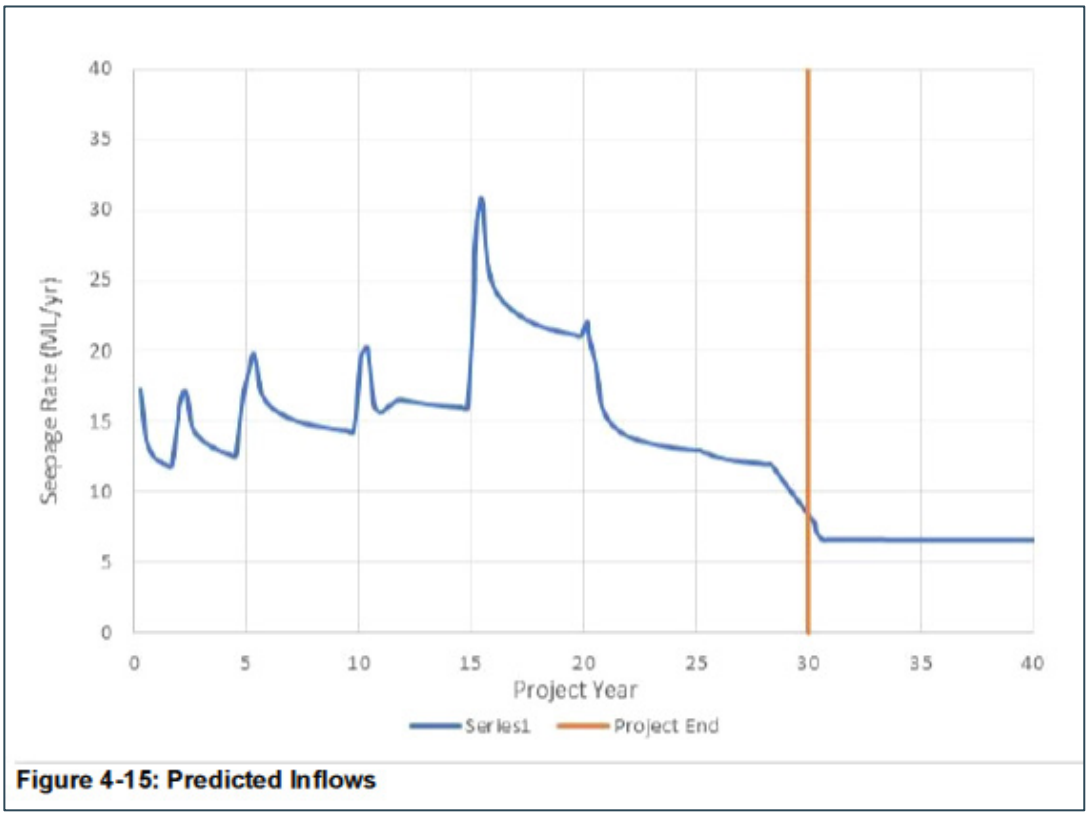


Figure 4-15: Predicted Inflows

9.5.2.2 Groundwater Levels

There were no specific predictions regarding the groundwater levels in the EIS.

The draft Alluvial Aquifer Assessment predicts that the extent of impact on groundwater level will have a very small footprint surrounding the open excavations with a steep drawdown cone surrounding each one. This will insulate potential impacts on either Badgerys Creek or South Creek, or any alluvium associated with either of these creek systems.

9.5.2.3 Groundwater Quality

The EIS states there is the potential for spills and contamination by metals and hydrocarbons from the machinery, waste disposal, waste oil used in maintenance of equipment and fuel storage areas; however adequate prevention measures should prevent contamination of the groundwater system.

Groundwater Quality monitoring will continue to be undertaken and will be compared to performance criteria once established.

9.5.2.4 Impact of Groundwater Dependant Ecosystems

Dewatering of the alluvial sediments has the potential to result in impacts to base flows and groundwater dependant ecosystems (if present).

The draft Alluvial Aquifer Assessment predicts that overall, the proposal will have a very limited impact on baseflow to local creeks. This is primarily due to limited impact on surficial soils and the influence of low hydraulic conductivities on the groundwater system.

9.5.2.5 Existing Groundwater Users

The draft Alluvial Aquifer Assessment states the closest registered bore not associated with the Project Site is located more than 1km to the north. As impacts are predicted to largely be contained with the project boundaries, no impact to other users is anticipated.

9.5.3 Monitoring Results

The SWMP stated quarterly monitored would occur, however biannual monitoring is being undertaken. This has resulted in a non-compliance of Schedule 3, Condition 23. The SWMP will be updated to reflect biannual reporting in the future. The most recent bi-annual Groundwater Monitoring report available is included in Appendix F.

9.6 WASTE MANAGEMENT

Condition 39 of schedule 3 requires that waste management and minimisation is reported in the Annual Review. All site contractors remove any rubbish when they leave. There has been no waste received on the site for storage, treatment, processing, reprocessing or disposal.

10 Activities Proposed in the Next ARR Period

10.1 OPERATIONAL ACTIVITIES

Activities proposed for the next reporting period will include dewatering of Pit 3 and rehabilitation commencement:

- Rehabilitation works to commence in late 2023;
- Stockpiles containing materials not suitable for brickmaking will be placed within existing Pit 3;
- Importation to commence in 2024;
- Dewater Pit 2 and 3, and commence filling of Pit 3;
- Upgrade intersection at Martin Rd and Elizabeth Rd.

10.2 IMPROVEMENTS TO ENVIRONMENTAL PERFORMANCE

All management plans have been updated and submitted for DPE approval to encompass all proposed activities in the next reporting period. The operators are undertaking an audit of the site to outline any improvements required and will continue to monitor performance against the current approved management plans.

11 References

Element Environment. (March 2019). *Badgerys Creek Modification 3 Environmental Assessment.*

Element Environment. (March 2019). *CSR Advanced Manufacturing Hub Modification 4 Environmental Assessment.*

Todoroski Air Sciences. (Feb 2019). *Air Quality Impact Assessment for Badgerys Ck Modification 3.*

VGT Environmental Compliance Solutions Pty Ltd. (2022). *Annual Exploration Report.*

VGT Environmental Compliance Solutions Pty Ltd. (August 2018). *Mining Operations Plan for Badgerys Creek Clay Mine ML1771.*

Appendix A
Consent Conditions

CONSOLIDATED CONSENT

Project Approval

Section 75J of the *Environmental Planning & Assessment Act 1979*

As delegate of the Minister for Planning and Infrastructure, I approve the project application referred to in Schedule 1, subject to the conditions in Schedules 2 to 5.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

Richard Pearson
Deputy Director-General, Development Assessment and Systems Performance

Sydney 2011

SCHEDULE 1

Application Number:	10_0014
Applicant:	CSR Building Products Limited
Approval Authority:	Minister for Planning and Infrastructure
Land:	See Appendix 1
Development:	Badgerys Creek Quarry and Brick Making Project

Navy text shows Modification 2 May 2018
Green Type shows Modification 3 and 4 August 2020
Red Type shows Modification 5 January 2022

TABLE OF CONTENTS

DEFINITIONS

Aboriginal object or place	Have the same meaning as the definitions of the terms in section 5 of the NP&W Act
Annual Review	The review required by condition 12 of Schedule 5
Applicant	CSR Building Products Limited (or its successors) or any person carrying out any development to which this consent applies
BCA	Building Code of Australia
BCD	Biodiversity and Conservation Division within the Department
Brickmaking Activities	The manufacturing, storage and sale of brick products, and associated operation of the innovation centre and laboratory described in EA (Mod 3 and 4)
Calendar year	A period of 12 months from 1 January to 31 December
CCC	Community Consultative Committee
Conditions of this consent	Conditions contained in Schedules 2 to 5 (inclusive) of this document
Construction Activities	All physical works to enable mining operations to be carried out, including demolition and removal of buildings or works, and erection of buildings and other infrastructure permitted by this consent
Council	Liverpool City Council
Day	The period from 7 am to 6 pm on Monday to Saturday, and 8 am to 6 pm on Sundays and Public Holidays
Department	NSW Department of Planning and Environment
Demolition	The deconstruction and removal of buildings, sheds and other structures on the site
Development	The development described in the documents listed in condition 3 of Schedule 2 and includes Quarrying Operations, Brickmaking Activities and rehabilitation activities
Development layout	The plans in Appendix 3 of this consent
Dewatering	Removal of accumulated water from Pits 2 and 3 into Pit 1, and removal of water accumulated in Pit 1
DPIE Water	Water Group within the Department
EA	Environmental Assessment titled *Boral Badgerys Creek Continued Operation of Quarry and Brick Making Facility* (Volumes 1 – 3), prepared by AECOM and dated November 2010, and associated Response to Submissions titled *Boral Badgerys Creek Continued Operation of Quarry and Brick Making Facility – Submissions* Report, prepared by AECOM and dated June 2011
EA (Mod 1)	Environmental Assessment titled *Boral Badgerys Creek Quarry and Brick Making Project, Application Number: 10_0014*, prepared by Boral Property Group and dated 5 November 2012
EA (Mod 2)	Environmental Assessment titled *Badgerys Creek Brick Making Facility Modification 2 Environmental Assessment* prepared by Element Environment and dated November 2017, the associated the Response to Submissions prepared by Element Environment and dated February 2018, and additional information provided by Element Environment dated 8 March 2018
EA (Mod 3 and 4)	Environmental Assessment titled *CSR Advanced manufacturing hub – Modification 3 Environmental Assessment* prepared by Element Environment and dated March 2019, Environmental Assessment titled *CSR Advanced manufacturing hub – Modification 4 Environmental Assessment* prepared by Element Environment and dated March 2019, the associated Response to Submissions Reports prepared by Element Environment and dated October 2019, and additional information provided by CSR Limited and dated 5 May 2020
Eastern Airport Ring Road	Transport corridor associated with development of the WSA and depicted in the *draft Western Sydney Aerotropolis Plan* (or later version)
ENM	Excavated Natural Material, as defined in the EPA's resource recovery orders (ENM Order) and exemptions (ENM Exemption) under clauses 91, 92, and 93 of the Waste Regulation
ENM Exemption	'The excavated natural material exemption 2014' under clauses 91 and 92 of Waste Regulation
ENM Order	'The excavated natural material order 2014' under clause 93 of the Waste Regulation
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPL	Environment Protection Licence under the POEO Act
Evening	The period from 6 pm to 10 pm
Fill	VENM and/or ENM
Finished Building Products	Building products prepared or manufactured on site and off site, as described in EA (Mod 3 and 4) and EA (Mod 2), respectively.

Heritage NSW	Heritage NSW within the Department of Premier and Cabinet
Incident	An occurrence or set of circumstances that: • causes or threatens to cause material harm to the environment; and/or • breaches or exceeds the limits or performance measures/criteria in this consent
Laden trucks	Trucks transporting bricks, quarry products or finished building products to or from the site
Land	Has the same meaning as the definition of the term in section 4 of the EP&A Act, except where the term is used in the noise and air quality conditions in Schedules 3 and 4 of this consent, where it is defined as the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this consent
m	Metres
Martin Road – Elizabeth Road Intersection Upgrade	The upgrade of the Martin Road – Elizabeth Drive Intersection to a standard required by Condition 25A of Schedule 3
Material harm	Is unauthorised harm that: • involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or • results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment)
MEG	Regional NSW – Mining, Exploration & Geoscience
Minimise	Implement all reasonable and feasible mitigation measures to reduce the impacts of the development
Minister	Minister for Planning, or delegate
Mitigation	Activities associated with reducing the impacts of the development prior to or during those impacts occurring
Modification 3 and 4	The modifications to the development, as described in EA (Mod 3 and 4)
Modification Report (Mod 5)	The Modification Report titled *Badgerys Creek Quarry and Brick Making Project | Modification 5* prepared by Element Environment dated October 2021 and further response prepared by CSR Building Products Limited dated December 2021
Morning Shoulder Period	The period from 5 am to 7 am Monday to Saturday
Night	The period from 10 pm to 7 am on Monday to Saturday, and 10 pm to 8 am on Sundays and Public Holidays
NP&W Act	*National Parks and Wildlife Act 1974*
NRAR	NSW Natural Resources Access Regulator
Phase 1	The initial phase of development associated with Modification 3 and 4, that comprises: • construction activities; • brickmaking activities; • dewatering of Pits 1, 2 and 3; • quarrying activities in Pit 3. • Fill import for quarry rehabilitation activities and preferential backfilling of Pits 1, 2 and 3.
Phase 2	The phase of the development associated with Modification 3 and 4 that commences from the date of completion of backfilling of Pits 1 and 2 and comprises: • construction activities; • brickmaking activities; • quarrying activities in Pit 3; • Fill import for quarry rehabilitation activities and progressive backfilling of Pit 3.
Phase 3	The phase of the development associated with Modification 3 and 4 that commences from the date of completion of extraction activities in Pit 3 and comprises: • brickmaking activities; • Fill import for quarry rehabilitation activities and backfilling of Pit 3.
Phase 4	The phase of development associated with Modification 3 and 4 that commences from the date of completion Fill import to site and the backfilling of Pit 3, and comprises: • brickmaking activities; and • residual rehabilitation activities (excluding Fill import).
PMF	Probable Maximum Flood event
POEO Act	*Protection of the Environment Operations Act 1997*
Privately-owned land	Land that is not owned by a public agency or a mining, petroleum or extractive industry company (or its subsidiary)

Public infrastructure	Linear and other infrastructure that provides services to the general public, such as roads, railways, water supply, drainage, sewerage, gas supply, electricity, telephone, telecommunications, etc.
Quarrying operations	The extraction, processing, stockpiling and transportation of extractive materials carried out on the site and the associated removal and/or emplacement of vegetation, topsoil and overburden
Quarry products	Includes all saleable quarry products, including raw materials, but excludes bricks, tailings, other wastes and rehabilitation material for use on the site
Quarry water	Water that accumulates within active quarrying areas, overburden emplacement areas and infrastructure areas, synonymous with dirty water
Raw materials	Extractive materials used in making brick, tiles, clay pipes or similar
Registered Aboriginal Parties	As described in the *National Parks and Wildlife Regulation 2009*
Rehabilitation	The restoration of land disturbed by the development to a good condition, to ensure it is safe, stable and non-polluting
Reasonable	Means applying judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Resources Regulator	NSW Resources Regulator within the Department of Regional NSW
Secretary	Planning Secretary under the EP&A Act, or nominee
Site	The land defined in Appendix 1
Statement of Commitments	The Applicant's commitments in Appendix 6
TfNSW	Transport for New South Wales
VENM	Virgin Excavated Natural Material, as defined in clause 50 of Schedule 1 of the POEO Act
Waste	Has the same meaning as defined in the Dictionary to the POEO Act
Waste Regulation	*Protection of the Environment (Waste) Regulation 2014*
WSA	Western Sydney Airport

SCHEDULE 2
ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

1. In addition to meeting the specific performance measures and criteria established under this consent, the Applicant must implement all reasonable and feasible measures to prevent, and if prevention is not reasonable and feasible, minimise, any material harm to the environment that may result from the construction and operation of the development, and any rehabilitation required under this consent.

TERMS OF CONSENT

2. The Applicant, in acting on this consent, must carry out the development:
   (a) in compliance with the conditions of this consent;
   (b) in accordance with all written directions of the Secretary; and
   (c) in accordance with the development layout.

3. The Applicant, in acting on this consent, must carry out the development:
   (a) generally in accordance with the EA;
   (b) generally in accordance with EA (Mod 1);
   (c) generally in accordance with EA (Mod 2);
   (d) generally in accordance with EA (Mod 3 and 4);
   (e) generally in accordance with Modification Report (Mod 5); and
   (f) generally in accordance with the Statement of Commitments.

4. The conditions of this consent and directions of the Secretary prevail to the extent of any inconsistency, ambiguity or conflict between them and a document referenced in condition 3 of this Schedule. In the event of an inconsistency, ambiguity or conflict between any of the documents referenced in condition 3 of this Schedule, the most recent document prevails.

   Note: For the purposes of this condition, there will be an inconsistency between documents if it is not possible to comply with both documents, or in the case of a condition of consent or direction of the Secretary, and a document, if it is not possible to comply with both the condition or direction, and the document.

5. Consistent with the requirements of this consent, the Secretary may make written directions to the Applicant in relation to:
   (a) the content of any strategy, study, system, plan, program, review, audit, notification, report or correspondence submitted under or otherwise made in relation to this consent, including those that are required to be, and have been, approved by the Secretary; and
   (b) the implementation of any actions or measures contained in any such document referred to in (a) above.

   Note: For the purposes of this condition, there will be an inconsistency between documents if it is not possible to comply with both documents, or in the case of a condition of consent or direction of the Secretary, and a document, if it is not possible to comply with both the condition or direction, and the document.

STAGED DEVELOPMENT

5A. The development as modified by EA Mod 3 and 4, must be undertaken sequentially in the following stages:
   (a) Phase 1;
   (b) Phase 2;
   (c) Phase 3; and
   (d) Phase 4.

   Note: Each of these phases is listed in the definitions and shown in Appendix 3.

5B. The Applicant must notify the Department in writing, at least two weeks before the date of:
   (a) the commencement of each Phase of the development;
   (b) the completion of extraction in Pit 3;
   (c) cessation of Brickmaking Activities; and
   (d) decommissioning.

COMPLIANCE

6. The Applicant must ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this consent relevant to activities they carry out in respect of the development.

APPLICABILITY OF GUIDELINES

7. References in the conditions of this consent to any guideline, protocol, Australian Standard or policy are to such guidelines, protocols, standards or policies in the form they are in as at the date of this consent.

However, consistent with the conditions of this consent and without altering any limits or criteria in this consent, the Secretary may, when issuing directions under this consent in respect of ongoing monitoring and management obligations, require compliance with an updated or revised version of such a guideline, protocol, standard or policy, or a replacement of them.

LIMITS OF CONSENT

8. The Applicant may carry out quarrying operations on the site until 27 September 2031.

Note: Under this consent, the Applicant is required to decommission and rehabilitate the site and carry out additional requirements. Consequently, this consent will continue to apply in all respects other than to permit the carrying the development, until the rehabilitation of the site and those requirements and undertakings have been carried out to the required standard.

9. (*Deleted*).

9A. The Applicant may receive, store, and dispatch finished building products at the site until brick making at the site commences.

10. The Applicant must not exceed the limits in Table 1 during any calendar year.

Table 1: Limits on extraction, production, receival and dispatch volumes per calendar year

Activity	Development Phase	Total Volume (tonnes per calendar year)
Extraction from Pit 3	Phase 1 and 2	420,000
Receive raw materials for brickmaking	Phase 1 and 2	215,000
	Phase 3 onwards	360,000
Dispatch raw materials	Phase 1,2 and 3	275,000
Brick production	All Phases	300,000
Dispatch finished building products	All Phases	330,000

Note: The Total Volume limits in Table 1 do not apply to the import of Fill for the purpose of backfilling voids. The import of Fill is separately managed under the restrictions on truck movements contained in Conditions 12, of this Schedule.

11. The Applicant must not transport bricks or quarry products to or from the site, other than by road.

12. The Applicant must not exceed the total truck movements detailed in Table 2.

Table 2: Total Truck Movements

Transport Route Stage	Development Phases	Day	Total truck movements[a]
Prior to the upgrade of the Martin Road-Elizabeth Drive Intersection	1,2 and 3	Monday to Friday	120
		Saturday	40
		Sundays	40
Following completion of the Martin Road-Elizabeth Drive Intersection upgrade	1,2 and 3	Monday to Friday	800
		Saturday	358
		Sundays	200
	4	Monday to Friday	366
		Saturday	98
		Sunday	0

[a] *Note: each truck entering or exiting the site is counted as a separate movement*.

12A. Truck movements entering or exiting the site on Sundays are restricted to the importation of Fill for the purpose of backfilling quarry pits and rehabilitation activities.

Note: Truck movements are also controlled, further restricted by the limits in condition 10 of this Schedule and operating hours in condition 1 of Schedule 3.

STRUCTURAL ADEQUACY

13. All new buildings and structures, and any alterations or additions to existing buildings and structures, that are part of the development, must be constructed in accordance with the BCA.

Notes:

- *Under Part 6 of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for any proposed building works;*
- *Part 8 of the EP&A Regulation sets out the requirements for the certification of the development*
- *A detailed stormwater drainage design, prepared by a qualified practicing civil engineer, is to be submitted to Council prior to the issue of a construction certificate.*

BRICK KILN STACKS

13A. The brick kiln stacks must not exceed 41 m above natural ground level.

DEMOLITION

14. All demolition work must be carried out in accordance with the *Australian Standard AS 2601-2001: The Demolition of Structures* (Standards Australia, 2001).

PROTECTION OF PUBLIC INFRASTRUCTURE

15. Unless the Applicant and the applicable authority agree otherwise the Applicant must:
    (a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the development; and
    (b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development.

Note: This condition does not apply to damage to roads caused as a result of general road usage or otherwise addressed by contributions required by condition 25 of Schedule 3.

OPERATION OF PLANT AND EQUIPMENT

16. All plant and equipment used on the site, or to monitor the performance of the development, must be:
    (a) maintained in a proper and efficient condition; and
    (b) operated in a proper and efficient manner.

16A. The external walls of all buildings including additions to existing buildings must comply with the relevant requirements of the BCA. Before the issue of a Construction Certificate and an Occupation Certificate, the Applicant must provide the Certifying Authority with documented evidence that the products and systems proposed for use or used in the construction of external walls, including finishes and claddings such as synthetic or aluminium composite panels, comply with the requirements of the BCA. The Applicant must provide a copy of the documentation given to the Certifying Authority to the Secretary within seven days after the Certifying Authority accepts it.

PRODUCTION DATA

17. The Applicant must:
    (a) provide calendar year annual quarry production data to MEG using the standard form for that purpose; and
    (b) include a copy of this data in the Annual Review.

LIMITS OF EXTRACTION

Identification of Approved Extraction Limits

18. Within 3 months of the determination of Modification 3 and 4, the Applicant must:
    (a) engage a registered surveyor to mark out the boundary of the approved area of extraction within Pit 3; and
    (b) provide the Secretary with a survey plan of the boundary.

The boundary of the approved area of extraction within Pit 3 must be clearly marked in a manner that allows them to be easily identified at all times during the carrying out of quarrying operations.

Maximum Extraction Depth

19. The Applicant must not extract any extractive materials or carry out any work in the extraction area below 35 m below the pre-existing natural surface of the ground, other than construction of bores approved by DPIE Water or in-pit sumps approved by the Secretary.

SCHEDULE 3
ENVIRONMENTAL PERFORMANCE CONDITIONS

NOISE

Hours of Operation

1. The Applicant must comply with the operating hours set out in Table 1.

Table 1: Operating hours

Activity	*Permissible Hours*
Quarrying operations (excluding truck arrival, loading and dispatch)	7.00 am to 6.00 pm Monday to Saturday
	At no time on Sundays or public holidays
Brickmaking Activities	24 hours per day, 7 days per week
Truck arrival and dispatch (raw materials only)	6.00 am to 10.00 pm Monday to Friday
	6.00 am to 6.00 pm Saturday
	At no time on Sundays or public holidays
Truck arrival and dispatch (finished building products only)	5.00 am to 10.00 pm Monday to Friday
	6.00 am to 6.00 pm Saturday
	At no time on Sundays or public holidays
Truck arrival and dispatch (Fill import only)	7.00 am to 6.00 pm Monday to Saturday
	9.00 am to 6.00 pm Sunday
	At no time on public holidays
Cash sales	6.00 am to 6.00 pm Monday to Saturday
	At no time on Sundays or public holidays
Sales selection/Customer Display Centre	8.00 am to 5.00 pm Monday to Sunday
Maintenance	At any time, provided that these activities are not audible at any privately-owned residence outside of permissible hours for quarrying operations

1A. With the written agreement of the Secretary, the Applicant may undertake limited campaign trucking (within the limits imposed under conditions 10 and 12 of Schedule 2) for the import of Fill outside of the operating hours prescribed in condition 1 of this Schedule.

2. The following activities may be carried out outside the hours specified in condition 1 of this Schedule:
   (a) activities that are inaudible at residences on privately-owned land;
   (b) the delivery or dispatch of materials as requested by the NSW Police Force or other public authorities for safety reasons; or
   (c) emergency work to avoid the loss of life, property or to prevent material harm to the environment.

   In such circumstances, the Applicant must notify the Department and affected residents prior to undertaking the activities, or as soon as is practical thereafter.

Construction Noise

3. Approved construction works must only be undertaken during standard construction hours (7 am to 6 pm, Monday to Friday and 8 am to 1 pm on Saturdays), unless the Secretary agrees otherwise.

4. *(Deleted).*

Operational Noise Criteria

5. The Applicant must ensure that operational noise generated by the development (including construction activities) does not exceed the criteria in Table 2 at any residence on privately-owned land.

Table 2: Operational noise criteria dB(A)

Receiver ID	Morning Shoulder	Day	Evening	Night	
	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	L_{AFmax}
R9, R25, R35	43	45	40	38	52
R5, R26, R27, R28, R29, R30, R31, R32, R34, R42, R43, R44, R45, R46	42	42	41	38	52
R11, R12, R13, R14, R15	43	43	43	38	52
All other residences	-	40	35	35	52

Noise generated by the development must be monitored and measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the *NSW Noise Policy for Industry (NSW EPA 2017)*.

However, the noise criteria in Table 2 do not apply if the Applicant has an agreement with the relevant landowner to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Note: Should an agreement with a landowner be terminated for any reason, the Applicant must comply with the noise criteria in Table 2.

Road Traffic Noise Criteria

6. The Applicant must ensure that the road traffic noise generated by the development does not exceed the criteria in Table 3 at any privately-owned residence.

Table 3: Road traffic noise criteria dB(A)

Road Noise Receiver ID	Day / Evening $L_{Aeq\ (1\ hour)}$	Night $L_{Aeq\ (1\ hour)}$
Prior to Martin Road – Elizabeth Road Intersection Upgrade		
Residents on Martin Road	60	55
Following Martin Road – Elizabeth Road Intersection Upgrade		
RN5	61	55
RN9, RN21	62	55
RN14, RN22	63	55
RN16	64	55
All other residences on Martin Road	60	55

Traffic noise generated by the development is to be measured in accordance with the relevant procedures in the NSW Road Noise Policy (Department of Environment, Climate Change and Water NSW).

However, the noise criteria in Table 3 do not apply if the Applicant has an agreement with the relevant landowner to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

6A. Upon receiving a written request from the owner of residences RN5, RN9, RN14, RN16, RN21 or RN22, the Applicant must implement noise mitigation treatment packages as described in the EA (Mod 3 and 4) and as set out in the *RMS Draft At-Receiver Treatment Packages*.

If within 3 months of receiving this request from the owner, the Applicant and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.

Noise Operating Conditions

7. The Applicant must:
   (a) take all reasonable steps to minimise the construction, operational, low frequency and road transportation noise of the development;
   (b) take all reasonable steps to minimise the noise impacts of the development during noise enhancing meteorological conditions;
   (c) operate a noise management system to guide the day to day planning of quarrying operations and the implementation of noise mitigation measures to ensure compliance with the relevant conditions of this consent;
   (d) carry out regular noise monitoring to determine whether the development is complying with the relevant conditions of this consent; and
   (e) modify or stop operations on the site to comply with the relevant conditions of this consent.

Note: Monitoring under this consent is not required at all residences and the use of representative monitoring locations can be used to demonstrate compliance with criteria, if agreed to by the Secretary.

Noise Management Plan

8. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must:
   (a) be submitted to the Secretary for approval prior to commencing Modification 3 and 4, unless otherwise agreed by the Secretary;
   (b) describe the measures to be implemented to ensure:
      - compliance with the noise criteria and operating conditions of this consent;
      - best practice management is being employed;
      - residences listed in condition 6A of this Schedule are notified of their rights to request road noise mitigation measures;
      - vibration impacts are minimised; and
      - the construction and operational noise impacts of the development are minimised during noise enhancing meteorological conditions;
   (c) describe measures to ensure that all the commitments in the EA (Mod 3 and 4) in relation to noise are implemented;
   (d) include a consultation plan detailing:
      - procedures for notifying and consulting nearby residents prior to the recommencement of quarrying and brick making activities;
      - procedures for notifying and consulting nearby residents prior to the commencement of construction activities;
      - details of a telephone complaints line (operated at all hours) and relevant site persons responsible for following up complaints;
      - procedures for handling and monitoring all complaints received; and
      - contingency measures that would be implemented where complaints are received;
   (e) describe the proposed noise management system; and
   (f) include a noise monitoring program that:
      - is capable of evaluating the performance of the development;
      - includes a protocol for determining any exceedances of the relevant conditions of this consent; and
      - effectively supports the noise management system.

The Applicant must implement the Noise Management Plan as approved by the Secretary.

AIR QUALITY

Air Quality Impact Assessment Criteria

9. The Applicant must ensure that particulate matter emissions generated by the development do not cause exceedances of the criteria in Table 4 at any residence on privately-owned land.

Table 4: Air quality criteria

Pollutant	Averaging Period	Criterion	
Particulate matter < 2.5 µm (PM_{10})	Annual	[a,d] 8 µg/m³	
Particulate matter < 2.5 µm (PM_{10})	24 hour	[b] 25 µg/m³	
Particulate matter < 10 µm (PM_{10})	Annual	[a,d] 25 µg/m³	
Particulate matter < 10 µm (PM_{10})	24 hour	[b] 50 µg/m³	
Total suspended particulates (TSP)	Annual	[a,d] 90 µg/m³	
[c] Deposited dust	Annual	[b] 2 g/m²/month	[a,d] 4 g/m²/month

Notes to Table 4:
a Total impact (ie increase in concentrations due to the development plus background concentrations due to all other sources).
b Incremental impact (ie increase in concentrations due to the development alone, with zero allowable exceedances of the criteria over the life of the development.
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.
d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.

Operating Conditions

10. The Applicant must:
    (a) implement best practice management to minimise the dust emissions of the development;
    (b) implement all air quality management and mitigation measures that were committed to in the EA (Mod 3 and 4);
    (c) implement real-time monitoring of 24-hour average PM_{10} and meteorological conditions;
    (d) regularly assess meteorological and air quality monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the air quality criteria in this consent;
    (e) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see note d under Table 4);
    (f) monitor and report on compliance with the relevant air quality conditions in this consent; and
    (g) minimise the area of surface disturbance and undertake progressive rehabilitation of the site,
    to the satisfaction of the Secretary.

10A. During Phase 4, the Applicant may request the Secretary's agreement to reduce or waive certain air quality monitoring requirements if the Applicant can demonstrate that they are no longer necessary.

11. The Applicant must ensure compliance with stack emission limits and gaseous pollutant load limits included in any EPL applicable to the site.

12. Within 14 months of commencement of increased production of bricks to 300,000 tonnes per year, or as otherwise required by the EPA, the Applicant must submit an Air Quality Verification Assessment to the EPA, and must provide a copy of this assessment to the Secretary. The Air Quality Verification Assessment must be completed in accordance with the requirements of the EPL for the premises.

Air Quality Management Plan

13. The Applicant must prepare an Air Quality Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with relevant WSA authorities;
    (b) be submitted to the Secretary for approval prior to commencing Phase 1, unless otherwise agreed by the Secretary;
    (c) describe the proposed air quality management system;
    (d) describe the measures to be implemented to ensure:
        - compliance with the air quality criteria and operating conditions of this consent;
        - best practice management is being employed; and
        - the air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events;
    (e) describe measures to ensure that all the commitments in the EA (Mod 3 and 4) in relation to air quality are implemented;
    (f) include a program to ensure surface disturbance associated with quarrying operations is minimised;

(g) include an air quality monitoring program that:
- is capable of evaluating the performance of the development and informing day to day operational decisions;
- includes a protocol for determining any exceedances of the relevant conditions of this consent; and
- effectively supports the air quality management system; and

(h) include a program to:
- notify affected landowners of the potential health-related impacts associated with dust;
- respond effectively to enquiries or complaints.

The Applicant must implement the Air Quality Management Plan as approved by the Secretary.

Meteorological Monitoring

14. For the life of the development, the Applicant must ensure that there is a suitable meteorological station operating in the vicinity of the site that complies with the requirements in the *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales* guideline and is capable of measuring meteorological conditions in accordance with the *NSW Noise Policy for Industry* (EPA, 2017).

Odour

15. The Applicant must ensure that no offensive odours, as defined by the POEO Act, are emitted from the site.

Greenhouse Gas Emissions

16. The Applicant must implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site.

SOIL AND WATER

Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Applicant is required to obtain all necessary approvals and/or water licences for the development.

Water Supply

17. The Applicant must ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of operations under the consent to match its available water supply, to the satisfaction of the Secretary.

17A. The Applicant must report on water extracted from the site each year (direct and indirect) in the Annual Review, including water taken under each water licence.

Water Discharges

18. The Applicant must ensure that all quarry water from the site is contained wholly within the site except where discharges are otherwise authorised by condition 19 and 19A of this Schedule.

19. The Applicant must ensure that all surface water discharges from the site comply with the limits (both volume and quality) set in any EPL applicable to the site.

Dewatering of Pits 1, 2 and 3

19A. All water that is dewatered from Pit 1 (including any water transferred into Pit 1 from Pit 2 and Pit 3) must be transferred from the site in accordance with the Dewatering Management Plan required under Condition 23A of this Schedule.

19B. All dewatering activities from Pit 1 must be completed within Phase 1 unless otherwise agreed by the Secretary.

Riparian Buffer Distance

20. The Applicant must maintain a minimum setback width of 60 metres (measured from the top of bank) between extraction areas and both Badgerys Creek and Badgerys Creek tributary.

Note: This condition does not prohibit overburden emplacement or rehabilitation works in accordance with the Development Layout Plan.

Alluvial Aquifers

21. The Applicant must ensure that the development has no impact on alluvial aquifers associated with South Creek, Badgerys Creek or their tributaries.

22. *(Deleted)*

Soil and Water Management Plan

23. The Applicant must prepare a Soil and Water Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared by a suitably qualified and experienced person/s approved by the Secretary;
    (b) be prepared in consultation with Council and DPIE-Water;
    (c) be submitted to the Secretary for approval prior to commencing Phase 1, unless otherwise agreed by the Secretary; and
    (d) include a:
    (i) Site Water Balance that includes:
    - details of:
        - sources and security of water supply;
        - water use and management on site;
        - adequacy of water storage facilities to contain all surface water runoff;
        - all existing Water Access Licences and potential Water Access Licences, including information on the relevant Water Sharing Plan and Water Sources;
        - any off-site water transfers, including those described in condition 23A of this Schedule; and
        - reporting procedures; and
    - measures to be implemented to minimise clean water use on site;

    (ii) Surface Water Management Plan, that includes:
    - a program for obtaining detailed baseline data on surface water flows and quality in water bodies that could potentially be affected by the development;
    - a detailed description of the surface water management system on site including the:
        - clean water diversion system;
        - erosion and sediment controls;
        - dirty water management system; and
        - water storages, including the area, depth and capacity of any in-pit sumps;
    - detailed plans, including design objectives and performance criteria, for:
        - reinstatement of drainage lines on the rehabilitated areas of the site; and
        - control of any potential water pollution from rehabilitated areas of the site;
    - performance criteria for the following, including trigger levels for investigating any potentially adverse impacts on:
        - the water management system;
        - surface water quality in creeks and other water bodies that could potentially affected by the development (including Badgerys Creek and Badgerys Creek tributary); and
        - the stream health, vegetation health and channel stability of water bodies that could potentially affected by the development;
    - a program to monitor and report on:
        - any surface water discharges;
        - the effectiveness of the water management system;
        - the quality of water discharged from the site to the environment;
        - surface water flows and quality in local watercourses; and
        - the stream health, riparian vegetation health and channel stability of creeks and other water bodies that could potentially be affected by the development; and
    - a plan to respond to any exceedances of the performance criteria, and mitigate and/or offset any adverse surface water impacts of the development; and

    (iii) Groundwater Management Plan that includes:
    - measures to ensure that the maximum extraction depth is not exceeded (see condition 19 of Schedule 2);
    - a protocol to obtain appropriate water licence(s) to cover the volume of any unforeseen groundwater inflows into the quarry from the quarry face or floor;
    - groundwater assessment criteria, including trigger levels for investigating any potentially adverse groundwater impacts; and

- a monitoring program to manage potential impacts, if any, on any alluvium and associated surface water source near the proposed extraction area that includes:
  - monitoring of boreholes within the alluvial sediments adjacent to Badgerys and South Creeks and their tributaries, and in the Bringelly Shale bedrock aquifer;
  - monitoring of groundwater inflows into the quarry from the quarry face or floor, or into any in-pit sumps;
  - monitoring the impacts of the development on baseflows to Badgerys and South Creeks and their tributaries;
  - identification of a methodology for determining exceedances of the assessment criteria;
  - a plan to respond to any exceedances of the performance criteria; and
  - a program to regularly report on monitoring.

The Applicant must implement the Soil and Water Management Plan as approved by the Secretary.

Dewatering Infrastructure Plan

23A. Prior to carrying out any construction activities associated with the dewatering activities on the site, the Applicant must prepare a Dewatering Infrastructure Plan for the development to the satisfaction of the Secretary. This plan must include:

(a) detailed designs for:
- any pipeline infrastructure used for dewatering activities; and
- the method to be used to cross Badgerys Creek;

(b) a flooding assessment which:
- considers the impacts of any structures (including overland pipelines) to flood flow within the floodplain up to the PMF; and
- describes the measures that will be implemented to minimise those impacts; and

(c) a description of the measures to be implemented for:
- managing construction and operation of minor surface infrastructure;
- avoiding significant impacts and minimisation of impacts generally;
- controlling any potential water pollution from construction;
- minimising and managing erosion and sedimentation;
- decommissioning of pipeline infrastructure; and
- rehabilitating disturbed areas.

The Applicant must implement the Dewatering Management Plan as approved by the Secretary.

Dewatering Management Plan

23B. The Applicant must prepare a Dewatering Management Plan for the development to the satisfaction of the Secretary. This plan must:

(a) be prepared in consultation with DPIE-Water and NRAR;

(b) be submitted to the Secretary for approval prior to dewatering activities from Pit 1, unless otherwise agreed by the Secretary; and

(c) include:
- details of:
  - off-site water transfer or discharge arrangements; and
  - procedures for monitoring on volumes transferred off-site and reporting on this as part of Annual Review;
- a Fauna Relocation Plan regarding the transfer of aquatic fauna from Pits 1, 2 and 3 prepared by a suitably qualified ecologist which includes details on:
  - native fauna species known to inhabit and/or use the pits which require transfer from the pits;
  - methodology proposed to transfer the fauna;
  - location and suitability of the proposed relocation sites;
  - any potential impacts of relocating the fauna top the relocation sites and proposed mitigation measures; and
  - details of ecologists to monitor dewatering activities;
- a Geotechnical Monitoring Program, prepared by a suitably qualified and experience geotechnical engineer, to examine and monitor the faces and high walls of the quarry pits to determine potential geotechnical hazards areas and evaluate risks of potential failures;
- a program to monitor and report on dewatering that involves any discharge from the site, including:
  - the quality of any water discharged from the site;

- surface water flows and quality in local watercourses; and
- the stream health, riparian vegetation health and channel stability of creeks and other water bodies that could potentially be affected by the discharges; and

- a plan to respond to any exceedances of the performance criteria and mitigate and/or offset any adverse surface water impacts of the discharges.

The Applicant must implement the Dewatering Management Plan as approved by the Secretary.

Flooding

23C. The Applicant must prepare and implement an Evacuation Plan for the site. This Evacuation Plan must be prepared in consultation with the State Emergency Services and include details of the site evacuation and sheltering procedures during flood events.

TRANSPORT

Road Haulage

24. Prior to commencing Phase 1, the Applicant must:
(a) erect signage on Elizabeth Drive advising of "trucks turning";
(b) install a wheel wash on the quarry access road and Fill haul road to prevent material being deposited on Martin Road; and
(c) ensure the access driveway from Martin Road is capable of catering for all heavy vehicles associated with the development in accordance with AS2890.2,
to the satisfaction of Council.

Road Upgrade and Maintenance Contribution

25. Prior to the recommencement of quarrying operations, the Applicant must enter into a formal agreement with Council for:
(a) the repair of historical impacts of trucking from the development on Martin Road; and
(b) annual road maintenance contributions to be paid to Council, based on the weight of all laden truck movements to and from the site, for the duration that Martin Road is vested in the Council as the roads authority.

The Applicant must provide evidence to the Secretary that the agreement has been executed and implemented to the satisfaction of Council.

If there is any dispute between the Applicant and Council, then either of the parties may refer the matter to the Secretary for resolution.

25A. Prior to increasing truck movement limits as specified in condition 12 of Schedule 2, the Applicant must complete an interim upgrade of the Martin Road and Elizabeth Drive Intersection. The final design of intersection must be to the satisfaction of the relevant roads authority/s and must:
(a) be designed and constructed in accordance with Austroads Guidelines, Australian Standards and any requirements of the relevant road authority/s;
(b) include, at a minimum, a three phase signal operation including a right turn green light and pedestrian crossings on one Martin Road and one Elizabeth Drive approach;
(c) be subject to a Works Authorisation Deed (WAD) with TfNSW; and
(d) be funded by the Applicant, unless otherwise agreed with TfNSW.

25B. With the written agreement of the Secretary, the requirements of condition 25A of this Schedule may be waived if the Applicant can demonstrate that the Martin Road-Elizabeth Drive Intersection has been upgraded to achieve service, capacity and safety standards equivalent to or greater than those required under condition 25A of this Schedule.

25C. The Applicant must provide an area for a potential transport corridor associated with an extension of Martin Road through the site (as conceptually shown in Appendix 3). The final design and location of the transport corridor and any associated commercial arrangements must be determined in consultation with TfNSW.

The Applicant must advise the Secretary in writing of the final design and location of the transport corridor as agreed with TfNSW, and update relevant management plans, strategies or programs for the development to reflect the transport corridor.

Monitoring of Product Transport

26. The Applicant must keep accurate records of:
    (a) all truck movements to and from the site (including time of arrival and dispatch and nature of material transported);
    (b) the weight of all bricks, Fill and quarry products transported to and from the site; and
    (c) publish a summary of these records on its website every 6 months.

Operating Conditions

27. The Applicant must:
    (a) ensure that all laden trucks carrying quarry products, raw materials or Fill have their loads covered when arriving at or leaving the site;
    (b) ensure that all trucks are cleaned of material that may fall from vehicles, before leaving the site;
    (c) use its best endeavours to ensure that appropriate signage is displayed on trucks used to transport finished building materials, quarry products or raw materials to or from the development so they can be easily identified by road users; and
    (d) continue to engage with TfNSW regarding the detailed planning and design for the Eastern Airport Ring Road.

Traffic Management Plan

28. The Applicant must prepare a Traffic Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with TfNSW, WSA and Council;
    (b) be submitted to the Secretary for approval prior to commencing Phase 1 operations, unless otherwise agreed by the Secretary;
    (c) describe the processes in place to control the arrival and dispatch of trucks;
    (d) include a Drivers' Code of Conduct that details the safe and quiet driving practices that must be used by drivers travelling to and from the site;
    (e) describe the measures to be put in place to ensure compliance with the Drivers' Code of Conduct; and
    (f) propose measures to minimise the transmission of dust and tracking of material onto the surface of the public road from vehicles leaving the quarry; and
    (g) describe the measures to manage construction and cumulative traffic impacts on the surrounding road network;
    (h) be updated as necessary to reflect the operational phases and truck movement limits specified in condition 12 of Schedule 2 and prior to the commencement of any construction works for the upgrade of the Martin Road – Elizabeth Drive Intersection or the Eastern Airport Ring Road.

    The Applicant must implement the Traffic Management Plan as approved by the Secretary.

ABORIGINAL HERITAGE

29. The Applicant must ensure that:
    (a) archaeological salvage of site BC-01-09 is undertaken in accordance with Recommendation 1, Section 6.0 of the *Aboriginal Heritage Assessment – Addendum* in the EA; and
    (b) regeneration works, dewatering activities and water discharges in the area of the archaeological deposit identified adjacent to Badgerys Creek (see Appendix 5) are either avoided, or else undertaken in a manner that will minimise harm to Aboriginal objects, to the satisfaction of the Secretary; and
    (c) measures are implemented prior to the commencement of Phase 1, to conserve and protect the hearth feature within site BCBW18 AS 02 02 (AHIMS ID 45-5-5164).

30. The Applicant must prepare an Aboriginal Heritage Management Plan for the development to the satisfaction of the Secretary. The plan must:
    (a) be prepared by suitably qualified and experienced persons;
    (b) be prepared in consultation with Registered Aboriginal Parties and Heritage NSW;
    (c) be submitted to the Secretary for approval within 6 months of the determination of Modification 3 and 4, unless otherwise agreed by the Secretary;
    (d) include a description of the measures that would be implemented to:
        (i) protect, monitor and manage identified Aboriginal objects and Aboriginal places on the site (including any proposed archaeological investigations and salvage measures), including specific measures to ensure that the archaeological deposit adjacent to Badgerys Creek (see Appendix 5) is not impacted during regeneration operations;

(ii) conserve the entire extent of the hearth feature within site BCBW18 AS 02 (AHIMS ID 45-5-5164);
(iii) manage the discovery of previously unidentified Aboriginal objects or Aboriginal places on the site; and
(iv) facilitate ongoing consultation and involvement of Registered Aboriginal Parties in the conservation and management of Aboriginal cultural heritage on the site; and

(e) include a protocol to be implemented in the event that skeletal remains are discovered during the development.

The Applicant must implement the Aboriginal Heritage Management Plan as approved by the Secretary.

31. If human remains are discovered on the site, then all work in the area surrounding the discovery must cease, and the area must be secured. The Applicant must immediately notify NSW Police Force and Heritage NSW, and work must not recommence in the area until authorised by NSW Police Force and Heritage NSW.

32. If any potential Aboriginal object or Aboriginal place is identified on the site, or suspected to be on the site:
(a) all work in the immediate vicinity of the object or place must cease immediately;
(b) a 10 m buffer area around the object or place must be cordoned off; and
(c) Heritage NSW must be contacted immediately.

33. Work in the immediate vicinity of a site identified in condition 32 of this Schedule may only recommence if:
(a) the object or place is confirmed by Heritage NSW upon consultation with the Registered Aboriginal Parties not to be an Aboriginal object or Aboriginal Place;
(b) the Aboriginal Cultural Heritage Management Plan is revised to include the object or place and appropriate measures in respect of it; or
(c) the Secretary is satisfied with the measures to be implemented in respect of the object or place and makes a written direction in that regard.

REHABILITATION

Rehabilitation Objectives

34. The Applicant must rehabilitate the site in accordance with the conditions imposed on the mining lease(s) associated with the development under the *Mining Act 1992*. This rehabilitation must be generally consistent with the proposed rehabilitation strategy described in the EA (Mod 3 and 4) and shown in Appendix 4, and must comply with the objectives in Table 5.

Table 5: Rehabilitation Objectives

Feature	Objective
All areas of the site affected by the development	• Safe • Hydraulically and geotechnically stable • Non-polluting • Fit for the intended final land use(s) • Final landform integrated with surrounding natural landforms as far as is reasonable and feasible, and minimising visual impacts when viewed from surrounding land
Surface infrastructure	• Decommissioned and removed, unless otherwise agreed by the Secretary
Landscaping bunds	• Hydraulically and geotechnically stable • Vegetated
Pits 1, 2 and 3	• Backfilled to a landform that is consistent with natural ground level and is geotechnically stable • Free draining

Progressive Rehabilitation

35. The Applicant must rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. All reasonable measures must be taken to minimise the total area exposed for dust generation at any time. Interim stabilisation measures must be implemented where reasonable and feasible to control dust emissions in disturbed areas that are not active and which are not ready for final rehabilitation.

Note: It is accepted that parts of the site that are progressively rehabilitated may be subject to future re-disturbance.

35A. The Applicant must complete the backfilling of Pits 1 and 2 within 6 years of commencement of Phase 1, or as otherwise agreed by the Secretary.

35B. The Applicant must complete the backfilling of Pit 3 within 2 years of the date of completion of extraction activities in Pit 3, or as otherwise agreed by the Secretary.

Rehabilitation Management Plan

36. The Applicant must prepare a Rehabilitation Management Plan for the development, in accordance with the conditions imposed on the mining lease(s) associated with the development under the *Mining Act 1992*. This plan must:

(a) be prepared in consultation with the Department, DPIE Water, BCD, TfNSW and relevant WSA authorities and Council;

(b) build upon the Rehabilitation Objectives in Table 5 and the proposed rehabilitation strategy described in the EA (Mod 3 and 4) and shown in Appendix 4;

(c) investigate options for the future use of disturbed areas following the completion of backfilling operations, having regards to the strategic planning associated with the draft Western Sydney Aerotropolis Plan (or subsequently adopted NSW Government strategic plans);

(d) describe and justify the proposed rehabilitation strategy for the site, including the landform and use of the site following the completion of quarry operations;

(e) include details of the planting of replacement trees in riparian areas consistent with the Statement of Commitments and with vegetation requirements for WSA to minimise wildlife impacts;

(f) describe how the rehabilitation of the site would achieve the objectives identified in Table 5 and the requirements of conditions 35A and 35B of this Schedule;

(g) include detailed Rehabilitation Objectives, Rehabilitation Completion Criteria and the Final Landform and Rehabilitation Plan for evaluating the performance of the rehabilitation of the site;

(h) include procedures for the use of interim stabilisation and temporary vegetation strategies, where reasonable to minimise the area exposed for dust generation;

(i) to the maximum extent practicable, build on and integrate with the other management plans required under this consent;

(j) include a life of mine rehabilitation and mining schedule and a protocol for progressive reviews of key progressive rehabilitation milestones from the commencement of operations through to decommissioning and mine closure;

(k) an overview of the identified risks to achieving successful rehabilitation and strategies to be implemented to address these risks;

(l) include a program to monitor, audit and report on the progress against the Rehabilitation Objectives and Rehabilitation Completion Criteria and the Final Landform and Rehabilitation Plan; and

(m) describe the measures to be implemented to ensure compliance with the relevant conditions of this consent, including intervention and adaptive management techniques that may be required to ensure rehabilitation remains on a trajectory of achieving the Rehabilitation Objectives, Rehabilitation Completion Criteria and the Final Landform and Rehabilitation Plan as soon as reasonably practical.

***Note**: The Rehabilitation Management Plan may be combined with a Mining Operations Plan, or similar plan, required under the mining lease granted for the development.*

VISUAL

37. The Applicant must implement all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the development to the satisfaction of the Secretary.

37A. Within 3 months of commencing quarrying operations in Pit 3, the Applicant must construct landscaped earthen bunds and plant vegetation screens (as shown conceptually in Appendix 3), to minimise the visual impacts of the development. The landscaped earthen bunds and plant vegetation screens must be maintained until Pit 3 area has been fully rehabilitated.

37B. Within 6 months of the Secretary being advised of the confirmed Eastern Ring Road alignment, as required under condition 25C of this Schedule, the Applicant must construct landscaped earthen bunds and plant vegetation screens around the brickmaking facility and raw material stockpile (as shown conceptually in Appendix 3), to minimise the visual impacts of the development. The landscaped earthen bunds and plant vegetation screens and must be maintained for the life of the development.

37C. The Applicant must ensure that all outdoor and external lighting at the site:
(a) complies with *AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting;* and
(b) is designed in accordance with any Civil Aviation Safety Authority requirements for the WSA and is mounted, screened and directed in such a manner that it does not cause distraction or confusion to pilots due to light spill above the horizontal plane.

Visual Impact Management Plan

37D. Within 6 months of approval of Modification 3 and 4, the Applicant must prepare a Visual Impact Management Plan for the development to the satisfaction of the Secretary. This plan must:
(a) be prepared by a suitably qualified and experienced person/s;
(b) be prepared in consultation with Council, TfNSW and relevant WSA authorities;
(c) describe the measures to be implemented to minimise the visual, landscaping and off-site lighting impacts of the development to the WSA and surrounding community;
(d) include a landscaping strategy to shield public views of the development (including views from the Eastern Airport Ring Road) that includes:
- the measures identified in the EA (Mod 3 and 4);
- a vegetation strategy utilising a diversity of local provenance tree species from the native vegetation community (or communities) that occur, or once occurred on the site, and would minimise wildlife attraction;
- a bund vegetation and maintenance schedule; and
- procedures to notify, consult with and implement site-specific mitigation measures at affected privately-owned residences; and

(e) include a program to monitor and report on the implementation and effectiveness of the mitigation measures; and
(f) include a protocol to update the plan to include the requirements of condition 37A and 37B of this Schedule, once the Secretary has been advised of the confirmed Eastern Ring Road alignment, as required under condition 25C of this Schedule.

The Applicant must implement the Visual Impact Management Plan as approved by the Secretary.

WASTE

38. The Applicant must:
(a) manage on-site sewage treatment and disposal to the satisfaction of Council;
(b) minimise the waste generated by the development;
(c) ensure that the waste generated by the development is appropriately stored, handled, and disposed of; and
(d) report on waste management and minimisation, including management of non-recyclable materials in the Annual Review,
to the satisfaction of the Secretary.

Note: Approval pursuant to Section 68 of the Local Government Act 1993 is required from Council for onsite sewage management systems.

39. Except as expressly permitted in an EPL and/or the conditions of this consent, the Applicant must not receive waste on the site for storage, treatment, processing, reprocessing or disposal.

Fill Management Plan

39A. Prior to the import of Fill to the site, the Applicant must prepare a Fill Management Plan for the development to the satisfaction of the Secretary. This plan must:
(a) identify the quantities of Fill to be imported to site;
(b) describe:
- the procedures for monitoring Fill imported to the site to ensure that it meets relevant quality specifications for VENM or ENM;
- a protocol to prevent materials that fail to meet the requirements of the ENM Exemption and ENM Order from being accepted;
- the management of reject materials;
- management measures for the emplacement and temporary stockpiling of Fill;
- the process for handling Fill for use in rehabilitation;
- measures for the on-site use of water captured in sediment basins to ensure that the water does not present a contamination risk; and
- processes for assessing, recording, handling and managing any contamination found on the site; and

(c) provide an indicative schedule of Fill material to be imported to the site for each Phase of the development, in order to achieve the conceptual final landform.

The Applicant must implement the Fill Management Plan as approved by the Secretary.

LIQUID STORAGE

40. The Applicant must ensure that all tanks and similar storage facilities (other than for water) are protected by appropriate bunding or other containment, in accordance with the relevant Australian Standards.

DANGEROUS GOODS

41. The Applicant must ensure that the storage, handling, and transport of dangerous goods is done in accordance with the relevant Australian Standards, particularly AS1940 and AS1596, and the *Dangerous Goods Code*.

FIRE SAFETY

42. The Applicant must:
    (a) ensure that the development is suitably equipped to respond to any fires on site;
    (b) assist the emergency services to the extent practicable if there is a fire in the vicinity of the site; and
    (c) ensure that the development provides for asset protection in accordance with the relevant requirements in *Planning for Bushfire Protection 2019* (NSW RFS 2019).

SCHEDULE 4
ADDITIONAL PROCEDURES

NOTIFICATION OF LANDOWNERS

1. As soon as practicable, and no longer than 7 days, after obtaining monitoring results showing:
   (a) an exceedance of any criteria in Schedule 3, the Applicant must notify the affected landowners in writing of the exceedance, and provide regular monitoring results, at least every 3 months, to each affected landowner until the development is again complying with the relevant criteria; and
   (b) an exceedance of any air quality criteria in Schedule 3, the Applicant must 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 current tenants of the land (including the tenants of land which is not privately-owned).

INDEPENDENT REVIEW

2. If a landowner considers the development to be exceeding the relevant criteria in Schedule 3, they may ask the Secretary in writing for an independent review of the impacts of the development on their land.

   If the Secretary is not satisfied that an independent review is warranted, the Secretary will notify the landowner in writing of that decision, and the reasons for that decision, within 21 days of the request for a review.

   If the Secretary is satisfied that an independent review is warranted, within 3 months, or as otherwise agreed by the Secretary and the landowner, of the Secretary's decision, the Applicant must:
   (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to:
      - consult with the landowner to determine his/her concerns;
      - conduct monitoring to determine whether the development is complying with the relevant criteria in Schedule 3; and
      - if the development is not complying with these criteria, then identify measures that could be implemented to ensure compliance with the relevant criteria;
   (b) give the Secretary and landowner a copy of the independent review; and
   (c) comply with any written requests made by the Secretary to implement any findings of the review.

SCHEDULE 5
ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

1. The Applicant must prepare an Environmental Management Strategy for the development to the satisfaction of the Secretary. This strategy must:
   (a) be submitted to the Secretary for approval within 6 months of the determination of Modification 3 and 4, unless otherwise agreed by the Secretary;
   (b) provide the strategic framework for environmental management of the development;
   (c) identify the statutory approvals that apply to the development;
   (d) set out the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;
   (e) set out the procedures to be implemented to:
      - keep the local community and relevant agencies informed about the operation and environmental performance of the development;
      - receive, record, handle and respond to complaints;
      - resolve any disputes that may arise during the course of the development;
      - respond to any non-compliance and any incident; and
      - respond to emergencies; and
   (f) include:
      - references to any strategies, plans and programs approved under the conditions of this consent; and
      - a clear plan depicting all the monitoring to be carried out under the conditions of this consent.

   The Applicant must implement any Environmental Management Strategy as approved by the Secretary.

Evidence of Consultation

2. Where the conditions of this consent require consultation with an identified party, the Applicant must:
   (a) consult with the relevant party prior to submitting the subject document to the Secretary for approval; and
   (b) provide details of the consultation undertaken, including:
      - the outcome of that consultation, matters resolved and unresolved; and
      - details of any disagreement remaining between the party consulted and the Applicant and how the Applicant has addressed any unresolved matters.

   However, if the Secretary agrees, a strategy, plan or program may be prepared without consultation being undertaken with an identified party required under a condition of this consent.

Management Plan Requirements

3. The Applicant must ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:
   (a) a summary of relevant background or baseline data;
   (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 development or any management measures;
   (c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;
   (d) a program to monitor and report on the:
      - impacts and environmental performance of the development; and
      - effectiveness of any management measures (see (c) above);
   (e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;
   (f) a program to investigate and implement ways to improve the environmental performance of the development over time;
   (g) a protocol for managing and reporting any:

- incidents;
- complaints; and
- non-compliances with statutory requirements;

(h) a protocol for periodic review of the plan; and

(i) a document control table that includes version numbers, dates when the management plan was prepared and reviewed, names and positions of the person/s who prepared and reviewed the management plan, a description of any revisions made and the date of the Secretary's approval.

Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.

Application of Existing Strategies, Plans and Programs

4. The Applicant must continue to apply existing management plans, strategies or monitoring programs approved prior to the approval of Modification 3 and 4, until the approval of a similar plan, strategy or program following the approval of Modification 3 and 4.

Revision of Strategies, Plans & Programs

5. Within 3 months of:

(a) the submission of an incident report under condition 10 below;

(b) the submission of an Annual Review under condition 12 below;

(c) the submission of an Independent Environmental Audit report under condition 14 below; and

(d) the approval any modifications to this consent,

the Applicant must review the suitability of all strategies, plans and programs required under this consent, to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 6 weeks of the review the revised document must be submitted for the approval of the Secretary.

Notes:

- *The purpose of this condition is to ensure that strategies, plans and programs are regularly updated to incorporate any measures recommended to improve environmental performance of the development.*
- *In the event of an inconsistency between condition 5(d) above and any condition in Schedule 3 of this consent, the latter prevails.*

Updating and Staging of Strategies, Plans or Programs

6. With the approval of the Secretary, the Applicant may:

(a) prepare and submit any strategy, plan or program required by this consent on a staged basis (if a clear description is provided as to the specific stage and scope of the development to which the strategy, plan or program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program);

(b) combine any strategy, plan or program required by this consent (if a clear relationship is demonstrated between the strategies, plans or programs that are proposed to be combined); and

(c) update any strategy, plan or program required by this consent (to ensure the strategies, plans and programs required under this consent are updated on a regular basis and incorporate additional measures or amendments to improve the environmental performance of the development).

Adaptive Management

7. The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and/or performance measures in Schedule 3. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.

Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must as soon as becoming aware of any exceedance:

(a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not reoccur;

(b) consider all reasonable and feasible options for remediation (where relevant);

(c) within 14 days of the exceedance occurring, submit a report to the Secretary describing these remediation options and any preferred remediation measures or other course of action; and

(d) implement remediation measures as directed by the Secretary;

to the satisfaction of the Secretary.

COMMUNITY CONSULTATIVE COMMITTEE

8. The Applicant must establish and operate a Community Consultative Committee (CCC) for the development to the satisfaction of the Secretary. The CCC must be established prior to recommencing quarrying operations and be operated in general accordance with the Department's *Community Consultative Committee Guidelines, November 2016* (or later version).

Notes:
- *The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Applicant complies with this consent.*
- *In accordance with the guidelines, the Committee should comprise an independent chair and appropriate representation from the Applicant, Council and the local community.*
- *The Applicant may, with the approval of the Secretary, combine the function of this CCC with the functions of other CCCs in the area.*

REPORTING AND AUDITING

Incident Notification

9. The Applicant must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be made in writing through the Department's Major Projects Website and identify the development (including the development application number and name) and set out the location and nature of the incident.

Non-Compliance Notification

10. Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be made in writing through the Department's Major Projects website and identify the development (including the development application number and name), set out the condition of this consent that the development is non-compliant with, why it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

Note: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

Regular Reporting

11. The Applicant must provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.

Annual Review

12. Prior to recommencing quarrying operations or Fill import, and annually thereafter, the Applicant must submit a review to the Department reviewing the environmental performance of the development to the satisfaction of the Secretary. This review must:
    (a) describe the development (including any progressive rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year;
    (b) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against the:
        - relevant statutory requirements, limits or performance measures/criteria;
        - requirements of any plan or program required under this consent;
        - monitoring results of previous years; and
        - relevant predictions in the documents listed in condition 3 of Schedule 2;
    (c) evaluate and report on:
        - the effectiveness of the air quality and noise management systems; and
        - compliance with the performance measures, criteria and operating conditions in this consent.
    (d) identify any non-compliance over the past calendar year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid reoccurrence;
    (e) identify any trends in the monitoring data over the life of the development;
    (f) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and

(g) describe what measures will be implemented over the current calendar year to improve the environmental performance of the development.

The Applicant must ensure that copies of the Annual Review are submitted to Council and are available to the Community Consultative Committee (see condition 8 of Schedule 5) and any interested person upon request.

INDEPENDENT ENVIRONMENTAL AUDIT

13. Within 12 months of the commencement of Phase 1, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant must commission, commence and pay the full cost of an Independent Environmental Audit of the development. This audit must:
    (a) be led and conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
    (b) include consultation with the relevant agencies and the CCC;
    (c) assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent and any relevant EPL or necessary water licences for the development (including any assessment, strategy, plan or program required under these approvals);
    (d) review the adequacy of strategies, plans or programs required under the abovementioned approvals;
    (e) recommend appropriate measures or actions to improve the environmental performance of the development, and/or any assessment, strategy, plan or program required under the abovementioned approvals; and
    (f) be conducted and reported to the satisfaction of the Secretary.

14. Within 12 weeks of commencing this audit, or as otherwise agreed by the Secretary, the Applicant must submit a copy of the audit report to the Secretary and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of these recommendations as required. The Applicant must implement these recommendations, to the satisfaction of the Secretary.

14A. Any condition of this consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance report and independent audit.

Note: *For the purposes of this condition, as set out in the EP&A Act, "monitoring" is monitoring of the development to provide data on compliance with the consent or on the environmental impact of the development, and an "environmental audit" is a periodic or particular documented evaluation of the development to provide information on compliance with the consent or the environmental management or impact of the development.*

ACCESS TO INFORMATION

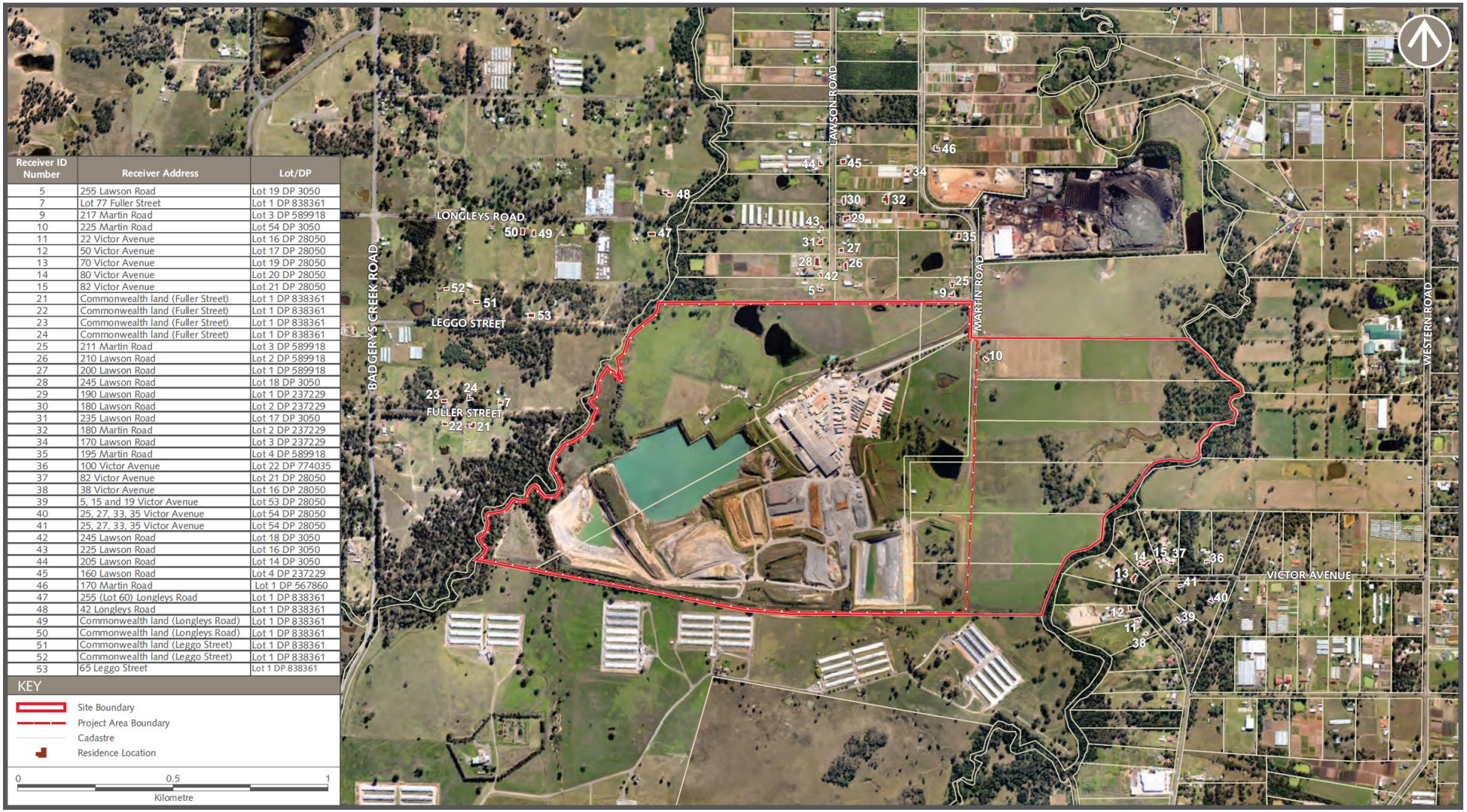
15. Within 3 months of the determination of Modification 3 and 4, until the completion of all works, including rehabilitation and remediation the Applicant must:
    (a) make the following information publicly available on its website:
        - the documents listed in condition 3 of Schedule 2;
        - current statutory approvals for the development;
        - all approved strategies, plans and programs required under the conditions of this consent;
        - regular reporting on the environmental performance of the development in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent;
        - a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
        - summary of the current stage and progress of the development;
        - contact details to enquire about the development or to make a complaint;
        - a complaints register, updated at least monthly;
        - the Annual Reviews of the development;
        - any Independent Environmental Audit as described in condition 13 above, and the Applicant's response to the recommendations in any audit; and
        - any other matter required by the Secretary; and
    (b) keep this information up-to-date,

    to the satisfaction of the Secretary.

APPENDIX 1
SCHEDULE OF LAND

Schedule of Land	
Lot	Deposited Plan
1	1035249
2	1035249
1	373863
54	3050
55	3050
56	3050
57	3050
58	3050
59	3050
1	981161

APPENDIX 2
LAND OWNERSHIP SURROUNDING THE DEVELOPMENT



Receiver ID Number	Receiver Address	Lot/DP
5	255 Lawson Road	Lot 19 DP 3050
7	Lot 77 Fuller Street	Lot 1 DP 838361
9	217 Martin Road	Lot 3 DP 589918
10	225 Martin Road	Lot 54 DP 3050
11	22 Victor Avenue	Lot 16 DP 28050
12	50 Victor Avenue	Lot 17 DP 28050
13	70 Victor Avenue	Lot 19 DP 28050
14	80 Victor Avenue	Lot 20 DP 28050
15	82 Victor Avenue	Lot 21 DP 28050
21	Commonwealth land (Fuller Street)	Lot 1 DP 838361
22	Commonwealth land (Fuller Street)	Lot 1 DP 838361
23	Commonwealth land (Fuller Street)	Lot 1 DP 838361
24	Commonwealth land (Fuller Street)	Lot 1 DP 838361
25	211 Martin Road	Lot 3 DP 589918
26	210 Lawson Road	Lot 2 DP 589918
27	200 Lawson Road	Lot 1 DP 589918
28	245 Lawson Road	Lot 18 DP 3050
29	190 Lawson Road	Lot 1 DP 237229
30	180 Lawson Road	Lot 2 DP 237229
31	235 Lawson Road	Lot 17 DP 3050
32	180 Martin Road	Lot 2 DP 237229
34	170 Lawson Road	Lot 3 DP 237229
35	195 Martin Road	Lot 4 DP 589918
36	100 Victor Avenue	Lot 22 DP 774035
37	82 Victor Avenue	Lot 21 DP 28050
38	38 Victor Avenue	Lot 16 DP 28050
39	5, 15 and 19 Victor Avenue	Lot 53 DP 28050
40	25, 27, 33, 35 Victor Avenue	Lot 54 DP 28050
41	25, 27, 33, 35 Victor Avenue	Lot 54 DP 28050
42	245 Lawson Road	Lot 18 DP 3050
43	225 Lawson Road	Lot 16 DP 3050
44	205 Lawson Road	Lot 14 DP 3050
45	160 Lawson Road	Lot 4 DP 237229
46	170 Martin Road	Lot 1 DP 567860
47	255 (Lot 60) Longleys Road	Lot 1 DP 838361
48	42 Longleys Road	Lot 1 DP 838361
49	Commonwealth land (Longleys Road)	Lot 1 DP 838361
50	Commonwealth land (Longleys Road)	Lot 1 DP 838361
51	Commonwealth land (Leggo Street)	Lot 1 DP 838361
52	Commonwealth land (Leggo Street)	Lot 1 DP 838361
53	65 Leggo Street	Lot 1 DP 838361

Figure 1: Receiver ID

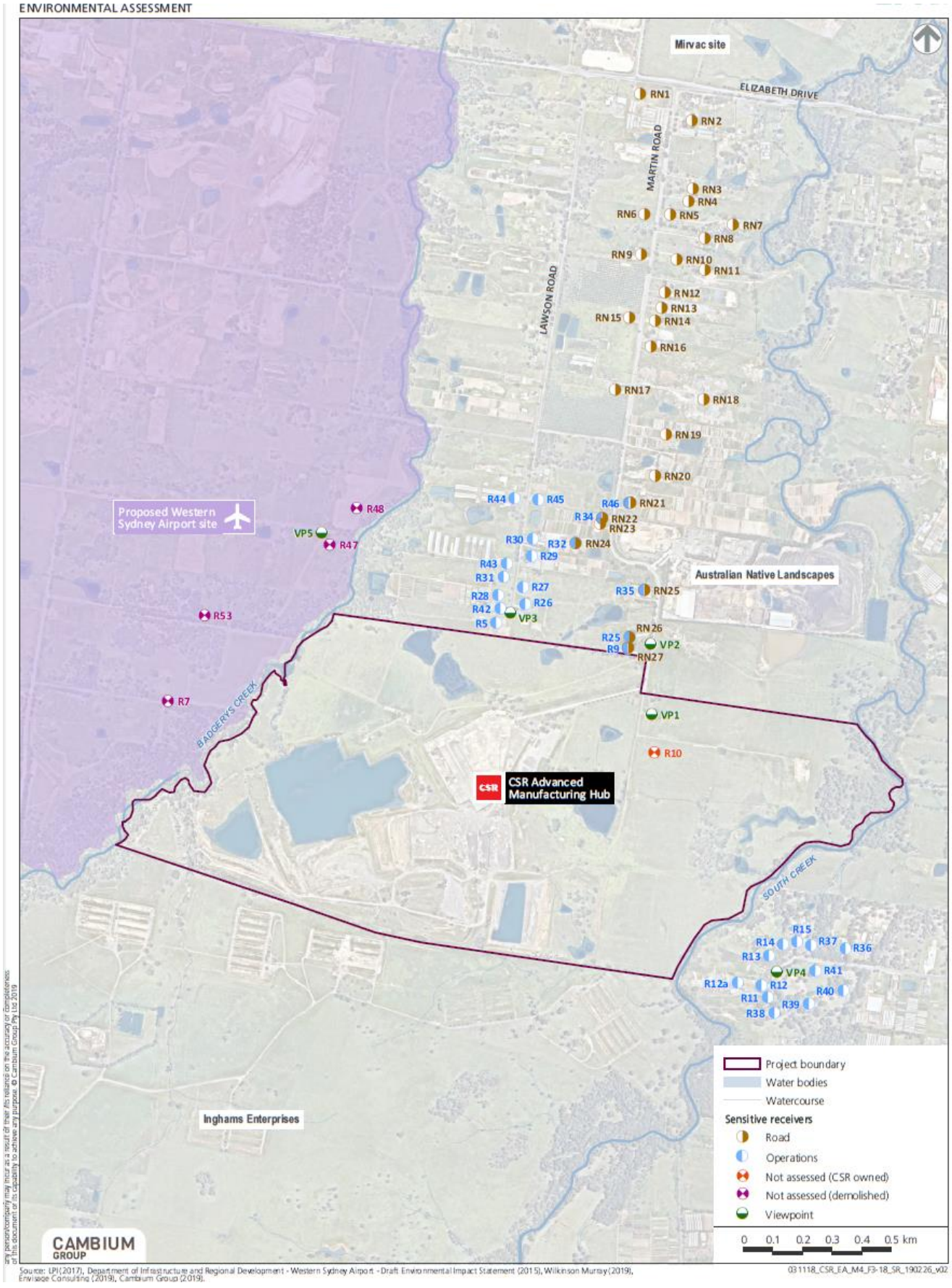


Figure 2: Road Noise Receiver ID

APENDIX 3
DEVELOPMENT LAYOUT PLANS

Figure 1: Development Layout Overview

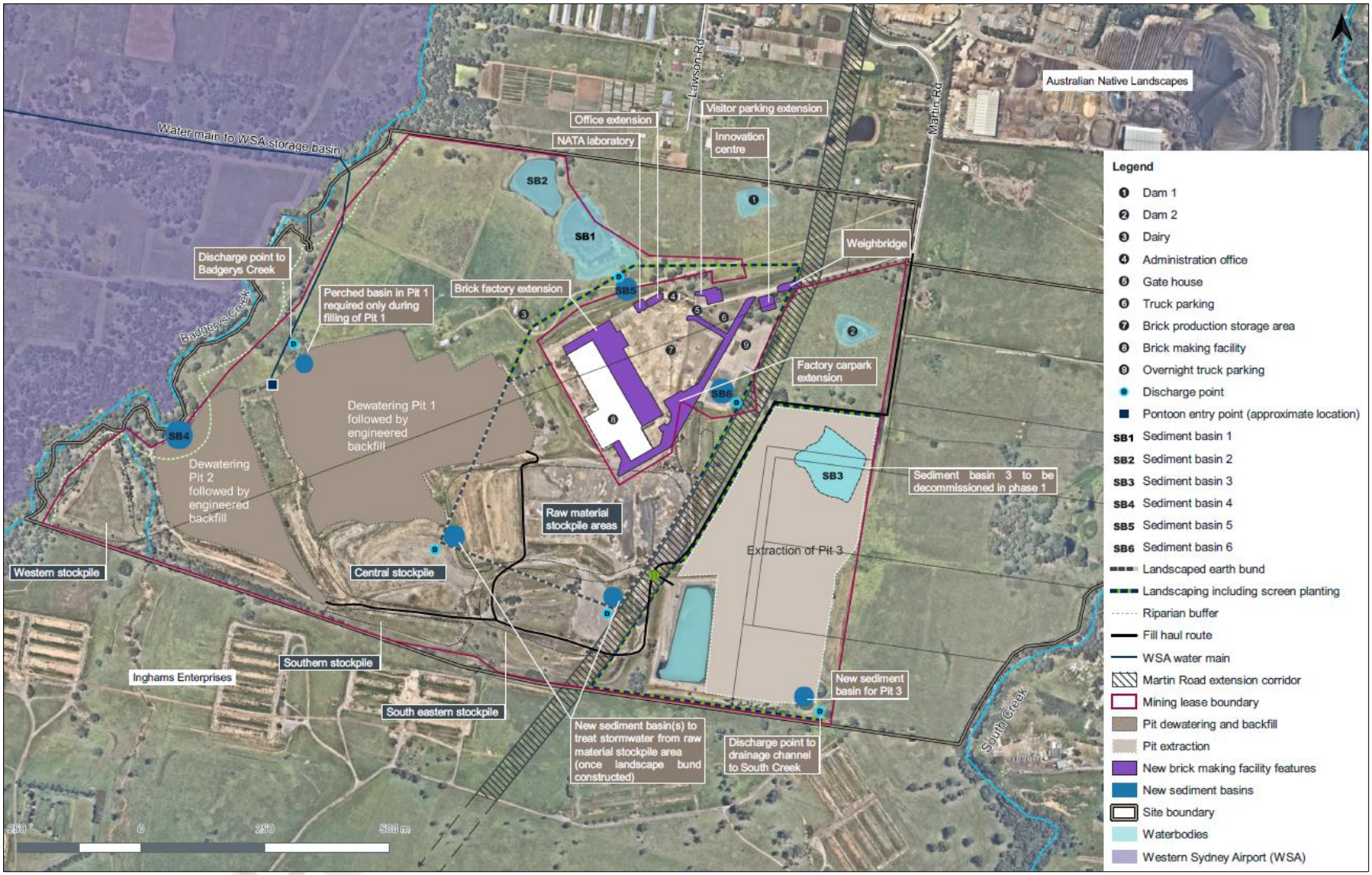


Figure 2: Phase 1 Development Layout

Figure 3: Phase 2 Development Layout

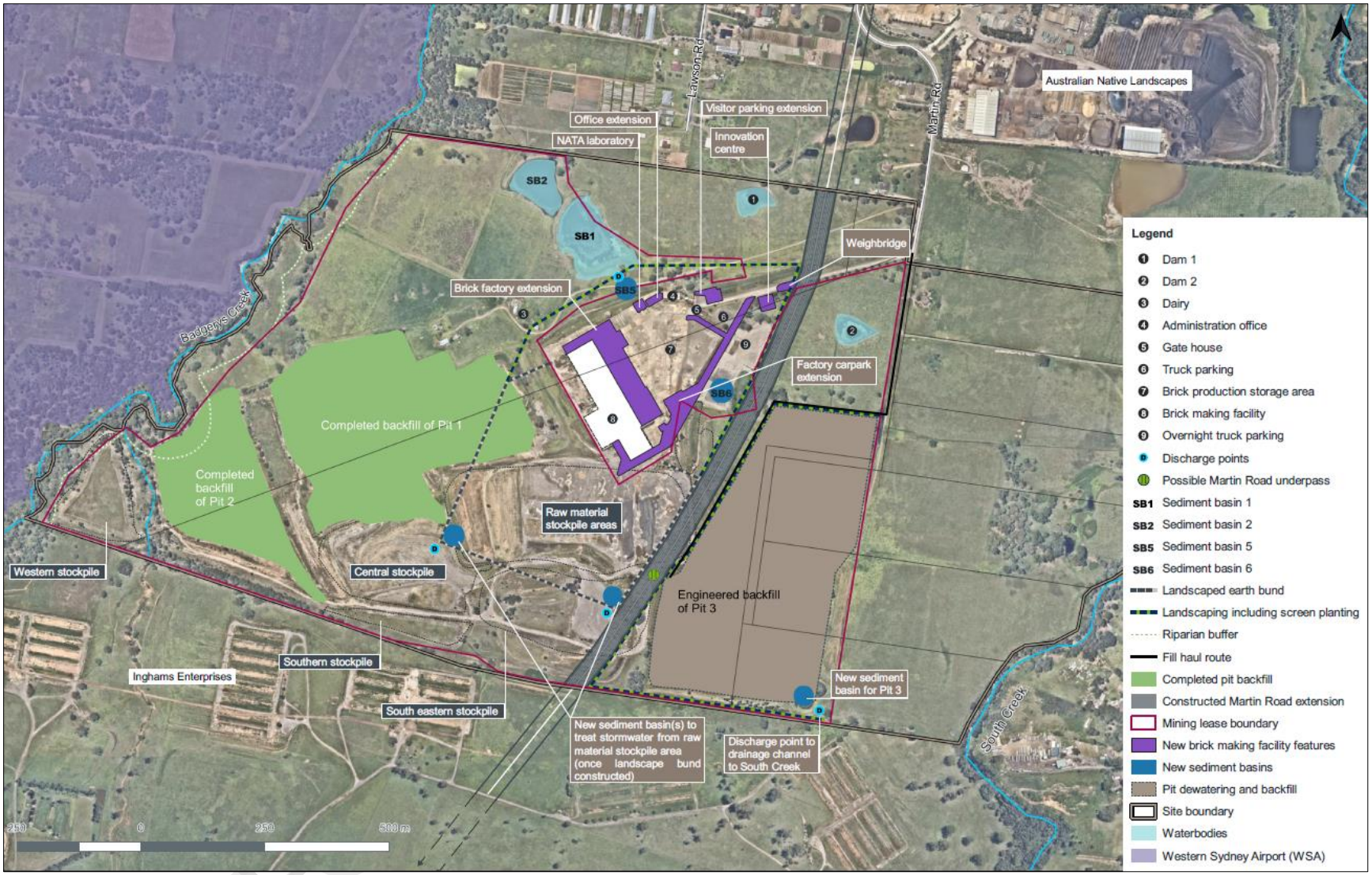


Figure 4: Phase 3 Development Layout

Figure 5: Phase 4 Development Layout

APPENDIX 4
REHABILITATION PLAN

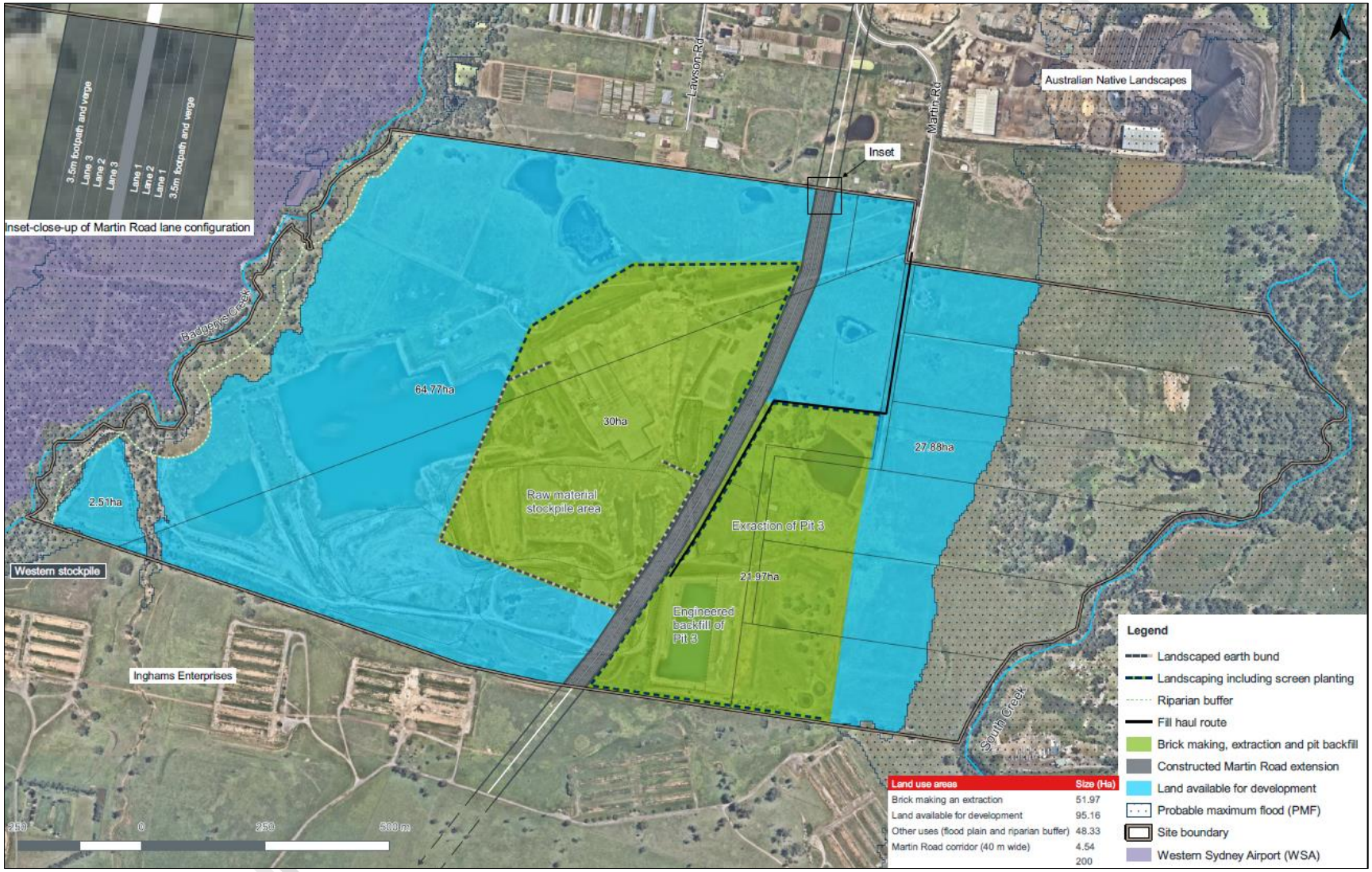


Figure 1: Phase 2 Rehabilitation

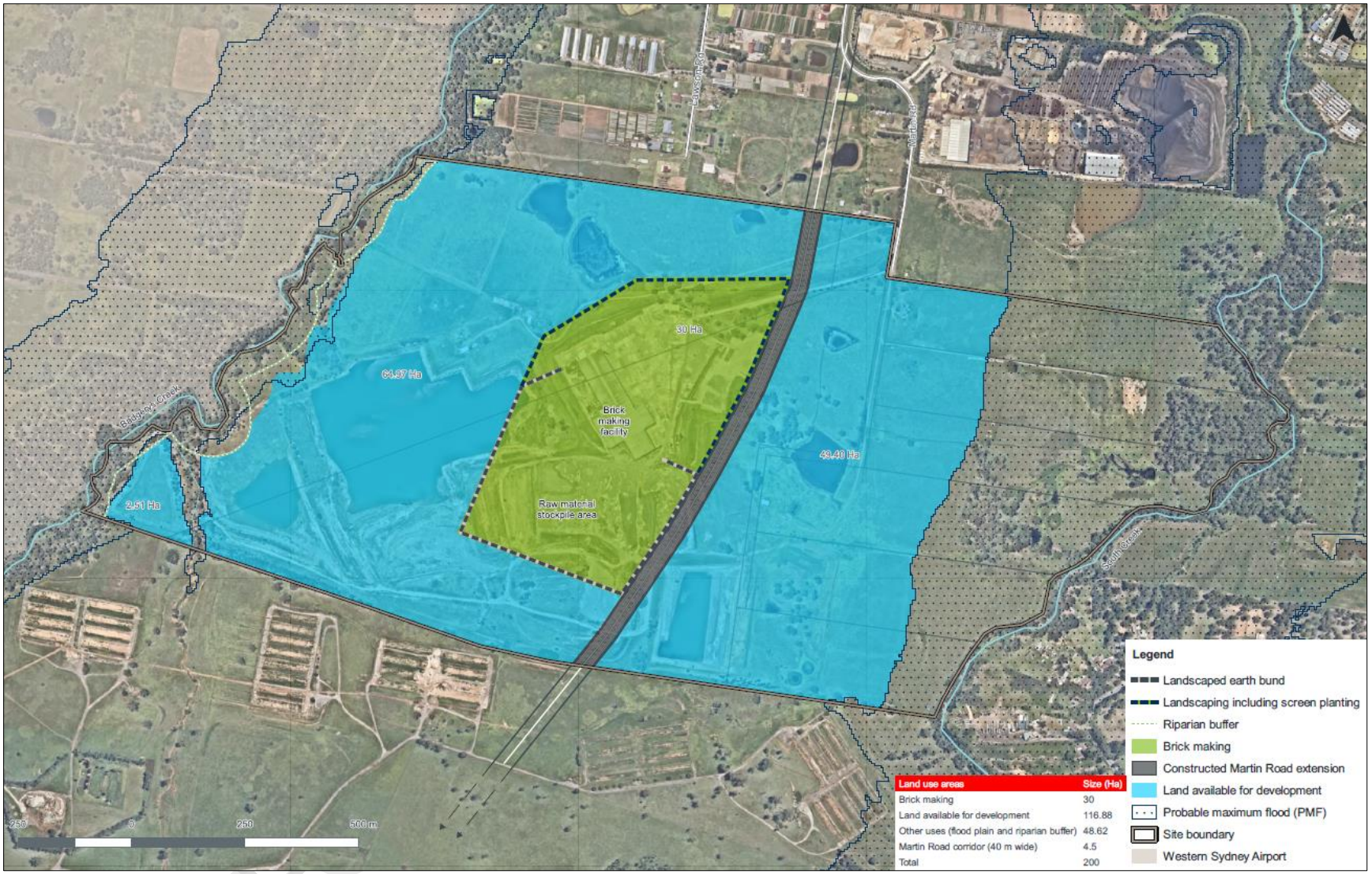


Figure 2: Phase 4 Rehabilitation

APPENDIX 5
ARCHAEOLOGICAL DEPOSIT AVOIDANCE ZONE

APPENDIX 6
STATEMENT OF COMMITMENTS

Issue	Commitment
General	1. The Applicant shall implement all practicable measures to prevent or minimise harm to the environment that may result from the construction, operation or rehabilitation of the development. 2. CSR will apply to amend EPL 684 to reflect the development. 3. The environmental management strategy and sub plans will be amended to reflect the development.
Air Quality	4. The Applicant will prepare an Air Quality and Green House Gas Management Plan (AQGHGMP) for the development to the satisfaction of the Secretary. The AQGHGMP will outline the purpose, methodology and expected outcomes of the dust monitoring, and will include the following content: ▪ Dust fraction to be measured, i.e. TSP, PM_{10}, $PM_{2.5}$ etc.; ▪ Equipment to be used to measure selected dust fraction; ▪ Frequency of the monitoring, i.e. sample collection schedule; ▪ Duration of the monitoring program; ▪ Location of the monitoring station/s; ▪ Standards/guidelines that are to be followed for location/construction of the monitoring station, equipment calibration, collection of samples and analysis of samples; ▪ Calibration methodology and schedule; ▪ Reporting procedure; ▪ Regulatory guidelines and compliance criteria; ▪ Action levels and contingency measures in the event that pollutant concentrations approach or are likely to exceed the relevant compliance criteria; and ▪ A consultation program that involves nearby agricultural producers and residents, in order to determine if the dust mitigation measures are being affective. 5. The AQGHGMP will detail measures to control dust and emissions from the Project Site including the following measures: ▪ Haul roads should be watered using water carts such that the road surface has sufficient moisture to minimise visible on-road dust generation but not so much as to cause pooling and mud/dirt track out to occur ▪ Unloading of trucks containing raw or unusable extracted material to be controlled using water sprays/dust suppression when generating excessive visible dust. ▪ Dust from existing stockpiles of unusable material and open pits to be controlled using water sprays with chemical additives (surfactants); ▪ Completed pits to be revegetated as soon as practicable after completion of quarrying activities. ▪ Disturbed soil surfaces to be revegetated in accordance with the RMP for the Project Site. ▪ Operational practices to be reviewed to ensure 'best practice' techniques are being employed and that operational equipment is working efficiently. 6. The existing HVAS will be moved to as close to the northern boundary of the property and the closest sensitive receiver as possible. 7. The existing deposited dust gauges will be relocated to appropriate positions as close to the property boundaries and nearest sensitive receivers as possible. 8. If HVAS and deposited dust air quality monitoring identifies ongoing exceedances of the relevant air quality criteria then the reactive dust management program may need to be reinstated at the site.
Noise	9. The Applicant will implement all practicable measures to undertake the development in a way that minimises the noise generated. The Applicant has made the following commitments in relation to operation noise management: 10. The Applicant will conduct quarrying activities at the Project Site only between the following hours: ▪ 7.00 am to 6.00 pm Monday to Saturday. 11. The Applicant will remove overburden only between the following hours: ▪ 7.00 am to 6.00 pm Monday to Saturday. 12. The Applicant will operate the Brick making facility and storage yard at the Project Site 24 hours a day, Monday to Sunday. 13. The Applicant will receive and dispatch finished building products only between the following hours: ▪ 5.00 am to 10.00 pm Monday to Friday. ▪ 6.00 am to 6.00pm Saturday. 14. The Applicant will receive and dispatch raw material only between the following hours: ▪ 6.00 am to 10.00 pm Monday to Friday. ▪ 6.00 am to 6.00pm Saturday. 15. The Applicant will conduct cash sales only between the following hours: ▪ 6.00 am to 6.00 pm Monday to Saturday.

Issue	Commitment
	16. The Applicant will operate the sales selection/customer display centre only between the following hours: ▪ 8.00 am to 5.00 pm Monday to Sunday. 17. Construction works shall be limited to 7am to 6pm Monday to Friday and 8am to 1pm on Saturdays. 18. A CNVMP will be prepared and implemented during development construction. 19. The construction noise mitigation measures described in Chapter 5.5 of the preferred development noise impact assessment report (appended to the RTS) shall be implemented. 20. Vibration during construction will be managed through the CNVMP to ensure that vibration impacts comply with the limits prescribed in British Standard BS 7385 for structural damage and in Assessing Vibration: a technical guide (DECCW, 2006) for human response. 21. The Applicant and/or its appointed contractors will select and maintain bulk earthwork machinery as specified in the preferred development noise impact assessment report (appended to the RTS). 22. Broadband reversing alarms or other non-tonal vehicle movement and warning alarms shall be fitted to all machinery on site. The potential noise impact associated with reversing alarms shall be managed and minimised via a combination of proactive driver/operator training and operational procedures. 23. The Applicant shall implement a noise monitoring programme which would involve quarterly attended noise monitoring at a number of nearby identified receiver locations for 12 months after all Modification 3 and 4 activities are in full operation. If there are no exceedances of the project noise trigger levels during quarterly noise monitoring during the first year of monitoring then noise monitoring will cease. Additional noise monitoring would be undertaken in response to any noise complaints. 23. The Applicant shall undertake consultation with identified Martin Road residential receivers predicted to exceed the RNP criteria and conduct further investigation of their residences (as detailed in Section 2.3.3 and 4.1 of the RTS) to determine whether they qualify for and require the 'Type 1' treatment package from RMS's (2015) *At-receiver Treatment Guideline*. 24. Further investigations of the six residences potentially affected by road noise will be undertaken prior to increasing heavy vehicle movements along Martin Road above the approved heavy vehicle numbers and no greater than 180 truck movements in the daytime period. The investigation will determine whether the residences require the 'Type 1' treatment package from RMS's (2015) At-receiver Treatment Guideline. 25. Prior to construction of the Martin Road-Elizabeth Drive intersection, existing road noise levels would be qualified to determine if architectural treatment should be offered to receivers along Elizabeth Drive raising complaints about increased road noise levels. 26. The Applicant will maintain a noise complaint register.
Surface Water	**Stormwater management** 27. The Applicant shall manage surface water on the Project Site in accordance with the WMP prepared for the Project Site and revised for the development, including surface water management measures include in the Modification 3 and 4 EA and the RTS. 28. If during the operational phase of the quarry or on completion of the quarry operations, the Applicant wishes to make use of the water from the pits/dams in the brick making process or for reuse at other premises offsite etc, a licence will be obtained from DPIE. 29. Sediment basins 4, 5 and 6 and the new basins at the raw material stockpile area and Pit 3 will be sized and operated in accordance with Landcom's (2004) Managing Urban Stormwater: Soils & Construction. If any of these basins are to be modified to perform additional stormwater treatment functions in future (other than sediment capture), then appropriate modelling and design of the basins will be required at that time. In this case monitoring of discharges from the basin at Pit 3 to South Creek will be required. 30. The site WMP will be revised prior to commencement of the modification to include the revised surface water management approach, and monitoring of any water discharged from the site. **Monitoring** 31. Electrical conductivity, pH, total nitrogen, total suspended solids, turbidity, total alkalinity, arsenic and copper will be monitored at the discharge points to Badgerys Creek and South Creek. Discharges will be monitored daily during the first month of continuous discharge, then weekly if the first month of data does not exceed concentration limits. Monitoring will revert to daily if any limits are exceeded and/or concentrations are reduced below limits.

Issue	Commitment
	32. Total dissolved solids, total phosphorus, arsenic, cadmium, chromium, lead, nickel, zinc and mercury will be sampled weekly during the first two months, which will reduce to monthly if there are no exceedances. 33. The analytes previously sampled in Pit 1 will be monitored at three depth levels from the surface to 6 m at two locations near the discharge point to Badgerys Creek. Water will be monitored weekly for three weeks prior to discharge, then monthly. This monitoring will continue for the life of the development, and in the perched treatment basin described above. 34. Similar sampling is also required for the new basin at Pit 3 if the basin is being used to treat Pit 3 water (other than sediment capture). The list of analytes may be able to be reduced according to the future quality of stormwater collected in Pit 3. **Licensing and approvals** 35. CSR will apply to the EPA to amend the EPL to incorporate the discharge rates and concentration limits for relevant physical and chemical stressors, and toxicants, at the discharge point to Badgerys Creek. 36. CSR will apply to the EPA to amend the EPL, if and when required, to incorporate appropriate discharge rates and concentration limits for discharges from the basin at Pit 3, for which time the basin provides additional water treatment other than sediment capture. 37. CSR will consult DPIE Water on the need for water licenses associated with the modification. 38. The EPA will be engaged, post approval, to determine whether the pit water must be classified in terms of the Protection of the Environment Operations Act 1997 (POEO Act) and to include the discharge point in the EPL. **Erosion and sediment control** 39. Erosion and sediment controls will be implemented at the pit areas once they are filled with Fill and rehabilitation has commenced. These measures will remain in place until surfaces are fully stabilised. 40. Erosion and sediment controls will be implemented along the unsealed Fill haul road, which will direct runoff to the pits or local sediment traps.
Groundwater	41. The Applicant shall prepare and implement a Groundwater Monitoring Program for the Project Site generally in accordance with the methodology provided in Chapter 11 of the 2011 EA, subject to consultation with the DPIE (water, lands and primary industry) and the satisfaction of the Director-General of the DP&I. 42. The WMP will be updated to include the groundwater monitoring network and a TARP for exceedances of groundwater criteria, which will be developed based on the baseline groundwater data. 43. The Applicant shall report the results of the Groundwater Monitoring Program to the Secretary of the DPIE on an annual basis. 44. The Applicant shall implement appropriate management measures in relation to groundwater as indicated by the Monitoring Program and agreed with the Secretary. 45. A licence to authorise any groundwater monitoring installation, required as part of this development, shall be obtained from the DPIE Water prior to any drilling commencing. 46. The Applicant shall implement an alluvial aquifer mapping and assessment program to inform: ▪ The definition of the boundaries of the alluvial system. ▪ Adjustment to the extent of proposed pits to avoid impacts to the alluvial aquifer. ▪ The establishment of further mitigation measures (if required) to minimise potential impacts upon the alluvial aquifer. ▪ This program will commence within 12 months of recommencing quarrying operations and the results will be reported to the Secretary of the DPIE.
Rehabilitation	47. The site will be progressively rehabilitated in accordance with the approved rehabilitation strategy and rehabilitation management plan. 48. The rehabilitation strategy and rehabilitation management plan will be revised to incorporate the development, and any additional management strategies to ensure temporary stabilisation of exposed surfaces, permanent stabilisation strategies and progressive rehabilitation with groundcover vegetation. 49. The rehabilitation management plan will be revised to exclude plant species that are known to attract wildlife and grow to a size which will penetrate the OLS. 50. The Applicant shall carry out rehabilitation works at the Project Site in accordance with the RMP prepared for the Project Site. 51. The Applicant will prepare a Final Landform Rehabilitation Plan in consultation with the DPIE two years prior to the completion of all approved quarrying activities.
Traffic and Transport	52. The Applicant shall manage traffic movements to and from the Project Site generally in accordance with the following:

Issue	Commitment
	▪ Personnel operating trucks and vehicles to and from the Project Site would be required to undertake a site-specific health and safety induction, specifying operating hours and vehicle speed limits on Martin Road. ▪ A heavy vehicle protocol would be developed for the Project Site and distributed to relevant staff and contractors during induction procedures. The protocol would deal with such issues as timing of vehicle movements, idling of vehicles, speed limits and parking. ▪ Unnecessary vehicle movements would be minimised where possible. ▪ Deliveries would be scheduled on larger capacity 'Truck and Trailer' vehicles rather than 'Truck Only' vehicles where possible to minimise truck movements. ▪ A construction traffic management plan will be prepared and implemented to manage impacts on the road network, including the intersection, from construction vehicles. ▪ Traffic signals and road upgrades will be constructed at the Martin Road-Elizabeth Drive intersection prior to increasing heavy vehicle movements from the development above the approved heavy vehicle numbers. ▪ CSR will contribute to the upgrade and ongoing maintenance of Martin Road in accordance with the deed of agreement with LCC.
Cultural Heritage	53. The Applicant shall adopt the following measures in relation to the management of cultural heritage on the Project Site: ▪ The heat retainer hearth will continue to be protected by a fenced 10m exclusion zone. ▪ All Aboriginal heritage items collected during survey and test excavations will be reburied with the hearth in consultation with the RAPs. ▪ Should Aboriginal heritage items be uncovered during the course of the approved works, works shall cease. In cases where historical items have been uncovered, Heritage NSW is to be advised or should indigenous items be uncovered the National Parks and Wildlife Service shall be advised. ▪ Workers/contractors shall be informed of their obligations under the NPW Act 1974, namely that it is illegal to disturb, damage or destroy an Aboriginal object without the prior approval of the Secretary of DPC. ▪ Should human remains be found in, on, or under the land during construction, the responsible party shall: - Contact the local police. - Not disturb or excavate the remains. - Immediately cease all work at the particular location. - Notify the Heritage NSW (DPC) office as soon as practicable and provide any available details of the remains and their location. - Not recommence any work at the particular location until authorised in writing by the Heritage NSW. 54. The AHMP will be updated with the findings of the Modification 4 ACHA.
Ecology	55. The Applicant shall adopt the following measures in relation to the removal of any trees on the Project Site: ▪ The canopy of the trees to be visually inspected prior to clearing to assess for the presence of fauna. Where bird species are detected the tree is to be nudged prior to felling to encourage the fauna to vacate the tree prior to felling. Trees to be left in situ until the birds leave the canopy. ▪ Felled trees are to be left in-situ for at least 24 hours to allow fauna species to relocate. Qualified personnel are to be on hand to check for wildlife and relocate them. ▪ Felled wood is to be relocated to the remnant woodland (and not placed in piles) or chipped and used in rehabilitation areas. ▪ Should any wildlife be inadvertently injured during the proposed works, WIRES or an accredited veterinarian shall be contacted. ▪ A 60 m buffer area shall be provided along Badgerys Creek and the Badgerys Creek tributary, except where Pit 2 extends into these buffers. Rehabilitation works are to be undertaken in this area in accordance with the RMP. ▪ Five local native trees shall be planted for each mature native tree that is removed. The replacement trees shall consist of a diversity of local provenance tree species from the native vegetation community (or communities) that occur, or once occurred on the site. The plantings shall be located adjacent to the riparian vegetation along South Creek, Badgerys Creek and its tributary.
Aquatic biodiversity	56. A 40 m vegetated riparian zone will be maintained around the wetland adjacent to South Creek and 20 m zone will be maintained around the tributary to Badgerys Creek (except over Pit 2). 57. As the hydraulic modelling for the surface water assessment was indicative, geomorphology will be assessed in greater detail to validate the bed and bank materials of Badgerys Creek prior to finalisation of the pit dewatering strategy. This

Issue	Commitment
	will include quantification of bed and bank material and particle size and calculation of critical shear stress for the bed and bank to determine its sensitivity to erosion. 58. If the bed and bank materials are demonstrated to be sensitive to erosion, the optimum flow rate that can be achieved without impacting the creek bed and banks will be determined in a sediment transport model. 59. It will be necessary to gain further water quality and flow data to determine the impact of discharges on Badgerys Creek. Water quality will be monitored every month at the four Badgerys Creek and South Creek monitoring locations as described in Section 6.3.2 of the EA. This will include nitrogen speciation to determine which portion of nitrogen is bioavailable and could impact aquatic ecosystems. 60. A biological monitoring program will be developed to detect if the macroinvertebrate community is changed by exposure to discharge water. An in-stream vegetation monitoring program will be prepared and implemented to detect if the discharge is impacting vegetation community composition and mortality. 61. Monitoring for changes to instream vegetation and macroinvertebrates will be incorporated into a pit dewatering plan as a sub-plan to the existing water management plan. 62. CSR will compile a fauna relocation plan. This plan will develop strategies for aspects such as transferring aquatic fauna, acclimatising aquatic fauna to different water conditions and managing pest species. DPIE will be consulted during the development of this strategy.
Contamination	63. The potential presence of asbestos in the eastern edge of Pit 1 will be added to the site Asbestos Register. 64. A materials management plan will be prepared to ensure that surface water, backfilled material and imported soils are handled appropriately, do not pose a risk to human health or the environment and will be suitable for the proposed land use. The plan will provide procedures to appropriately quantify, classify, dispose of and report on potential contaminants. 65. A UFP will be prepared, providing guidance in the event that future below ground excavations identify contaminated materials (e.g. asbestos, staining, odours). The UFP will outline procedures for handling, assessing and managing any contamination that may be identified as part of Modification 4 works. If previously unidentified contaminated materials are encountered during construction and operation of the proposed modification, relevant statutory requirements, including potential soil testing and waste classification, will need to be complied with, and the material managed and disposed of appropriately. 66. Stored/stockpiled materials within the proposed disturbance footprints will be inspected and they will be recycled or disposed at facilities which can legally receive such materials. 67. Soil materials within the vicinity of the Modification 3 works will be assessed in accordance with NSW EPA (2014) *Waste Classification Guidelines* and either re-use them on site where suitable or dispose of them offsite to a landfill which can legally receive such materials. 68. Conduct a hazardous material survey on existing site structures prior to demolition/alteration activities.
Waste	69. The Applicant shall manage waste in relation to the development in accordance with the existing WMP for the Project Site. 68. (*Deleted*). 70. All waste generated on site will be managed in accordance with the site's waste management plan that will follow the waste hierarchy of avoid, reduce, re-use, recycle and will be updated to include development works.
Visual amenity	71. Proposed lighting at the site will still comply with Australian Standard AS4282 (INT) 1995 - Control of Obtrusive Effects of Outdoor Lighting.
Mineral Resources	72. The Applicant will provide annual production data to the water, lands and primary industries division of the Department of Planning, Industry and Environment, as and when requested.
Environmental Management	73. The Applicant shall prepare an EMS for the Project Site to provide environmental management practices and procedures to be followed during the operation of the development. The EMS shall include, but not necessarily be limited to: ▪ identification of statutory and other obligations that the Applicant is required to fulfil in relation to operation of the development; ▪ a description of the roles and responsibilities for all key personnel involved in environmental management of the development; ▪ the environmental policies and principles to be applied to the operation of the development; and ▪ describe in general terms how the environmental performance of the development would be monitored and managed.

Appendix B: Mining Lease 1771

Instrument of Variation

Mining Lease 1771 (1992)

I, **JAMIE TRIPODI, Executive Director Assessments & Systems**, Mining Exploration and Geoscience in the Department of Regional NSW, with the delegated authority of the Minister under section 261B and clause 12 of Schedule 1B of the *Mining Act 1992* (the Act), **vary** the conditions of mining lease **ML 1771 (1992)** as described in Schedule A.

The conditions of **ML 1771 (1992)**, as varied, are set out in Schedule B.

The variation takes effect on 17 October 2022.

JAMIE TRIPODI
Executive Director Assessments & Systems
As delegate for the Minister administering the *Mining Act 1992*
Delegation date: 14 May 2018

Dated: 14 August 2022

Schedule A

Condition		Variation	New Condition
	Definitions	Definitions of 'Department', 'Environment' 'Environmental incident notifications and reports' and 'Harm to the environment' omitted as no longer used.	N/A
1	Notice to Landholders	Wording amended to modernise the condition	1. Notice to Landholders – see Schedule B
2	Rehabilitation	Condition omitted	N/A
3	Mining Operations Plan and Annual Rehabilitation Report	Condition omitted	N/A
4	Non-Compliance Reporting	Condition omitted	N/A
5	Environmental Incident Report	Condition omitted	N/A
7	Resource Recovery	Condition omitted	N/A
8	Security	Condition amended to modernise the wording. Condition has been re-numbered due to omission of other conditions.	2. Security– see Schedule B
9	Cooperation Agreement	Condition amended to modernise the wording. Condition has been re-numbered due to omission of other conditions.	3. Cooperation Agreement – see Schedule B
N/A		New condition attached	4. Assessable Prospecting Operations– see Schedule B
SPECIAL CONDITIONS			
Nil			

Schedule B

Mining Lease Conditions

(Version as at February 2022)

Definitions

Words used in this mining lease have the same meaning as defined in the *Mining Act 1992* except where otherwise defined below:

Term	Definition
Act	means the *Mining Act 1992.*
Landholder	for the purposes of these conditions: • does not include a secondary landholder • includes, in the case of exempted areas, the controlling body for the exempted area.
Minister	means the Minister administering the Act.

Note:

1. The rights and duties of the Lease Holder(s) are those prescribed by the *Mining Act 1992* and the Mining Regulation 2016, subject to the terms and conditions of this mining lease.
2. This mining lease does not override any obligation on the lease holder(s) to comply with the requirements of other legislation and regulatory instruments which may apply (including all relevant development approvals) unless specifically provided under the *Mining Act 1992* or other legislation or regulatory instruments.

MINING LEASE CONDITIONS

Standard conditions

See Mining Regulation 2016, Schedule 8A, Part 2.

NOTE TO HOLDERS: The prescribed standard conditions in the Mining Regulation 2016, Schedule 8A, Part 2 apply in addition to the conditions in this Schedule 2 (but have not been replicated in this mining lease). The conditions imposed by the Mining Regulation 2016 prevail to the extent of any inconsistency with the conditions in this Schedule 2.

General conditions

1. Notice to Landholders

(a) Within 90 days from the date of grant or renewal of this mining lease, the lease holder must give each landholder notice in writing:

(i) that this mining lease has been granted or renewed; and

(ii) whether the lease includes the surface.

The notice must include a plan identifying the lease area and each landholder and individual land parcel within the lease area.

(b) If there are ten or more landholders to which notice must be given, the lease holder will be taken to have complied with condition 1(a) if a notice complying with condition 1(a) is published in a newspaper circulating in the region where the lease area is situated.

2. Security

The lease holder is required to provide and maintain a security deposit to secure funding for the fulfilment of obligations under the mining lease, including obligations under the mining lease that may arise in the future.

The amount of the security deposit to be provided has been assessed at **$2,258,000**.

3. Cooperation Agreement

The lease holder must make every reasonable attempt, and be able to demonstrate its attempts to the satisfaction of the Secretary, to enter into a cooperation agreement with the holder(s) of any overlapping authorisations issued under the *Mining Act 1992* and petroleum titles issued under the *Petroleum (Onshore) Act 1991*. The cooperation agreement should address but not be limited to:

- access arrangements
- operational interaction procedures
- dispute resolution
- information exchange
- well location
- timing of drilling

- potential resource extraction conflicts; and
- rehabilitation issues.

4. Assessable Prospecting Operations

(a) The lease holder must not carry out any assessable prospecting operation on land over which this lease has been granted unless:

(i) it is carried out in accordance with any necessary development consent; or

(ii) if development consent is not required, the prior written approval of the Minister has been obtained.

(b) The Minister may require the lease holder to provide such information as required to assist the Minister to consider an application for approval.

(c) An approval granted by the Minister under this condition may be granted subject to terms.

(d) The lease holder must comply with the approval granted to the holder under this condition.

Special conditions

Nil

Exploration Reporting

Note: *Exploration Reports (Geological and Geophysical)*

The lease holder must lodge reports in accordance with the requirements in section 163C of the Mining Act 1992 and clauses 59, 60 and 61 of the Mining Regulation 2016 as well as any further requirements issued by the Secretary under clause 62 of the Mining Regulation.

Guidelines for the structure, content and data format requirements for reports are set out in the Exploration Reporting: A guide for reporting on exploration and prospecting in New South Wales.

Appendix C: EPA Licence

Environment Protection Licence

Licence - 684

Licence Details	
Number:	684
Anniversary Date:	18-November

Licensee

PGH BRICKS & PAVERS PTY LIMITED

LOCKED BAG 1345

NORTH RYDE NSW 1670

Premises

BADGERYS CREEK

235 MARTIN ROAD

BADGERYS CREEK NSW 2171

Scheduled Activity

Ceramic works

Extractive activities

Mining for minerals

Fee Based Activity	Scale
Ceramics production	0-15000 T annual production capacity
Land-based extractive activity	0-30000 T annual capacity to extract, process or store
Mining for minerals	0-30000 T annual production capacity

Region

Metropolitan West - Sydney

4 Parramatta Square, 12 Darcy Street

PARRAMATTA NSW 2150

Phone: (02) 9995 5000

Fax: (02) 9995 6900

Locked Bag 5022

PARRAMATTA NSW 2124

Environment Protection Licence

Licence - 684

Environment Protection Licence

Licence - 684

Environment Protection Licence

Licence - 684

Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

Environment Protection Licence

The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

PGH BRICKS & PAVERS PTY LIMITED
LOCKED BAG 1345
NORTH RYDE NSW 1670

subject to the conditions which follow.

Environment Protection Licence

Licence - 684

1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Ceramic works	Ceramics production	0 - 15000 T annual production capacity
Extractive activities	Land-based extractive activity	0 - 30000 T annual capacity to extract, process or store
Mining for minerals	Mining for minerals	0 - 30000 T annual production capacity

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
BADGERYS CREEK
235 MARTIN ROAD
BADGERYS CREEK
NSW 2171
LOT 54 DP 3050, LOT 55 DP 3050, LOT 56 DP 3050, LOT 57 DP 3050, LOT 58 DP 3050, LOT 59 DP 3050, LOT 1 DP 373863, PART LOT 1 DP 981161, LOT 1 DP 1035249, LOT 2 DP 1035249

A3 Information supplied to the EPA

A3.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:
a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

Environment Protection Licence

2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

Air

EPA identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Discharge to air; Air emissions monitoring	Discharge to air; Air emissions monitoring	The stack serving the kiln shown as Point 1 - Kiln Exhaust Stack on drawing titled "Boral Badgerys Creek Air Emission Points" Dated 4/03/2009 Rev: 1 submitted to DECC on 4/03/09
2	Discharge to air; Air emission monitoring	Discharge to air; Air emission monitoring	The stack serving the dryer shown as Point 2 - Dryer Exhaust Stack on drawing titled "Boral Badgerys Creek Air Emission Points" Dated 4/03/2009 Rev: 1 submitted to EPA on 4/03/09

P1.2 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

P1.3 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

Water and land

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
3	Discharge to waters and water quality monitoring	Discharge to waters and water quality monitoring	Outlet from Sediment Basin B as described in 'Water Pollution Impact Assessment for Discharge of Stormwater Runoff from Disturbed Areas at PGH Badgerys Creek (Version 2)', PGH Bricks, 04/02/2021

3 Limit Conditions

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

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L2 Concentration limits

L2.1 For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L2.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.

L2.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\s.

L2.4 Air Concentration Limits

POINT 1

Pollutant	Units of measure	100 percentile concentration limit	Reference conditions	Oxygen correction	Averaging period
Total Solid Particles	milligrams per cubic metre	100			
Hydrogen fluoride	milligrams per cubic metre	50			
Nitrogen Oxides	milligrams per cubic metre	2000			

L2.5 Water and/or Land Concentration Limits

POINT 3

Pollutant	Units of Measure	50 Percentile concentration limit	90 Percentile concentration limit	3DGM concentration limit	100 percentile concentration limit
pH	pH				6.5-8.5
Turbidity	nephelometric turbidity units				50

L3 Waste

L3.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste

in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	Waste	Any waste received on site that is below licensing thresh holds in Schedule 1 of the POEO Act, as in from time to time.		N/A
NA	General or Specific exempted waste	Waste that meets all the conditions of a recourse recovery exemption Clause 92 of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	N/A

L4 Noise limits

L4.1 Noise from the premises (excluding mobile plant) must not exceed:
a) An LA10(15 minute) noise emission criterion of 55 dB(A)(0700 to 2200) Monday to Saturday and 0800 to 2200 Sundays and Public Holidays; and
b) An LA10(15 minute) noise emission criterion of 40 dB(A) at all other times,
except as expressly provided by this licence.

L4.2 Noise from the operation of the mobile plant must not exceed:
a) An LA10(15 minute) noise emission criterion of 50 dB(A)>(0700 to 2200) Monday to Saturday and (0800 to 2200) Sundays and Public Holidays; and
b) An LA10[15 minute) noise emission criterion of 40 dB(A) at all other times,
except as expressly provided by this licence.

L4.3 Noise from the premises is to be measured or computed at the most affected point on or within the residential property boundary or, if that is more than 30 metres from the residence, at the most affected point within 30 metres of the residence to determine compliance with condition L4.1. 5dB(A) must be added if the noise is tonal or impulsive in character.

L4.4 Noise from the operation of the mobile plant is to be measured or computed at the most affected point on or within the residential property boundary or, if that is more than 30 metres from the residence, at the most affected point within 30 metres of the residence to determine compliance with condition L4.2. 5dB(A) must be added if the noise is tonal or impulsive in character.

L5 Potentially offensive odour

L5.1 No condition in this licence identifies a potentially offensive odour for the purposes of section 129 of the

Protection of the Environment Operations Act 1997.

Note: Section 129 of the Protection of the Environment Operations Act 1997 provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour.

L6 Other limit conditions

L6.1 **Asbestos**

Note: The licensee must comply with all conditions as specified in this licence or where no specific condition are outlined in this licence, the licencee must comply with the Protection of the Environment Operations (Waste) Regulation 2005.

4 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.
This includes:
a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
a) must be maintained in a proper and efficient condition; and
b) must be operated in a proper and efficient manner.

O3 Dust

O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.

O4 Processes and management

O4.1 The licensee must ensure that any liquid and/or non-liquid waste generated and/or stored at the premises is assessed and classified in accordance with the EPA Waste Classification Guidelines as in force from time to time to time.

O4.2 The licensee must ensure that waste identified for recycling is stored separately from other waste.

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O5 Other operating conditions

O5.1 Water from pits 1, 2 or 3 must not be transferred to Sediment Basin A or Sediment Basin B, or discharged to waterways.

5 Monitoring and Recording Conditions

M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:
a) in a legible form, or in a form that can readily be reduced to a legible form;
b) kept for at least 4 years after the monitoring or event to which they relate took place; and
c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
a) the date(s) on which the sample was taken;
b) the time(s) at which the sample was collected;
c) the point at which the sample was taken; and
d) the name of the person who collected the sample.

M2 Requirement to monitor concentration of pollutants discharged

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

M2.2 Air Monitoring Requirements

POINT 1

Pollutant	Units of measure	Frequency	Sampling Method
Chlorine	milligrams per cubic metre	Special Frequency 1	TM-7
Dry gas density	kilograms per cubic metre	Special Frequency 1	TM-23
Hydrogen fluoride	milligrams per cubic metre	Special Frequency 1	TM-9
Moisture content	percent	Special Frequency 1	TM-22
Molecular weight of stack gases	grams per gram mole	Special Frequency 1	TM-23
Nitrogen Oxides	milligrams per cubic metre	Special Frequency 1	TM-11

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Odour	odour units	Special Frequency 1	OM-8
Temperature	degrees Celsius	Special Frequency 1	TM-2
Total Solid Particles	milligrams per cubic metre	Special Frequency 1	TM-15
Type 1 substance	milligrams per cubic metre	Special Frequency 1	TM-12
Type 2 substance	milligrams per cubic metre	Special Frequency 1	TM-13
Velocity	metres per second	Special Frequency 1	TM-2
Volatile organic compounds	milligrams per cubic metre	Special Frequency 1	TM-34
Volumetric flowrate	cubic metres per second	Special Frequency 1	TM-2

POINT 2

Pollutant	Units of measure	Frequency	Sampling Method
Chlorine	milligrams per cubic metre	Special Frequency 1	TM-7
Dry gas density	kilograms per cubic metre	Special Frequency 1	TM-23
Hydrogen fluoride	milligrams per cubic metre	Special Frequency 1	TM-9
Moisture content	percent	Special Frequency 1	TM-22
Molecular weight of stack gases	grams per gram mole	Special Frequency 1	TM-23
Nitrogen Oxides	milligrams per cubic metre	Special Frequency 1	TM-11
Odour	odour units	Special Frequency 1	OM-8
Temperature	degrees Celsius	Special Frequency 1	TM-2
Total Solid Particles	milligrams per cubic metre	Special Frequency 1	TM-15
Type 1 substance	milligrams per cubic metre	Special Frequency 1	TM-12
Type 2 substance	milligrams per cubic metre	Special Frequency 1	TM-13
Velocity	metres per second	Special Frequency 1	TM-2
Volatile organic compounds	milligrams per cubic metre	Special Frequency 1	TM-34
Volumetric flowrate	cubic metres per second	Special Frequency 1	TM-2

M2.3 For the purpose of the above tables Special Frequency 1 means that when the plant is in operation the pollutants listed in the tables above for licence Discharge Poins 1 and 2 must be monitored at least once every six months.

M2.4 Water and/ or Land Monitoring Requirements

POINT 3

Environment Protection Licence

Pollutant	Units of measure	Frequency	Sampling Method
Aluminium (dissolved)	milligrams per litre	Monthly during discharge	Grab sample
Electrical conductivity	microsiemens per centimetre	Continuous during discharge	In line instrumentation
pH	pH	Continuous during discharge	In line instrumentation
Turbidity	nephelometric turbidity units	Continuous during discharge	In line instrumentation

M2.5 For the purpose of the above table, if monitoring results for aluminium (dissolved) exceed ANZG (2018) default guideline values (55µg/L for fresh water, pH >6.5), the licensee must notify the EPA within 7 days.

M3 Testing methods - concentration limits

M3.1 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:
a) any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or
b) if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or
c) if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

Note: The *Protection of the Environment Operations (Clean Air) Regulation 2010* requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".

M3.2 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

M4 Recording of pollution complaints

M4.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M4.2 The record must include details of the following:
a) the date and time of the complaint;
b) the method by which the complaint was made;
c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
d) the nature of the complaint;
e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the

complainant; and
f) if no action was taken by the licensee, the reasons why no action was taken.

M4.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M4.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M5 Telephone complaints line

M5.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M5.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M5.3 The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.

6 Reporting Conditions

R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee notification that the Annual Return is due.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

R1.3 Where this licence is transferred from the licensee to a new licensee:
a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and

ending on:
a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.7 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
a) the licence holder; or
b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
a) where this licence applies to premises, an event has occurred at the premises; or
b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:
a) the cause, time and duration of the event;
b) the type, volume and concentration of every pollutant discharged as a result of the event;

c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

7 General Conditions

G1 Copy of licence kept at the premises or plant

G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

G2 Other general conditions

G2.1 **Completed Programs**

Program	Description	Completed Date
Stormwater management plan	Prepare stormwater management plan for site that includes fuel storage; sewage irrigation.	22-October-2002
Trial Use of Recycled Wastewater	Trial use of recycled wastewater in brick manufacturing. Reduce use of water by using recycled wastewater.	01-December-2008

Environment Protection Licence

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Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

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flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environmen t Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder described at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 mo nths. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.

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TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non - putrescible), special waste or hazardous waste

Mr Tim Gilbert

Environment Protection Authority

(By Delegation)

Date of this edition: 01-March-2000

Environment Protection Licence

Licence - 684

End Notes

1	Licence varied by notice 1009191, issued on 27-Jun-2002, which came into effect on 22-Jul-2002.
2	Licence varied by change to legislation, issued on 05-Jul-2007, which came into effect on 05-Jul-2007.
3	Licence varied by notice 1076261, issued on 19-Sep-2007, which came into effect on 19-Sep-2007.
4	Licence varied by notice 1079904, issued on 28-Nov-2007, which came into effect on 28-Nov-2007.
5	Licence varied by notice 1082805, issued on 06-Mar-2008, which came into effect on 06-Mar-2008.
6	Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
7	Licence varied by notice 1093859, issued on 18-Nov-2008, which came into effect on 18-Nov-2008.
8	Licence varied by change to FBA for summer pollutants, issued on 16-Jan-2009, which came into effect on 16-Jan-2009.
9	Licence varied by notice 1097146, issued on 20-Apr-2009, which came into effect on 20-Apr-2009.
10	Licence varied by notice 1524840 issued on 08-Sep-2014
11	Licence varied by notice 1528953 issued on 19-Mar-2015
12	Licence transferred through application 1530237 approved on 04-May-2015 , which came into effect on 04-May-2015
13	Licence varied by notice 1601711 issued on 23-Mar-2021

Appendix D: Water Licences

Information about a water licence or approval

Use this tool to search for information about water licences and approvals issued under the Water Act 1912 or Water Management Act 2000.

Select the type of licence or approval and enter the licence or approval number:

- Water access licence (WAL): a WAL number starts with the letters 'WAL' followed by several numbers; a WAL also has a reference number that starts with a two digit number, followed by 'AL' and then several numbers.
- 1912 water licence: a water licence number starts with a two digit number, followed by a two letter code and then several numbers. Note: a PT reference number cannot be entered.
- Approval: an approval number starts with a two digit number, followed by a two letter code (WA, UA, CA or FW) and then several numbers.

Search for information about either a:

(•) Water access licence (WAL) issued under the Water Management Act 2000

Water Access Licence (WAL) Number WAL 24346

A WAL number starts with the letters 'WAL' followed by several numbers

Can't find your WAL number? Do you have a reference number? A reference number starts with a two digit number, followed by 'AL' and then several numbers. Use the following tool to find your WAL by entering your reference number. Enter the reference number to find the WAL number.

Notes:

The search results will list the conditions imposed on the water access licence. Any approved water supply work/s nominated on the water access licence are identified by the approval number/s for the work/s.

The information about a water access licence provided in the search results is a summary and may not always be up to date. If you require full and up to date details about a particular water access licence (including current holders, share and extraction component details, encumbrances and notations) you should search the Water Access Licence Register administered by Land and Property Information.

( ) Approval issued under the Water Management Act 2000

Find out if a Water Act 1912 licence has been converted

( ) Water licence conversion status

« Previous Search Print Export

Search Results

Category [Subcategory]	Status	Water Source	Tenure Type	Management Zone	Share Components (units or ML)
Aquifer	Current	Sydney Basin Central Groundwater Source	Continuing		25.00

Extraction Times or Rates

Subject to conditions water may be taken at any time or rate

Nominated Work Approval(s)

10WA109463

- Conditions

Plan Conditions

Water sharing plan	Greater Metropolitan Region Groundwater Sources
	Take of water
MW0929-00001	From 1 July 2018, if the water supply work nominated on this access licence is located at or less than 40 m from the top of the high bank of a river then: A. water must not be taken in this groundwater source when flows are in the Very Low Flow Class for an unregulated river access licence in that river. B. This restriction will only apply when the system that confirms when water can be taken is available on the relevant licensor website. C. the relevant licensor will inform the licence holder in writing of the applicable restrictions and how to access the information on its website when this system becomes operative.
MW0919-00001	A maximum water allocation of 0.1 ML/unit share may be carried over in the account for this access licence from one water year to the next water year if a water meter is installed on each water supply work nominated on this licence and each meter is maintained in working order.
MW0605-00001	Water must be taken in compliance with the conditions of the approval for the nominated work on this access licence through which water is to be taken.
MW0547-00001	The total volume of water taken under this licence in any water year must not exceed a volume equal to: A. the sum of water in the account from the available water determination for the current year, plus B. the water carried over in the account from the previous water year, plus C. the net amount of water assigned to or from the account under a water allocation assignment, plus D. any water re-credited by the Minister to the account.
	Monitoring and recording
MW2338-00001	The completed logbook must be retained for five (5) years from the last date recorded in the logbook.
MW2336-00001	The purpose or purposes for which water is taken, as well as details of the type of crop, area cropped, and dates of planting and harvesting, must be recorded in the logbook each time water is taken.
MW0606-00001	The volume of water taken in the water year must be recorded in the logbook at the end of each water year. The maximum volume of water permitted to be taken in that water year must also be recorded in the logbook.
MW2337-00001	The following information must be recorded in the logbook for each period of time that water is taken: A. date, volume of water, start and end time when water was taken as well as the pump capacity per unit of time, and B. the access licence number under which the water is taken, and C. the approval number under which the water is taken, and D. the volume of water taken for domestic consumption and/or stock watering.
MW2339-00001	A logbook must be kept, unless the work is metered and fitted with a data logger. The logbook must be produced for inspection when requested by the relevant licensor.

	Reporting
MW0051-00002	Once the licence holder becomes aware of a breach of any condition on this access licence, the licence holder must notify the Minister as soon as practicable. The Minister must be notified by: A. email: water.enquiries@dpi.nsw.gov.au, or B. telephone: 1800 353 104. Any notification by telephone must also be confirmed in writing within seven (7) business days of the telephone call.

Other Conditions

NIL

Disclaimer: The NSW Office of Water does not warrant the data is current nor does it warrant that the data or the data capturing processes are free from corruption or error.

Privacy: The information provided is limited to meet the requirements of section 57 of the Privacy and Personal Information Act 1998.

Exporting and printing: Search results show a maximum of 50 rows per page. Search results can only be printed page by page.

More information: Should you require further information or technical assistance, please submit your request to water.enquiries@dpi.nsw.gov.au or contact 1800 353 104.

Department of Primary Industries Water

Statement of Approval

Water Management Act 2000

Approval details

Approval number	10WA109463
Status	CURRENT*
Approval kind	Water Supply Works
Water sharing plan	GREATER METROPOLITAN REGION GROUNDWATER SOURCES 2011
Date of effect	01/Jul/2011
Expiry date	08/Nov/2025
Approval holder(s)	Schedule 1
Water supply works	Schedule 2
Conditions	Schedule 3

Contact for service of documents

Name	PGH Bricks & Pavers Pty Ltd
Address	59-67 Cecil Road CECIL PARK NSW 2178

* **Note: An approval has effect for such period as is specified in the approval, or if the period is extended under section 105, that extended period. If an application for extension of an approval is lodged before the approval expires, the term of the expiring approval is extended until either the date of the final decision on the application, or a date fixed by the Minister for the approval, whichever is the later date. An approval which has expired can be the subject of an application to extend it but it needs to be accompanied by a statutory declaration of the reasons for the delay in making the application. If the Minister accepts these reasons the term of the approval is taken to have been extended, and the application may be dealt with, as if the application had been made before the approval expired.**

  It is an offence under the Water Management Act 2000 to breach a term or condition of the approval or to construct and use works to which the approval does not relate. It is also an offence to use works the subject of an approval if the approval has expired, been surrendered or cancelled.

Schedule 1 - Approval holders

The holders of this approval are:

Approval holder(s)	ACN (if applicable)
PGH Bricks & Pavers Pty Ltd	168 794 821

Important notice - change of landholder or contact

Please advise the Office in the event of any of the following, as soon as practicable:

- If there is a change in the ownership or occupation of the land benefited by this approval (see Schedule 2). Under the Water Management Act 2000, an approval is typically held by the owner or lawful occupier of the benefited land. Consequently, a change in occupation may cause a change in your legal obligations as an approval holder.*
- If there is a change to the contact person. You will be required to lodge a written statement signed by all the holders.*
- If there is a change to the mailing address for the nominated contact person. This should be done by the contact person in writing.

** An updated Statement of Approval will be issued free of charge*

Schedule 2 - Water supply works

Part A: Authorised water supply works

Subject to the conditions of this approval, in relation to each numbered work in the table, the holders of this approval are authorised to construct and use a water supply work of the type shown at the location specified:

Work 1

Specified work	EXCAVATION - GROUNDWATER
Specified location	1//373863 Whole Lot 1//1035249 Whole Lot
Management zone (if applicable)	
Water source	SYDNEY BASIN CENTRAL GROUNDWATER SOURCE
Water sharing plan	GREATER METROPOLITAN REGION GROUNDWATER SOURCES 2011

Schedule 3 - Conditions

The approval is subject to the following conditions:

Plan conditions

Water sharing plan ***Greater Metropolitan Region Groundwater Sources***

Take of water

MW0655-00001 Any water supply work authorised by this approval must take water in compliance with the conditions of the access licence under which water is being taken.

Water management works

MW0097-00001 If contaminated water is found above the production aquifer during the construction of the water supply work authorised by this approval, the licensed driller must:
A. notify the relevant licensor in writing within 48 hours of becoming aware of the contaminated water, and
B. adhere to the Minimum Construction Requirements for Water Bores in Australia (2012), as amended or replaced from time to time.

MW0487-00001 The water supply work authorised by this approval must be constructed within three (3) years from the date this approval is granted.

MW0044-00001 A. When a water supply work authorised by this approval is to be abandoned or replaced, the approval holder must contact the relevant licensor in writing to verify whether the work must be decommissioned.

B. The work is to be decommissioned, unless the approval holder receives notice from the Minister not to do so.

C. When decommissioning the work the approval holder must:
i. comply with the minimum requirements for decommissioning bores prescribed in the Minimum Construction Requirements for Water Bores in Australia (2012), as amended or replaced from time to time, and
ii. notify the relevant licensor in writing within sixty (60) days of decommissioning that the work has been decommissioned.

Monitoring and recording

MW0484-00001

Before water is taken through the water supply work authorised by this approval, confirmation must be recorded in the logbook that cease to take conditions do not apply and water may be taken.

The method of confirming that water may be taken, such as visual inspection, internet search, must also be recorded in the logbook.

If water may be taken, the:
A. date, and
B. time of the confirmation, and
C. flow rate or water level at the reference point in the water source
must be recorded in the logbook.

MW2338-00001

The completed logbook must be retained for five (5) years from the last date recorded in the logbook.

MW2336-00001

The purpose or purposes for which water is taken, as well as details of the type of crop, area cropped, and dates of planting and harvesting, must be recorded in the logbook each time water is taken.

MW2337-00001

The following information must be recorded in the logbook for each period of time that water is taken:
A. date, volume of water, start and end time when water was taken as well as the pump capacity per unit of time, and
B. the access licence number under which the water is taken, and
C. the approval number under which the water is taken, and
D. the volume of water taken for domestic consumption and/or stock watering.

MW0482-00001

Where a water meter is installed on a water supply work authorised by this approval, the meter reading must be recorded in the logbook before taking water. This reading must be recorded every time water is to be taken.

MW2339-00001

A logbook must be kept, unless the work is metered and fitted with a data logger. The logbook must be produced for inspection when requested by the relevant licensor.

Reporting

MW0051-00001

Once the approval holder becomes aware of a breach of any condition on this approval, the approval holder must notify the Minister as soon as practicable. The Minister must be notified by:
A. email: water.enquiries@dpi.nsw.gov.au,
or
B. telephone: 1800 353 104. Any notification by telephone must also be confirmed in writing within seven (7) business days of the telephone call.

Other conditions

Water management works

DK1198-00001

The approval holder must allow the relevant licensor or any person authorised by it, full and free access to the works, either during or after construction, for the purpose of carrying out inspection or test of the works and its fittings and shall carry out any work or alterations deemed necessary by the department for the protection and proper maintenance of the works, or the control of the water extracted and for the protection of the quality and the prevention from pollution or contamination of sub-surface water.

DK1208-00001

The approval holder must not construct or install works used for the purpose of conveying, distributing or storing water from the works authorised by this approval, that obstruct the reasonable passage of floodwaters flowing in, to, or from a river or lake.

Glossary

cease to take - Cease to take conditions means any condition on this approval, or on the access licence under which water is proposed to be taken, that prohibits the taking of water in a particular circumstance.

domestic consumption - Domestic consumption is the use of water for normal household purposes in domestic premises situated on the land.

licensor - WaterNSW or DPI Water, depending on which organisation administers your licences and/or approvals

logbook - A logbook is a document, electronic or hard copy, that records specific required information.

metered water supply work - A metered water supply work is a water supply work fitted with a data logger and a water meter that complies with Australian Standard AS 4747: Meters for non-urban water supply.

stock watering - Stock watering is the use of water for stock animals being raised on the land. It does not include the use of water for the raising of stock animals on an intensive commercial basis (kept in feedlots or buildings for all, or a substantial part, of the period during which the stock animals are being raised).

water meter - A water meter is a device that measures the volume of water extracted over a known period of time. Examples of a water meter include a mechanical meter, electromagnetic meter, channel meter with mobile phone, or an authorised meter equivalent.

General Notes

All conditions on an approval require compliance. An appeal to the Land and Environment Court against a decision to impose certain conditions on an approval can be made within 28 days after the date the decision is made. Conditions identified with the first letter "**D**" are those that can be appealed during the appeal period.

The words in this approval have the same meaning as in the *Water Management Act 2000*

Note: The words in this approval have the same meaning as in the WMA

END OF STATEMENT

Appendix E: Compliance Status

Project	**Badgerys Creek**
Approvals	**DPIE, EPL and Mining requirements**
Created by	**Nelma Arancibia**
Date Reviewed	**29-May-2023**
Reporting Period	

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 2	1	**OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT** In Addition to meeting the specific performance measures and criteria established under this consent, the Applicant must implement all reasonable and feasible measures to prevent, and if prevention is not reasonable and feasible, minimise, any material harm to the environment that may result from the construction and operation of the development, and any rehabilitation required under this consent.	Compliant
Project Approval - Mod 5	10_0014	Schedule 2	2	**TERMS OF APPROVAL** The Applicant , in acting on this consent, must carry out the development: (a) in compliance with the conditions of this consent; (b) in accordance with all written directions of the Secretary; and (c) in accordance with the development layout.	Not compliant
Project Approval - Mod 5	10_0014	Schedule 2	3	The Applicant, in acting on this consent, must carry out the development: (a) generally in accordance with the EA; (b) generally in accordance with EA (Mod 1); (c) generally in accordance with EA (Mod 2); (d) generally in accordance with EA (Mod 3 and 4); (e) generally in accordance with Modification Report (Mod 5); and (f) generally in accordance with the Statement of Commitments.	Compliant
Project Approval - Mod 5	10_0014	Schedule 2	4	The conditions of this consent and directions of the Secretary prevail to the extent of any inconsistency, ambiguity or conflict between them and a document referenced in condition 3 of this Schedule. In the event of an inconsistency, ambiguity or conflict between any of the documents referenced in condition 3 of this Schedule, the most recent document prevails. *Note: For the purposes of this condition, there will be an inconsistency between documents if it is not possible to comply with both documents, or in the case of a condition of consent or direction of the Secretary, and a document, if it is not possible to comply with both the condition or direction, and the document.*	Compliant
Project Approval - Mod 5	10_0014	Schedule 2	5	Consistent with the requirements of this consent, the Secretary may make written directions to the Applicant in relation to: (a) the content of any strategy, study, system, plan, program, review, audit, notification, report or correspondence submitted under or otherwise made in relation to this consent, including those that are required to be, and have been, approved by the Secretary; and (b) the implementation of any actions or measures contained in any such document referred to in (a) above. *Note: For the purposes of this condition, there will be an inconsistency between documents if it is not possible to comply with both documents, or in the case of a condition of consent or direction of the Secretary, and a document, if it is not possible to comply with both the condition or direction, and the document.*	Not applicable
Project Approval - Mod 5	10_0014	Schedule 2	5A	The development as modified by EA Mod 3 and 4, must be undertaken sequentially in the following stages: (a) Phase 1; (b) Phase 2; (c) Phase 3; and (d) Phase 4. Note: Each of these phases is listed in the definitions and shown in Appendix 3.	Not applicable

<table>
<tr><th>Document Name</th><th>Document Reference #</th><th>Schedule</th><th>Condition #</th><th>Compliance requirement</th><th>Compliance</th></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>5B</td><td>The development must notify the Department in writing, at least two weeks before the date of:
(a)the commencement of each Phase of the development;
(b)the completion of extraction in Pit 3;
(c)cessation of Brickmaking Activities; and
(d)decommissioning.</td><td>Compliant</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>6</td><td>COMPLIANCE:
The Applicant must ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this consent relevant to activities they carry out in respect of the development.</td><td>Compliant</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>7</td><td>APPLICABILITY OF GUIDELINES
References in the conditions of this consent to any guideline, protocol, Australian Standard or policy are to such guidelines, protocols, standards or policies in the form they are in as at the date of this consent.
However, consistent with the conditions of this consent and without altering any limits or criteria in this approval, the Secretary may, when issuing directions under this consent in respect of ongoing monitoring and management obligations, require compliance with an updated or revised version of such a guideline, protocol, standard or policy, or a replacement of them.</td><td>Compliant</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>8</td><td>LIMITS OF CONSENT
The Applicant may carry out quarrying operations on the site until 27 September 2031.
Note: Under this consent, the Applicant is required to decommission and rehabilitate the site and carry out additional requirements. Consequently, this consent will continue to apply in all respects other than to permit the carrying out of development, until the rehabilitation of the site and those requirements and undertakings have been carried out to the required standard.</td><td>Compliant</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>9A</td><td>The Applicant may receive, store, and dispatch finished building products at the site until brick making at the site commences.</td><td>Compliant</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>10</td><td>The Applicant must not exceed the limits in Table 1 during any calendar year.
Table 1: Limits on extraction, production, receival and dispatch volumes per calendar year<table><tr><th>Activity</th><th>Project Phase</th><th>Total Volume (tonnes per calendar year)</th></tr><tr><td>Extraction from Pit 3</td><td>Phase 1 and 2</td><td>420,000</td></tr><tr><td rowspan="2">Receive raw materials for brickmaking</td><td>Phase 1 and 2</td><td>215,000</td></tr><tr><td>Phase 3 onwards</td><td>360,000</td></tr><tr><td>Dispatch raw materials</td><td>Phase 1,2 and 3</td><td>275,000</td></tr><tr><td>Brick production</td><td>All Phases</td><td>300,000</td></tr><tr><td>Dispatch finished building products</td><td>All Phases</td><td>330,000</td></tr></table>Note: The Total Volume limits in Table 1 do not apply to the import of VENM for the purpose of backfilling voids. The import of VENM is separately managed under the restrictions on truck movements contained in Condition 12 of this Schedule.</td><td>Compliant</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>11</td><td>The Applicant must not transport bricks or quarry products to or from the site, other than by road.</td><td>Compliant</td></tr>
</table>

<table>
<tr><th>Document Name</th><th>Document Reference #</th><th>Schedule</th><th>Condition #</th><th>Compliance requirement</th><th>Compliance</th></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>12</td><td>The Proponent must not exceed the total truck movements detailed in Table 2.

Table 2: Total Truck Movements
<table><tr><th>Transport Route Stage</th><th>Project Phases</th><th>Day</th><th>Total truck movements[a]</th></tr><tr><td rowspan="3">Prior to the upgrade of the Martin Road-Elizabeth Drive Intersection</td><td rowspan="3">1,2 and 3</td><td>Monday to Friday</td><td>120</td></tr><tr><td>Saturday</td><td>40</td></tr><tr><td>Sundays</td><td>40</td></tr><tr><td rowspan="6">Following completion of the Martin Road-Elizabeth Drive Intersection upgrade</td><td rowspan="3">1,2 and 3</td><td>Monday to Friday</td><td>800</td></tr><tr><td>Saturday</td><td>358</td></tr><tr><td>Sundays</td><td>200</td></tr><tr><td rowspan="3">4</td><td>Monday to Friday</td><td>366</td></tr><tr><td>Saturday</td><td>98</td></tr><tr><td>Sunday</td><td>0</td></tr></table>[a] Note: each truck entering or exiting the site is counted as a separate movement.</td><td>Not compliant</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>12A</td><td>Truck movements entering or exiting the site on Sundays are restricted to the importation of Fill for the purpose of backfilling quarry pits and rehabilitation activities.

Note: Truck movements are also controlled further by the limits in condition 10 of this Schedule and operating hours in condition 1 of Schedule 3.</td><td>Not applicable</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>13</td><td>STRUCTURAL ADEQUACY
All new buildings and structures, and any alterations or additions to existing buildings and structures, that are part of the project, must be constructed in accordance with the BCA.
Notes:
• Under Part 6 of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for any proposed building works;
• Part 8 of the EP&A Regulation sets out the requirements for the certification of the project.</td><td>Not applicable</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>13A</td><td>BRICK KILN STACKS
The brick kiln stacks must not exceed 41 m above natural ground level.</td><td>Not applicable</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>14</td><td>DEMOLITION
All demolition work must be carried out in accordance with the Australian Standard AS 2601-2001: The Demolition of Structures (Standards Australia, 2001).</td><td>Compliant</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>15</td><td>PROTECTION OF PUBLIC INFRASTRUCTURE
Unless the Applicant and the applicable authority agree otherwise the Applicant must:
(a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the project; and
(b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the project.
Note: This condition does not apply to damage to roads caused as a result of general road usage or otherwise addressed by contributions required by condition 25 of Schedule 3.</td><td>Not applicable</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>16</td><td>OPERATION OF PLANT AND EQUIPMENT
All plant and equipment used on the site, or to monitor the performance of the project, must be:
(a) maintained in a proper and efficient condition; and
(b) operated in a proper and efficient manner.</td><td>Compliant</td></tr>
</table>

<table>
<tr><th>Document Name</th><th>Document Reference #</th><th>Schedule</th><th>Condition #</th><th>Compliance requirement</th><th>Compliance</th></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>16A</td><td>The external walls of all buildings including additions to existing buildings must comply with the relevant requirements of the BCA. Before the issue of a Construction Certificate and an Occupation Certificate, the Applicant must provide the Certifying Authority with documented evidence that the products and systems proposed for use or used in the construction of external walls, including finishes and claddings such as synthetic or aluminium composite panels, comply with the requirements of the BCA. The Applicant must provide a copy of the documentation given to the Certifying Authority to the Secretary within seven days after the Certifying Authority accepts it.</td><td>Not applicable</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>17</td><td>PRODUCTION DATA
The Applicant must:
(a)provide calendar year annual quarry production data to MEG using the standard form for that purpose; and
(b)include a copy of this data in the Annual Review.</td><td>Compliant</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>18</td><td>LIMIT OF EXTRACTION
Identification of Approved Extraction Limits

Within 3 months of the determination of Modification 3 and 4, the Applicant must:
(a)engage a registered surveyor to mark out the boundary of the approved area of extraction within Pit 3; and
(b)provide the Secretary with a survey plan of the boundary.

The boundary of the approved area of extraction within Pit 3 must be clearly marked in a manner that allows them to be easily identified at all times during the carrying out of quarrying operations.</td><td>Compliant</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 2</td><td>19</td><td>Maximum Extraction Depth
The Applicant must not extract any extractive materials or carry out any work in the extraction area below 35 m below the pre-existing natural surface of the ground, other than construction of bores approved by DPIE Water or in-pit sumps approved by the Secretary.</td><td>Not applicable</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 3</td><td>1</td><td>NOISE
hours of Operation
1. The Applicant must comply with the operating hours set out in Table 1.
Table 1: Operating hours
<table>
<tr><th>Activity</th><th>Permissible Hours</th></tr>
<tr><td>Quarrying operations (excluding truck arrival, loading and dispatch)</td><td>7.00 am to 6.00 pm Monday to Saturday</td></tr>
<tr><td></td><td>At no time on Sundays or public holidays</td></tr>
<tr><td>Brickmaking Activities</td><td>24 hours per day, 7 days per week</td></tr>
<tr><td>Truck arrival and dispatch (raw materials only)</td><td>6.00 am to 10.00 pm Monday to Friday</td></tr>
<tr><td></td><td>6.00 am to 6.00 pm Saturday</td></tr>
<tr><td></td><td>At no time on Sundays or public holidays</td></tr>
<tr><td>Truck arrival and dispatch (finished building products only)</td><td>5.00 am to 10.00 pm Monday to Friday</td></tr>
<tr><td></td><td>6.00 am to 6.00 pm Saturday</td></tr>
<tr><td></td><td>At no time on Sundays or public holidays</td></tr>
<tr><td>Truck arrival and dispatch (Fill import only)</td><td>7.00 am to 6.00 pm Monday to Saturday</td></tr>
<tr><td></td><td>9.00 am to 6.00 pm Sunday</td></tr>
<tr><td></td><td>At no time on public holidays</td></tr>
<tr><td>Cash sales</td><td>6.00 am to 6.00 pm Monday to Saturday</td></tr>
<tr><td></td><td>At no time on Sundays or public holidays</td></tr>
<tr><td>Sales selection/Customer Display Centre</td><td>8.00 am to 5.00 pm Monday to Sunday</td></tr>
<tr><td>Maintenance</td><td>At any time, provided that these activities are not audible at any privately-owned residence outside of permissible hours for quarrying operations</td></tr>
</table></td><td>Compliant</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 3</td><td>1A</td><td>With the written agreement of the Secretary, the Applicant may undertake limited campaign trucking (within the limits imposed under conditions 10 and 12 of Schedule 2) for the import of Fill outside of the operating hours prescribed in condition 1 of this Schedule.</td><td>Not applicable</td></tr>
</table>

<table>
<tr><th>Document Name</th><th>Document Reference #</th><th>Schedule</th><th>Condition #</th><th>Compliance requirement</th><th>Compliance</th></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 3</td><td>2</td><td>The following activities may be carried out outside the hours specified in condition 1 of this Schedule:
(a)activities that are inaudible at residences on privately-owned land;
(b)the delivery or dispatch of materials as requested by the NSW Police Force or other public authorities for safety reasons; or
(c)emergency work to avoid the loss of life, property or to prevent material harm to the environment.

In such circumstances, the Applicant must notify the Department and affected residents prior to undertaking the activities, or as soon as is practical thereafter.</td><td>Compliant</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 3</td><td>3</td><td>Construction Noise
Approved construction works must only be undertaken during standard construction hours (7 am to 6 pm, Monday to Friday and 8 am to 1 pm on Saturdays), unless the Secretary agrees otherwise.</td><td>Compliant</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 3</td><td>5</td><td>Operational Noise Criteria
The Applicant must ensure that operational noise generated by the project (including construction activities) does not exceed the criteria in Table 2 at any residence on privately-owned land.

Table 2: Operational noise criteria dB(A)<table><tr><th>Receiver ID</th><th>Morning Shoulder</th><th>Day</th><th>Evening</th><th colspan="2">Night</th></tr><tr><th></th><th>$L_{Aeq\ (15\ min)}$</th><th>$L_{Aeq\ (15\ min)}$</th><th>$L_{Aeq\ (15\ min)}$</th><th>$L_{Aeq\ (15\ min)}$</th><th>L_{AFmax}</th></tr><tr><td>R9, R25, R35</td><td>43</td><td>45</td><td>40</td><td>38</td><td>52</td></tr><tr><td>R5, R26, R27, R28, R29, R30, R31, R32, R34, R42, R43, R44, R45, R46</td><td>42</td><td>42</td><td>41</td><td>38</td><td>52</td></tr><tr><td>R11, R12, R13, R14, R15</td><td>43</td><td>43</td><td>43</td><td>38</td><td>52</td></tr><tr><td>All other residences</td><td>-</td><td>40</td><td>35</td><td>35</td><td>52</td></tr></table>Noise generated by the project must be monitored and measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (NSW EPA 2017).

However, the noise criteria in Table 2 do not apply if the Proponent has an agreement with the relevant landowner to exceed the noise criteria, and the Proponent has advised the Department in writing of the terms of this agreement.

Note: Should an agreement with a landowner be terminated for any reason, the Proponent must comply with the noise criteria in Table 2.</td><td>Compliant</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 3</td><td>6</td><td>Road Traffic Noise Criteria
The Applicant must ensure that the road traffic noise generated by the project does not exceed the criteria in Table 3 at any privately-owned residence.</td><td>Compliant</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 3</td><td>6A</td><td>Upon receiving a written request from the owner of residences RN5, RN9, RN14, RN16, RN21 or RN22, the Applicant must implement noise mitigation treatment packages as described in the EA (Mod 3 and 4) and as set out in the RMS Draft At-Receiver Treatment Packages.

If within 3 months of receiving this request from the owner, the Applicant and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.</td><td>Not applicable</td></tr>
</table>

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 3	7	Noise Operating Conditions The Applicant must: (a)take all reasonable steps to minimise the construction, operational, low frequency and road transportation noise of the project; (b)take all reasonable steps to minimise the noise impacts of the project during noise enhancing meteorological conditions; (c)operate a noise management system to guide the day to day planning of quarrying operations and the implementation of noise mitigation measures to ensure compliance with the relevant conditions of this approval; (d)carry out regular noise monitoring to determine whether the project is complying with the relevant conditions of this approval; and (e)modify or stop operations on the site to comply with the relevant conditions of this approval. *Note: Monitoring under this approval is not required at all residences and the use of representative monitoring locations can be used to demonstrate compliance with criteria, if agreed to by the Secretary.*	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	8	The Applicant must prepare a **Noise Management Plan** for the project to the satisfaction of the Secretary. This plan must: (a)be submitted to the Secretary for approval prior to commencing Modification 3 and 4, unless otherwise agreed by the Secretary; (b)describe the measures to be implemented to ensure: •compliance with the noise criteria and operating conditions of this approval; •best practice management is being employed; •residences listed in condition 6A of this Schedule are notified of their rights to request road noise mitigation measures; •vibration impacts are minimised; and •the construction and operational noise impacts of the project are minimised during noise enhancing meteorological conditions; (c)describe measures to ensure that all the commitments in the EA (Mod 3 and 4) in relation to noise are implemented; (d)include a consultation plan detailing: •procedures for notifying and consulting nearby residents prior to the recommencement of quarrying and brick making activities; •procedures for notifying and consulting nearby residents prior to the commencement of construction activities; •details of a telephone complaints line (operated at all hours) and relevant site persons responsible for following up complaints; •procedures for handling and monitoring all complaints received; and •contingency measures that would be implemented where complaints are received; (e)describe the proposed noise management system; and (f)include a noise monitoring program that: •is capable of evaluating the performance of the project; •includes a protocol for determining any exceedances of the relevant conditions of this approval; and •effectively supports the noise management system. The Applicant must implement the Noise Management Plan as approved by the Secretary.	Compliant

<table>
<tr><th>Document Name</th><th>Document Reference #</th><th>Schedule</th><th>Condition #</th><th>Compliance requirement</th><th>Compliance</th></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 3</td><td>9</td><td>Air Quality Impact Assessment Criteria
The Applicant must ensure that particulate matter emissions generated by the project do not cause exceedances of the criteria in Table 4 at any residence on privately-owned land.

Table 4: Air quality criteria
<table><tr><th>Pollutant</th><th>Averaging Period</th><th>Criterion</th></tr><tr><td>Particulate matter < 2.5 µm (PM_{10})</td><td>Annual</td><td>a,d 8 µg/m³</td></tr><tr><td>Particulate matter < 2.5 µm (PM_{10})</td><td>24 hour</td><td>b 25 µg/m³</td></tr><tr><td>Particulate matter < 10 µm (PM_{10})</td><td>Annual</td><td>a,d 25 µg/m³</td></tr><tr><td>Particulate matter < 10 µm (PM_{10})</td><td>24 hour</td><td>b 50 µg/m³</td></tr><tr><td>Total suspended particulates (TSP)</td><td>Annual</td><td>a,d 90 µg/m³</td></tr><tr><td>c Deposited dust</td><td>Annual</td><td>b 2 g/m²/month</td><td>a,d 4 g/m²/month</td></tr></table></td><td>Not compliant</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 3</td><td>10</td><td>Operating Conditions

The Applicant must:
(a)implement best practice management to minimise the dust emissions of the project;
(b)implement all air quality management and mitigation measures that were committed to in the EA (Mod 3 and 4);
(c)implement real-time monitoring of 24-hour average PM10 and meteorological conditions;
(d)regularly assess meteorological and air quality monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the air quality criteria in this approval;
(e)minimise the air quality impacts of the project during adverse meteorological conditions and extraordinary events (see note d under Table 4);
(f)monitor and report on compliance with the relevant air quality conditions in this approval; and
(g)minimise the area of surface disturbance and undertake progressive rehabilitation of the site, to the satisfaction of the Secretary.</td><td>Not compliant</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 3</td><td>10A</td><td>During Phase 4, the Applicant may request the Secretary’s agreement to reduce or waive certain air quality monitoring requirements if the Applicant can demonstrate that they are no longer necessary.</td><td>Not applicable</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 3</td><td>11</td><td>The Applicant must ensure compliance with stack emission limits and gaseous pollutant load limits included in any EPL applicable to the site.</td><td>Not applicable</td></tr>
<tr><td>Project Approval - Mod 5</td><td>10_0014</td><td>Schedule 3</td><td>12</td><td>Within 14 months of commencement of increased production of bricks to 300,000 tonnes per year, or as otherwise required by the EPA, the Applicant must submit an Air Quality Verification Assessment to the EPA, and must provide a copy of this assessment to the Secretary. The Air Quality Verification Assessment must be completed in accordance with the requirements of the EPL for the premises.</td><td>Not applicable</td></tr>
</table>

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 3	13	**Air Quality Management Plan** The Applicant must prepare an Air Quality Management Plan for the project to the satisfaction of the Secretary. This plan must: (a) be prepared in consultation with relevant WSA authorities; (b) be submitted to the Secretary for approval prior to commencing Phase 1, unless otherwise agreed by the Secretary; (c) describe the proposed air quality management system; (d) describe the measures to be implemented to ensure: •compliance with the air quality criteria and operating conditions of this approval; •best practice management is being employed; and •the air quality impacts of the project are minimised during adverse meteorological conditions and extraordinary events; (e) describe measures to ensure that all the commitments in the EA (Mod 3 and 4) in relation to air quality are implemented; (f) include a program to ensure surface disturbance associated with quarrying operations is minimised; (g) include an air quality monitoring program that: •is capable of evaluating the performance of the project and informing day to day operational decisions; •includes a protocol for determining any exceedances of the relevant conditions of this approval; and •effectively supports the air quality management system; and (h) include a program to: •notify affected landowners of the potential health-related impacts associated with dust; •respond effectively to enquiries or complaints. The Applicant must implement the Air Quality Management Plan as approved by the Secretary.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	14	**Meteorological Monitoring** For the life of the project, the Applicant must ensure that there is a suitable meteorological station operating in the vicinity of the site that complies with the requirements in the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales guideline and is capable of measuring meteorological conditions in accordance with the NSW Noise Policy for Industry (EPA, 2017).	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	15	**Odour** The Applicant must ensure that no offensive odours, as defined by the POEO Act, are emitted from the site.	Not applicable
Project Approval - Mod 5	10_0014	Schedule 3	16	**Greenhouse Gas Emissions** The Applicant must implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	16	**SOIL AND WATER** *Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Applicant is required to obtain all necessary approvals and/or water licences for the project.*	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	17	The Applicant must ensure that it has sufficient water for all stages of the project, and if necessary, adjust the scale of operations under the approval to match its available water supply, to the satisfaction of the Secretary.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	17A	The Applicant must report on water extracted from the site each year (direct and indirect) in the Annual Review, including water taken under each water licence.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	18	**Water Discharges** The Applicant must ensure that all quarry water from the site is contained wholly within the site except where otherwise authorised by condition 19 and 19A of this Schedule.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	19	The Applicant must ensure that all surface water discharges from the site comply with the limits (both volume and quality) set in any EPL applicable to the site.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	19A	**Dewatering of Pits 1, 2 and 3** All water that is dewatered from Pit 1 (including any water transferred into Pit 1 from Pit 2 and Pit 3) must be transferred from the site in accordance with the Dewatering Management Plan required under Condition 23A of this Schedule.	Compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 3	19B	All dewatering activities from Pit 1 must be completed within Phase 1 unless otherwise agreed by the Secretary.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	20	**Riparian Buffer Distance** The Applicant must maintain a minimum setback width of 60 metres (measured from the top of bank) between extraction areas and both Badgerys Creek and Badgerys Creek tributary. *Note: This condition does not prohibit overburden emplacement or rehabilitation works in accordance with the Project Layout Plan.*	Not applicable
Project Approval - Mod 5	10_0014	Schedule 3	21	**Alluvial Aquifers** The Applicant must ensure that the project has no impact on alluvial aquifers associated with South Creek, Badgerys Creek or their tributaries	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	23	**Soil and Water Management Plan** The Applicant must prepare a Soil and Water Management Plan for the project to the satisfaction of the Secretary. This plan must: (a)be prepared by a suitably qualified and experienced person/s approved by the Secretary; (b)be prepared in consultation with Council and DPIE-Water; (c)be submitted to the Secretary for approval prior to commencing Phase 1, unless otherwise agreed by the Secretary; and	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	23	(d)include a: (i)Site Water Balance that includes: •details of: *sources and security of water supply; *water use and management on site; *adequacy of water storage facilities to contain all surface water runoff; * all existing Water Access Licences and potential Water Access Licences, including information on the relevant Water Sharing Plan and Water Sources; *any off-site water transfers, including those described in condition 23A of this Schedule; and *reporting procedures; and •measures to be implemented to minimise clean water use on site;	Compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 3	23	(ii)Surface Water Management Plan, that includes: •a program for obtaining detailed baseline data on surface water flows and quality in water bodies that could potentially be affected by the project; •a detailed description of the surface water management system on site including the: *clean water diversion system; *erosion and sediment controls; *dirty water management system; and *water storages, including the area, depth and capacity of any in-pit sumps; •detailed plans, including design objectives and performance criteria, for: •reinstatement of drainage lines on the rehabilitated areas of the site; and •control of any potential water pollution from rehabilitated areas of the site; •performance criteria for the following, including trigger levels for investigating any potentially adverse impacts on: *the water management system; *surface water quality in creeks and other water bodies that could potentially affected by the project (including Badgerys Creek and Badgerys Creek tributary); and *the stream health, vegetation health and channel stability of water bodies that could potentially affected by the project; •a program to monitor and report on: *any surface water discharges; *the effectiveness of the water management system; *the quality of water discharged from the site to the environment; *surface water flows and quality in local watercourses; and *the stream health, riparian vegetation health and channel stability of creeks and other water bodies that could potentially be affected by the project; and •a plan to respond to any exceedances of the performance criteria, and mitigate and/or offset any adverse surface water impacts of the project; and	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	23	(iii)Groundwater Management Plan that includes: •measures to ensure that the maximum extraction depth is not exceeded (see condition 19 of Schedule 2); •a protocol to obtain appropriate water licence(s) to cover the volume of any unforeseen groundwater inflows into the quarry from the quarry face or floor; •groundwater assessment criteria, including trigger levels for investigating any potentially adverse groundwater impacts; and •a monitoring program to manage potential impacts, if any, on any alluvium and associated surface water source near the proposed extraction area that includes: * monitoring of boreholes within the alluvial sediments adjacent to Badgerys and South Creeks and their tributaries, and in the Bringelly Shale bedrock aquifer; *monitoring of groundwater inflows into the quarry from the quarry face or floor, or into any in-pit sumps; *monitoring the impacts of the project on baseflows to Badgerys and South Creeks and their tributaries; *identification of a methodology for determining exceedances of the assessment criteria; *a plan to respond to any exceedances of the performance criteria; and *a program to regularly report on monitoring. The Applicant must implement the Soil and Water Management Plan as approved by the Secretary.	Not compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 3	23 A	**Dewatering Infrastructure Plan** Prior to carrying out any construction activities associated with the dewatering activities on the site, the Applicant must prepare a Dewatering Infrastructure Plan for the project to the satisfaction of the Secretary. This plan must include: (a)detailed designs for: •any pipeline infrastructure used for dewatering activities; and •the method to be used to cross Badgerys Creek; (b)a flooding assessment which: •considers the impacts of any structures (including overland pipelines) to flood flow within the floodplain up to the PMF; and •describes the measures that will be implemented to minimise those impacts; and (c)a description of the measures to be implemented for: •managing construction and operation of minor surface infrastructure; •avoiding significant impacts and minimisation of impacts generally; •controlling any potential water pollution from construction; •minimising and managing erosion and sedimentation; •decommissioning of pipeline infrastructure; and •rehabilitating disturbed areas. The Applicant must implement the Dewatering Infrastructure Plan as approved by the Secretary.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	23 B	**Dewatering Management Plan** 23B. The Applicant must prepare a Dewatering Management Plan for the project to the satisfaction of the Secretary. This plan must: (a) be prepared in consultation with DPIE-Water and NRAR; (b) be submitted to the Secretary for approval prior to dewatering activities from Pit 1, unless otherwise agreed by the Secretary; and (c) include: •details of: *off-site water transfer or discharge arrangements; and *procedures for monitoring on volumes transferred off-site and reporting on this as part of annual review; •a Fauna Relocation Plan regarding the transfer of aquatic fauna from Pits 1, 2 and 3 prepared by a suitably qualified ecologist which includes details on: *native fauna species known to inhabit and/or use the pits which require transfer from the pits; *methodology proposed to transfer the fauna; *location and suitability of the proposed relocation sites; *any potential impacts of relocating the fauna to the relocation sites and proposed mitigation measures; and *details of ecologists to monitor dewatering activities; •a Geotechnical Monitoring Program, prepared by a suitably qualified and experience geotechnical engineer, to examine and monitor the faces and high walls of the quarry pits to determine potential geotechnical hazards and evaluate risks of potential failures; •a program to monitor and report on dewatering that involves any discharge from the site, including: *the quality of any water discharged from the site; *surface water flows and quality in local watercourses; and *the stream health, riparian vegetation health and channel stability of creeks and other water bodies that could potentially be affected by the discharges; and •a plan to respond to any exceedances of the performance criteria and mitigate and/or offset any adverse surface water impacts of the discharges. The Proponent must implement the Dewatering Management Plan as approved by the Secretary.	Compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 3	23 C	**Flooding** The Applicant must prepare and implement an Evacuation Plan for the site. This Evacuation Plan must be prepared in consultation with the State Emergency Services and include details of the site evacuation and sheltering procedures during flood events.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	24	TRANSPORT Transport - Road Haulage Prior to commencing Phase 1, the Applicant must: (a) erect signage on Elizabeth Drive advising of “trucks turning”; (b) install a wheel wash on the quarry access road and Fill haul road to prevent material being deposited on Martin Road; and (c) ensure the access driveway from Martin Road is capable of catering for all heavy vehicles associated with the project in accordance with AS2890.2, to the satisfaction of Council.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	25	**Road Upgrade and Maintenance Contribution** Prior to the recommencement of quarrying operations, the Applicant must enter into a formal agreement with Council for: (a) the repair of historical impacts of trucking from the project on Martin Road; and (b) annual road maintenance contributions to be paid to Council, based on the weight of all laden truck movements to and from the site, for the duration that Martin Road is vested in the Council as the roads authority. The Applicant must provide evidence to the Secretary that the agreement has been executed and implemented to the satisfaction of Council. If there is any dispute between the Proponent and Council, then either of the parties may refer the matter to the Secretary for resolution.	Not applicable
Project Approval - Mod 5	10_0014	Schedule 3	25 A	Prior to increasing truck movement limits as specified in condition 12 of Schedule 2, the Applicant must complete an interim upgrade of the Martin Road and Elizabeth Drive Intersection. The final design of intersection must be to the satisfaction of the relevant roads authority/s and must: (a) be designed and constructed in accordance with Austroads Guidelines, Australian Standards and any requirements of the relevant road authority/s; (b) include, at a minimum, a three phase signal operation including a right turn green light and pedestrian crossings on one Martin Road and one Elizabeth Drive approach; (c) be subject to a Works Authorisation Deed (WAD) with TfNSW; and (d) be funded by the Applicant, unless otherwise agreed with TfNSW.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	25 B	With the written agreement of the Secretary, the requirements of condition 25A of this Schedule may be waived if the Applicant can demonstrate that the Martin Road-Elizabeth Drive Intersection has been upgraded to achieve service, capacity and safety standards equivalent to or greater than those required under condition 25A of this Schedule.	Not applicable
Project Approval - Mod 5	10_0014	Schedule 3	25 C	The Applicant must provide an area for a potential transport corridor associated with an extension of Martin Road through the site (as conceptually shown in Appendix 3). The final design and location of the transport corridor and any associated commercial arrangements must be determined in consultation with TfNSW. The Applicant must advise the Secretary in writing of the final design and location of the transport corridor as agreed with TfNSW, and update relevant management plans, strategies or programs for the project to reflect the transport corridor.	Compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 3	26	**Monitoring of Product Transport** The Applicant must keep accurate records of: (a) all truck movements to and from the site (including time of arrival and dispatch and nature of material transported); (b) the weight of all bricks, Fill and quarry products transported to and from the site; and (c) publish a summary of these records on its website every 6 months.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	27	Operating Conditions The Applicant must: (a) ensure that all laden trucks carrying quarry products, raw materials or Fill have their loads covered when arriving at or leaving the site; (b) ensure that all trucks are cleaned of material that may fall from vehicles, before leaving the site; (c) use its best endeavours to ensure that appropriate signage is displayed on trucks used to transport finished building materials, quarry products or raw materials to or from the project so they can be easily identified by road users; and (d)continue to engage with TfNSW regarding the detailed planning and design for the Eastern Airport Ring Road.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	28	The Applicant must prepare a **Traffic Management Plan** for the project to the satisfaction of the Secretary. This plan must: (a) be prepared in consultation with TfNSW, WSA and Council; (b) be submitted to the Secretary for approval prior to commencing Phase 1 operations, unless otherwise agreed by the Secretary; (c) describe the processes in place to control the arrival and dispatch of trucks; (d) include a Drivers' Code of Conduct that details the safe and quiet driving practices that must be used by drivers travelling to and from the site; (e) describe the measures to be put in place to ensure compliance with the Drivers' Code of Conduct; (f) propose measures to minimise the transmission of dust and tracking of material onto the surface of the public road from vehicles leaving the quarry; (g) describe the measures to manage construction and cumulative traffic impacts on the surrounding road network; and (h) be updated as necessary to reflect the operational phases and truck movement limits specified in condition 12 of Schedule 2 and prior to the commencement of any construction works for the upgrade of the Martin Road – Elizabeth Drive Intersection or the Eastern Airport Ring Road. The Applicant must implement the Traffic Management Plan as approved by the Secretary.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	29	**ABORIGINAL HERITAGE** The Applicant must ensure that: (a) archaeological salvage of site BC-01-09 is undertaken in accordance with Recommendation 1, Section 6.0 of the Aboriginal Heritage Assessment – Addendum in the EA; (b) regeneration works, dewatering activities and water discharges in the area of the archaeological deposit identified adjacent to Badgerys Creek (see Appendix 5) are either avoided, or else undertaken in a manner that will minimise harm to Aboriginal objects, to the satisfaction of the Secretary; and (c) measures are implemented prior to the commencement of Phase 1, to conserve and protect the hearth feature within site BCBW18 AS 02 02 (AHIMS ID 45-5-5164).	Compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 3	30	The Applicant must prepare an **Aboriginal Heritage Management Plan** for the project to the satisfaction of the Secretary. The plan must: (a) be prepared by suitably qualified and experienced persons; (b) be prepared in consultation with Registered Aboriginal Parties and Heritage NSW; (c) be submitted to the Secretary for approval within 6 months of the determination of Modification 3 and 4, unless otherwise agreed by the Secretary; (d) include a description of the measures that would be implemented to: (i) protect, monitor and manage identified Aboriginal objects and Aboriginal places on the site (including any proposed archaeological investigations and salvage measures), including specific measures to ensure that the archaeological deposit adjacent to Badgerys Creek (see Appendix 5) is not impacted during regeneration operations; (ii) conserve the entire extent of the hearth feature within site BCBW18 AS 02 (AHIMS ID 45-5-5164); (iii) manage the discovery of previously unidentified Aboriginal objects or Aboriginal places on the site; and (iv) facilitate ongoing consultation and involvement of Registered Aboriginal Parties in the conservation and management of Aboriginal cultural heritage on the site; and (e) include a protocol to be implemented in the event that skeletal remains are discovered during the project. The Applicant must implement the Aboriginal Heritage Management Plan as approved by the Secretary.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	31	If human remains are discovered on the site, then all work in the area surrounding the discovery must cease, and the area must be secured. The Applicant must immediately notify NSW Police Force and Heritage NSW, and work must not recommence in the area until authorised by NSW Police Force and Heritage NSW.	Not applicable
Project Approval - Mod 5	10_0014	Schedule 3	32	If any potential Aboriginal object or Aboriginal place is identified on the site, or suspected to be on the site: (a) all work in the immediate vicinity of the object or place must cease immediately; (b) a 10 m buffer area around the object or place must be cordoned off; and (c) Heritage NSW must be contacted immediately.	Not applicable
Project Approval - Mod 5	10_0014	Schedule 3	33	Work in the immediate vicinity of a site identified in condition 32 of this Schedule may only recommence if: (a) the object or place is confirmed by Heritage NSW upon consultation with the Registered Aboriginal Parties not to be an Aboriginal object or Aboriginal Place; (b) the Aboriginal Cultural Heritage Management Plan is revised to include the object or place and appropriate measures in respect of it; or (c) the Secretary is satisfied with the measures to be implemented in respect of the object or place and makes a written direction in that regard.	Not applicable

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 3	34	**Rehabilitation Objectives** The Applicant must rehabilitate the site in accordance with the conditions imposed on the mining lease(s) associated with the project under the Mining Act 1992. This rehabilitation must be generally consistent with the proposed rehabilitation strategy described in the EA (Mod 3 and 4) and shown in Appendix 4, and must comply with the objectives in Table 5. *Table 5: Rehabilitation Objectives* ***Feature*** / ***Objective*** *All areas of the site affected by the development*: • Safe • Hydraulically and geotechnically stable • Non-polluting • Fit for the intended final land use(s) • Final landform integrated with surrounding natural landforms as far as is reasonable and feasible, and minimising visual impacts when viewed from surrounding land *Surface infrastructure*: • Decommissioned and removed, unless otherwise agreed by the Secretary *Landscaping bunds*: • Hydraulically and geotechnically stable • Vegetated *Pits 1, 2 and 3*: • Backfilled to a landform that is consistent with natural ground level and is geotechnically stable • Free draining	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	35	**Progressive Rehabilitation** The Applicant must rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. All reasonable measures must be taken to minimise the total area exposed for dust generation at any time. Interim stabilisation measures must be implemented where reasonable and feasible to control dust emissions in disturbed areas that are not active and which are not ready for final rehabilitation. *Note:It is accepted that parts of the site that are progressively rehabilitated may be subject to future re-disturbance.*	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	35 A	The Applicant must complete the backfilling of Pits 1 and 2 within 6 years of commencement of Phase 1, or as otherwise agreed by the Secretary.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	35 B	The Applicant must complete the backfilling of Pit 3 within 2 years of the date of completion of extraction activities in Pit 3, or as otherwise agreed by the Secretary.	Not applicable
Project Approval - Mod 5	10_0014	Schedule 3	36	**Rehabilitation Management Plan** The Applicant must prepare a Rehabilitation Management Plan for the project, in accordance with the conditions imposed on the mining lease(s) associated with the project under the Mining Act 1992. This plan must: (a) be prepared in consultation with the Department, DPIE Water, BCD, TfNSW, relevant WSA authorities and Council; (b) build upon the Rehabilitation Objectives in Table 5 and the proposed rehabilitation strategy described in the EA (Mod 3 and 4) and shown in Appendix 4; (c) investigate options for the future use of disturbed areas following the completion of backfilling operations, having regards to the strategic planning associated with the draft Western Sydney Aerotropolis Plan (or subsequently adopted NSW Government strategic plans); (d) describe and justify the proposed rehabilitation strategy for the site, including the landform and use of the site following the completion of quarry operations; (e) include details of the planting of replacement trees in riparian areas consistent with the Statement of Commitments and with vegetation requirements for WSA to minimise wildlife impacts;	Compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 3	36	(f) describe how the rehabilitation of the site would achieve the objectives identified in Table 5 and the requirements of conditions 35A and 35B of this Schedule; (g) include detailed Rehabilitation Objectives, Rehabilitation Completion Criteria and the Final Landform and Rehabilitation Plan for evaluating the performance of the rehabilitation of the site; (h) include procedures for the use of interim stabilisation and temporary vegetation strategies, where reasonable to minimise the area exposed for dust generation; (i) to the maximum extent practicable, build on and integrate with the other management plans required under this consent; (j) include a life of mine rehabilitation and mining schedule and a protocol for progressive reviews of key progressive rehabilitation milestones from the commencement of operations through to decommissioning and mine closure; (k) include an overview of the identified risks to achieving successful rehabilitation and strategies to be implemented to address these risks; (l) include a program to monitor, audit and report on the progress against the Rehabilitation Objectives and Rehabilitation Completion Criteria and the Final Landform and Rehabilitation Plan; and (m) describe the measures to be implemented to ensure compliance with the relevant conditions of this approval, including intervention and adaptive management techniques that may be required to ensure rehabilitation remains on a trajectory of achieving the Rehabilitation Objectives, Rehabilitation Completion Criteria and the Final Landform and Rehabilitation Plan as soon as reasonably practical. *Note: The Rehabilitation Management Plan may be combined with a Mining Operations Plan, or similar plan, required under the mining lease granted for the development.*	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	37	**VISUAL** The Applicant must implement all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the project to the satisfaction of the Secretary.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	37A	Within 3 months of commencing quarrying operations in Pit 3, the Applicant must construct landscaped earthen bunds and plant vegetation screens (as shown conceptually in Appendix 3), to minimise the visual impacts of the project. The landscaped earthen bunds and plant vegetation screens must be maintained until the Pit 3 area has been fully rehabilitated.	Not applicable
Project Approval - Mod 5	10_0014	Schedule 3	37 B	Within 6 months of the Secretary being advised of the confirmed Eastern Airport Ring Road alignment, as required under condition 25C of this Schedule, the Applicant must construct landscaped earthen bunds and plant vegetation screens around the brickmaking facility and raw material stockpile (as shown conceptually in Appendix 3), to minimise the visual impacts of the project. The landscaped earthen bunds and plant vegetation screens must be maintained for the life of the project.	Not applicable
Project Approval - Mod 5	10_0014	Schedule 3	37 C	The Applicant must ensure that all outdoor and external lighting at the site: (a) complies with AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting; and (b) is designed in accordance with any Civil Aviation Safety Authority requirements for the WSA and is mounted, screened and directed in such a manner that it does not cause distraction or confusion to pilots due to light spill above the horizontal plane.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	37 D	**Visual Impact Management Plan** Within 6 months of approval of Modification 3 and 4, the Applicant must prepare a Visual Impact Management Plan for the project to the satisfaction of the Secretary. This plan must: (a) be prepared by a suitably qualified and experienced person/s; (b) be prepared in consultation with Council, TfNSW and relevant WSA authorities; (c) describe the measures to be implemented to minimise the visual, landscaping and off-site lighting impacts of the project to the WSA and surrounding community; (d) include a landscaping strategy to shield public views of the project (including views from the Eastern Airport Ring Road) that includes: • the measures identified in the EA (Mod 3 and 4); • a vegetation strategy utilising a diversity of local provenance tree species from the native vegetation community (or communities) that occur or once occurred on the site, and would minimise wildlife attraction; • a bund vegetation and maintenance schedule; and	Compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 3	37 D	• procedures to notify, consult with and implement site-specific mitigation measures at affected privately-owned residences; (e) include a program to monitor and report on the implementation and effectiveness of the mitigation measures; and (f) include a protocol to update the plan to include the requirements of condition 37A and 37B of this Schedule, once the Secretary has been advised of the confirmed Eastern Airport Ring Road alignment, as required under condition 25C of this Schedule. The Applicant must implement the Visual Impact Management Plan as approved by the Secretary.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	38	**Waste** The Applicant must: (a) manage on-site sewage treatment and disposal in accordance with the requirements of its EPL, and to the satisfaction of the EPA and Council; (b) minimise the waste generated by the project; (c) ensure that the waste generated by the project is appropriately stored, handled, and disposed of; and (d) report on waste management and minimisation in the Annual Review, to the satisfaction of the Secretary. Note: Approval pursuant to Section 68 of the Local Government Act 1993 is required from Council for onsite sewage management systems.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	39	Except as expressly permitted in an EPL and/or the conditions of this approval, the Applicant must not receive waste on the site for storage, treatment, processing, reprocessing or disposal.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	39 A	Fill Management Plan 39A. Prior to the import of Fill to the site, the Applicant must prepare a Fill Management Plan for the development to the satisfaction of the Secretary. This plan must: (a) identify the quantities of Fill to be imported to site; (b) describe: • the procedures for monitoring Fill imported to the site to ensure that it meets relevant quality specifications for VENM or ENM; • a protocol to prevent materials that fail to meet the requirements of the ENM Exemption and ENM Order from being accepted; • the management of reject materials; • management measures for the emplacement and temporary stockpiling of Fill; • the process for handling Fill for use in rehabilitation; • measures for the on-site use of water captured in sediment basins to ensure that the water does not present a contamination risk; and • processes for assessing, recording, handling and managing any contamination found on the site; and (c) provide an indicative schedule of Fill material to be imported to the site for each Phase of the development, in order to achieve the conceptual final landform. The Applicant must implement the Fill Management Plan as approved by the Secretary.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	40	**LIQUID STORAGE** The Applicant must ensure that all tanks and similar storage facilities (other than for water) are protected by appropriate bunding or other containment, in accordance with the relevant Australian Standards.	Compliant
Project Approval - Mod 5	10_0014	Schedule 3	41	**DANGEROUS GOODS** The Applicant must ensure that the storage, handling, and transport of dangerous goods is done in accordance with the relevant Australian Standards, particularly AS1940 and AS1596, and the Dangerous Goods Code.	Compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 3	42	**FIRE SAFETY** 42.The Applicant must: (a)ensure that the project is suitably equipped to respond to any fires on site; (b)assist the emergency services to the extent practicable if there is a fire in the vicinity of the site; and (c)ensure that the project provides for asset protection in accordance with the relevant requirements in Planning for Bushfire Protection 2019 (NSW RFS 2019).	Compliant
Project Approval - Mod 5	10_0014	Schedule 4	1	**NOTIFICATION OF LANDOWNERS** As soon as practicable, and no longer than 7 days, after obtaining monitoring results showing: an exceedance of any criteria in Schedule 3, the Applicant must notify the affected landowners in writing of the exceedance, and provide regular monitoring results, at least every 3 months, to each affected landowner until the project is again complying with the relevant criteria; and (b) an exceedance of any air quality criteria in Schedule 3, the Proponent must 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 current tenants of the land (including the tenants of land which is not privately-owned).	(a) Not compliant
Project Approval - Mod 5	10_0014	Schedule 4	2	**INDEPENDENT REVIEW** If a landowner considers the project to be exceeding the relevant criteria in Schedule 3, they may ask the Secretary in writing for an independent review of the impacts of the project on their land. If the Secretary is not satisfied that an independent review is warranted, the Secretary will notify the landowner in writing of that decision, and the reasons for that decision, within 21 days of the request for a review. If the Secretary is satisfied that an independent review is warranted, within 3 months, or as otherwise agreed by the Secretary and the landowner, of the Secretary’s decision, the Applicant must: (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to: • consult with the landowner to determine his/her concerns; • conduct monitoring to determine whether the project is complying with the relevant criteria in Schedule 3; and • if the project is not complying with these criteria, then identify measures that could be implemented to ensure compliance with the relevant criteria; (b) give the Secretary and landowner a copy of the independent review; and (c) comply with any written requests made by the Secretary to implement any findings of the review.	Not applicable

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 5	1	**ENVIRONMENTAL MANAGEMENT** **Environmental Management Strategy** The Applicant must prepare an Environmental Management Strategy for the project to the satisfaction of the Secretary. This strategy must: (a) be submitted to the Secretary for approval within 6 months of the determination of Modification 3 and 4, unless otherwise agreed by the Secretary; (b) provide the strategic framework for environmental management of the project; (c) identify the statutory approvals that apply to the project; (d) set out the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the project; (e) set out the procedures to be implemented to: • keep the local community and relevant agencies informed about the operation and environmental performance of the project; • receive, record, handle and respond to complaints; • resolve any disputes that may arise during the course of the project; • respond to any non-compliance and any incident; and • respond to emergencies; and (f) include: • references to any strategies, plans and programs approved under the conditions of this approval; and • a clear plan depicting all the monitoring to be carried out under the conditions of this approval. The Applicant must implement any Environmental Management Strategy as approved by the Secretary.	Compliant
Project Approval - Mod 5	10_0014	Schedule 5	2	**Evidence of Consultation** Where the conditions of this approval require consultation with an identified party, the Applicant must: (a) consult with the relevant party prior to submitting the subject document to the Secretary for approval; and (b) provide details of the consultation undertaken, including: • the outcome of that consultation, matters resolved and unresolved; and • details of any disagreement remaining between the party consulted and the Proponent and how the Proponent has addressed any unresolved matters. However, if the Secretary agrees, a strategy, plan or program may be prepared without consultation being undertaken with an identified party required under a condition of this approval.	Compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 5	3	**Management Plan Requirements** The Applicant must ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include: (a)a summary of relevant background or baseline data; (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; (c)a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria; (d)a program to monitor and report on the: •impacts and environmental performance of the project; and •effectiveness of any management measures (see (c) above); (e)a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible; (f)a program to investigate and implement ways to improve the environmental performance of the project over time; (g)a protocol for managing and reporting any: •incidents; •complaints; and •non-compliances with statutory requirements; (h)a protocol for periodic review of the plan; and (i)a document control table that includes version numbers, dates when the management plan was prepared and reviewed, names and positions of the person/s who prepared and reviewed the management plan, a description of any revisions made and the date of the Secretary's approval. *Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.*	Compliant
Project Approval - Mod 5	10_0014	Schedule 5	4	**Application of Existing Strategies, Plans and Programs** The Applicant must continue to apply existing management plans, strategies or monitoring programs approved prior to the approval of Modification 3 and 4, until the approval of a similar plan, strategy or program following the approval of Modification 3 and 4.	Compliant
Project Approval - Mod 5	10_0014	Schedule 5	5	**Revision of Strategies, Plans & Programs** Within 3 months of: (a) the submission of an incident report under condition 10 below; (b) the submission of an Annual Review under condition 12 below; (c) the submission of an Independent Environmental Audit report under condition 14 below; and (d) the approval any modifications to this approval, the Applicant must review the suitability of all strategies, plans and programs required under this approval, to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 6 weeks of the review the revised document must be submitted for the approval of the Secretary. *Notes:* *•The purpose of this condition is to ensure that strategies, plans and programs are regularly updated to incorporate any measures recommended to improve environmental performance of the project.* *•In the event of an inconsistency between condition 5(d) above and any condition in Schedule 3 of this approval, the latter prevails.*	Compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 5	6	**Updating and Staging of Strategies, Plans or Programs** With the approval of the Secretary, the Applicant may: (a) prepare and submit any strategy, plan or program required by this approval on a staged basis (if a clear description is provided as to the specific stage and scope of the project to which the strategy, plan or program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program); (b) combine any strategy, plan or program required by this approval (if a clear relationship is demonstrated between the strategies, plans or programs that are proposed to be combined); and (c) update any strategy, plan or program required by this approval (to ensure the strategies, plans and programs required under this approval are updated on a regular basis and incorporate additional measures or amendments to improve the environmental performance of the project).	Compliant
Project Approval - Mod 5	10_0014	Schedule 5	7	**Adaptive Management** The Applicant must assess and manage project-related risks to ensure that there are no exceedances of the criteria and/or performance measures in Schedule 3. Any exceedance of these criteria and/or performance measures constitutes a breach of this approval and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation. Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must as soon as becoming aware of any exceedance: (a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not reoccur; (b) consider all reasonable and feasible options for remediation (where relevant); (c) within 14 days of the exceedance occurring, submit a report to the Secretary describing these remediation options and any preferred remediation measures or other course of action; and (d) implement remediation measures as directed by the Secretary; to the satisfaction of the Secretary.	Not compliant
Project Approval - Mod 5	10_0014	Schedule 5	8	**Community Consultative Committee** The Applicant must establish and operate a Community Consultative Committee (CCC) for the project to the satisfaction of the Secretary. The CCC must be established prior to recommencing quarrying operations and be operated in general accordance with the Department's Community Consultative Committee Guidelines, November 2016 (or later version). *Notes:* *• The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Proponent complies with this approval.* *• In accordance with the guidelines, the Committee should comprise an independent chair and appropriate representation from the Proponent, Council and the local community.* *• The Applicant may, with the approval of the Secretary, combine the function of this CCC with the functions of other CCCs in the area.*	Compliant
Project Approval - Mod 5	10_0014	Schedule 5	9	**REPORTING AND AUDITING** **Incident Notification** The Applicant must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be made in writing through the Department's Major Projects Website and identify the project (including the development application number and name) and set out the location and nature of the incident.	Compliant
Project Approval - Mod 5	10_0014	Schedule 5	10	**Non-Compliance Notification** Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be made in writing through the Department's Major Projects website and identify the project (including the development application number and name), set out the condition of this approval that the project is non-compliant with, why it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance. *Note: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.*	Not compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 5	11	**Regular Reporting** The Applicant must provide regular reporting on the environmental performance of the project on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this approval.	Compliant
Project Approval - Mod 5	10_0014	Schedule 5	12	**Annual Review** Prior to recommencing quarrying operations or Fill import, and annually thereafter, the Applicant must submit a review to the Department reviewing the environmental performance of the development to the satisfaction of the Secretary. This review must: (a)describe the development (including any progressive rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year; (b)include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against the: •relevant statutory requirements, limits or performance measures/criteria; •requirements of any plan or program required under this consent ; •monitoring results of previous years; and •relevant predictions in the documents listed in condition 3 of Schedule 2; (c)evaluate and report on: •the effectiveness of the air quality and noise management systems; and •compliance with the performance measures, criteria and operating conditions in this consent. (d)identify any non-compliance over the past calendar year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid reoccurrence; (e)identify any trends in the monitoring data over the life of the development; (f)identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and (g)describe what measures will be implemented over the current calendar year to improve the environmental performance of the development. The Applicant must ensure that copies of the Annual Review are submitted to Council and are available to the Community Consultative Committee (see condition 8 of Schedule 5) and any interested person upon request.	Compliant
Project Approval - Mod 5	10_0014	Schedule 5	13	**INDEPENDENT ENVIRONMENTAL AUDIT** Within 12 months of the commencement of Phase 1, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant must commission, commence and pay the full cost of an Independent Environmental Audit of the project. This audit must: (a) be led and conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary; (b) include consultation with the relevant agencies and the CCC; (c) assess the environmental performance of the project and whether it is complying with the relevant requirements in this approval and any relevant EPL or necessary water licences for the project (including any assessment, strategy, plan or program required under these approvals); (d) review the adequacy of strategies, plans or programs required under the abovementioned approvals; (e) recommend appropriate measures or actions to improve the environmental performance of the project, and/or any assessment, strategy, plan or program required under the abovementioned approvals; and (f) be conducted and reported to the satisfaction of the Secretary.	Compliant
Project Approval - Mod 5	10_0014	Schedule 5	14	Within 12 weeks of commencing this audit, or as otherwise agreed by the Secretary, the Applicant must submit a copy of the audit report to the Secretary and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of these recommendations as required. The Applicant must implement these recommendations, to the satisfaction of the Secretary.	Compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	Schedule 5	14A	Any condition of this approval that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance report and independent audit. *Note: For the purposes of this condition, as set out in the EP&A Act, "monitoring" is monitoring of the development to provide data on compliance with the approval or on the environmental impact of the project, and an "environmental audit" is a periodic or particular documented evaluation of the project to provide information on compliance with the approval or the environmental management or impact of the project.*	Compliant
Project Approval - Mod 5	10_0014	Schedule 5	15	**ACCESS TO INFORMATION** Within 3 months of the determination of Modification 3 and 4, until the completion of all works, including rehabilitation and remediation the Applicant must: (a) make the following information publicly available on its website: •the documents listed in condition 3 of Schedule 2; •current statutory approvals for the project; •all approved strategies, plans and programs required under the conditions of this approval; •regular reporting on the environmental performance of the project in accordance with the reporting arrangements in any plans or programs approved under the conditions of this approval; •a comprehensive summary of the monitoring results of the project, reported in accordance with the specifications in any conditions of this approval, or any approved plans and programs; •summary of the current stage and progress of the project; •contact details to enquire about the project or to make a complaint; •a complaints register, updated at least monthly; •the Annual Reviews of the project; •any Independent Environmental Audit as described in condition 13 above, and the Proponent's response to the recommendations in any audit; and •any other matter required by the Secretary; and (b) keep this information up-to-date, to the satisfaction of the Secretary.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	1	The Applicant shall implement all practicable measures to prevent or minimise harm to the environment that may result from the construction, operation or rehabilitation of the project.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	2	CSR will apply to amend EPL 684 to reflect the project.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	3	The environmental management strategy and sub plans will be amended to reflect the project.	Compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	4	**Air Quality** The Applicant will prepare an Air Quality and Green House Gas Management Plan (AQGHGMP) for the project to the satisfaction of the Director-General. The AQGHGMP will outline the purpose, methodology and expected outcomes of the dust monitoring, and will include the following content: * Dust fraction to be measured, i.e. TSP, PM10 , PM2.5 etc.; * Equipment to be used to measure selected dust fraction; * Frequency of the monitoring, i.e. sample collection schedule; * Duration of the monitoring program; * Location of the monitoring station/s; * Standards/guidelines that are to be followed for location/construction of the monitoring station, equipment calibration, collection of samples and analysis of samples; * Calibration methodology and schedule; * Reporting procedure; * Regulatory guidelines and compliance criteria; * Action levels and contingency measures in the event that pollutant concentrations approach or are likely to exceed the relevant compliance criteria; and * A consultation program that involves nearby agricultural producers and residents, in order to determine if the dust mitigation measures are being affective.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	5	The AQGHGMP will detail measures to control dust and emissions from the Project Site including the following measures: * Haul roads should be watered using water carts such that the road surface has sufficient moisture to minimise visible on-road dust generation but not so much as to cause pooling and mud/dirt track out to occur * Unloading of trucks containing raw or unusable extracted material to be controlled using water sprays/dust suppression when generating excessive visible dust. * Dust from existing stockpiles of unusable material and open pits to be controlled using water sprays with chemical additives (surfactants); * Completed pits to be revegetated as soon as practicable after completion of quarrying activities. * Disturbed soil surfaces to be revegetated in accordance with the RMP for the Project Site. * Operational practices to be reviewed to ensure 'best practice' techniques are being employed and that operational equipment is working efficiently.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	6	The existing HVAS will be moved to as close to the northern boundary of the property and the closest sensitive receiver as possible.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	7	The existing deposited dust gauges will be relocated to appropriate positions as close to the property boundaries and nearest sensitive receivers as possible.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	8	If HVAS and deposited dust air quality monitoring identifies ongoing exceedances of the relevant air quality criteria then the reactive dust management program may need to be reinstated at the site.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	16	The Applicant will operate the sales selection/customer display centre only between the following hours: *8.00 am to 5.00 pm Monday to Sunday.	Not applicable
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	17	17.Construction works shall be limited to 7am to 6pm Monday to Friday and 8am to 1pm on Saturdays.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	18	18.A CNVMP will be prepared and implemented during project construction. 18.The construction noise mitigation measures described in Chapter 5.5 of the preferred project noise impact assessment report (appended to the RTS) shall be implemented. .	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	19	19.Vibration during construction will be managed through the CNVMP to ensure that vibration impacts comply with the limits prescribed in British Standard BS 7385 for structural damage and in Assessing Vibration: a technical guide (DECCW, 2006) for human response.	Compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	20	20.The Applicant and/or its appointed contractors will select and maintain bulk earthwork machinery as specified in the preferred project noise impact assessment report (appended to the RTS).	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	21	21.Broadband reversing alarms or other non-tonal vehicle movement and warning alarms shall be fitted to all machinery on site. The potential noise impact associated with reversing alarms shall be managed and minimised via a combination of proactive driver/operator training and operational procedures.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	22	22.The Applicant shall implement a noise monitoring programme which would involve quarterly attended noise monitoring at a number of nearby identified receiver locations for 12 months after all Modification 3 and 4 activities are in full operation. If there are no exceedances of the project noise trigger levels during quarterly noise monitoring during the first year of monitoring then noise monitoring will cease. Additional noise monitoring would be undertaken in response to any noise complaints	Not applicable
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	23	23.The Applicant shall undertake consultation with identified Martin Road residential receivers predicted to exceed the RNP criteria and conduct further investigation of their residences (as detailed in Section 2.3.3 and 4.1 of the RTS) to determine whether they qualify for and require the 'Type 1' treatment package from RMS's (2015) At-receiver Treatment Guideline. 23.Further investigations of the six residences potentially affected by road noise will be undertaken prior to increasing heavy vehicle movements along Martin Road above the approved heavy vehicle numbers and no greater than 180 truck movements in the daytime period. The investigation will determine whether the residences require the 'Type 1' treatment package from RMS's (2015) At-receiver Treatment Guideline.	Not applicable
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	24	24.Prior to construction of the Martin Road-Elizabeth Drive intersection, existing road noise levels would be qualified to determine if architectural treatment should be offered to receivers along Elizabeth Drive raising complaints about increased road noise levels. 24.The Applicant will maintain a noise complaint register.	Not applicable
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	25	**Surface Water** **Stormwater management** 25.The Applicant shall manage surface water on the Project Site in accordance with the WMP prepared for the Project Site and revised for the project, including surface water management measures include in the Modification 3 and 4 EA and the RTS.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	26	26.If during the operational phase of the quarry or on completion of the quarry operations, the Applicant wishes to make use of the water from the pits/dams in the brick making process or for reuse at other premises offsite etc, a licence will be obtained from DPIE.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	27	27.Sediment basins 4, 5 and 6 and the new basins at the raw material stockpile area and Pit 3 will be sized and operated in accordance with Landcom's (2004) Managing Urban Stormwater: Soils & Construction. If any of these basins are to be modified to perform additional stormwater treatment functions in future (other than sediment capture), then appropriate modelling and design of the basins will be required at that time. In this case monitoring of discharges from the basin at Pit 3 to South Creek will be required.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	28	28.The site WMP will be revised prior to commencement of the modification to include the revised surface water management approach, and monitoring of any water discharged from the site.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	29	**Monitoring** 29.Electrical conductivity, pH, total nitrogen, total suspended solids, turbidity, total alkalinity, arsenic and copper will be monitored at the discharge points to Badgerys Creek and South Creek. Discharges will be monitored daily during the first month of continuous discharge, then weekly if the first month of data does not exceed concentration limits. Monitoring will revert to daily if any limits are exceeded and/or concentrations are reduced below limits.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	30	30. Total dissolved solids, total phosphorus, arsenic, cadmium, chromium, lead, nickel, zinc and mercury will be sampled weekly during the first two months, which will reduce to monthly if there are no exceedances.	Compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	31	31. The analytes previously sampled in Pit 1 will be monitored at three depth levels from the surface to 6 m at two locations near the discharge point to Badgerys Creek. Water will be monitored weekly for three weeks prior to discharge, then monthly. This monitoring will continue for the life of the project, and in the perched treatment basin described above.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	32	32. Similar sampling is also required for the new basin at Pit 3 if the basin is being used to treat Pit 3 water (other than sediment capture). The list of analytes may be able to be reduced according to the future quality of stormwater collected in Pit 3.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	33	**Licensing and approvals** 33.CSR will apply to the EPA to amend the EPL to incorporate the discharge rates and concentration limits for relevant physical and chemical stressors, and toxicants, at the discharge point to Badgerys Creek.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	34	34.CSR will apply to the EPA to amend the EPL, if and when required, to incorporate appropriate discharge rates and concentration limits for discharges from the basin at Pit 3, for which time the basin provides additional water treatment other than sediment capture.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	35	35.CSR will consult DPIE Water on the need for water licenses associated with the modification.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	36	36.The EPA will be engaged, post approval, to determine whether the pit water must be classified in terms of the Protection of the Environment Operations Act 1997 (POEO Act) and to include the discharge point in the EPL.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	37	**Erosion and sediment control** 37.Erosion and sediment controls will be implemented at the pit areas once they are filled with Fill and rehabilitation has commenced. These measures will remain in place until surfaces are fully stabilised.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	38	38.Erosion and sediment controls will be implemented along the unsealed Fill haul road, which will direct runoff to the pits or local sediment traps.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	39	**Groundwater** 39.The Applicant shall prepare and implement a Groundwater Monitoring Program for the Project Site generally in accordance with the methodology provided in Chapter 11 of the 2011 EA, subject to consultation with the DPIE (water, lands and primary industry) and the satisfaction of the Director-General of the DP&I.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	40	40.The WMP will be updated to include the groundwater monitoring network and a TARP for exceedances of groundwater criteria, which will be developed based on the baseline groundwater data.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	41	41.The Applicant shall report the results of the Groundwater Monitoring Program to the Secretary of the DPIE on an annual basis.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	42	42.The Applicant shall implement appropriate management measures in relation to groundwater as indicated by the Monitoring Program and agreed with the Secretary.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	43	43.A licence to authorise any groundwater monitoring installation, required as part of this project, shall be obtained from the DPIE Water prior to any drilling commencing.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	44	44.The Applicant shall implement an alluvial aquifer mapping and assessment program to inform: * The definition of the boundaries of the alluvial system. * Adjustment to the extent of proposed pits to avoid impacts to the alluvial aquifer. * The establishment of further mitigation measures (if required) to minimise potential impacts upon the alluvial aquifer. * This program will commence within 12 months of recommencing quarrying operations and the results will be reported to the Secretary of the DPIE.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	45	**Rehabilitation** 45.The site will be progressively rehabilitated in accordance with the approved rehabilitation strategy and rehabilitation management plan.	Compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	46	46.The rehabilitation strategy and rehabilitation management plan will be revised to incorporate the project, and any additional management strategies to ensure temporary stabilisation of exposed surfaces, permanent stabilisation strategies and progressive rehabilitation with groundcover vegetation.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	47	47.The rehabilitation management plan will be revised to exclude plant species that are known to attract wildlife and grow to a size which will penetrate the OLS.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	48	48.The Applicant shall carry out rehabilitation works at the Project Site in accordance with the RMP prepared for the Project Site.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	49	49.The Applicant will prepare a Final Landform Rehabilitation Plan in consultation with the DPIE two years prior to the completion of all approved quarrying activities.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	50	**Traffic and Transport** 50. The Applicant shall manage traffic movements to and from the Project Site generally in accordance with the following: * Personnel operating trucks and vehicles to and from the Project Site would be required to undertake a site-specific health and safety induction, specifying operating hours and vehicle speed limits on Martin Road. * A heavy vehicle protocol would be developed for the Project Site and distributed to relevant staff and contractors during induction procedures. The protocol would deal with such issues as timing of vehicle movements, idling of vehicles, speed limits and parking. * Unnecessary vehicle movements would be minimised where possible. * Deliveries would be scheduled on larger capacity 'Truck and Trailer' vehicles rather than 'Truck Only' vehicles where possible to minimise truck movements. * A construction traffic management plan will be prepared and implemented to manage impacts on the road network, including the intersection, from construction vehicles. * Traffic signals and road upgrades will be constructed at the Martin Road-Elizabeth Drive intersection prior to increasing heavy vehicle movements from the project above the approved heavy vehicle numbers. * CSR will contribute to the upgrade and ongoing maintenance of Martin Road in accordance with the deed of agreement with LCC.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	51	**Cultural Heritage** 51. The Applicant shall adopt the following measures in relation to the management of cultural heritage on the Project Site: * The heat retainer hearth will continue to be protected by a fenced 10m exclusion zone. * All Aboriginal heritage items collected during survey and test excavations will be reburied with the hearth in consultation with the RAPs. * Should Aboriginal objects be uncovered during the course of the approved works, works shall cease. In cases where historical items have been uncovered, Heritage NSW is to be advised or should indigenous items be uncovered the National Parks and Wildlife Service shall be advised. * Workers/contractors shall be informed of their obligations under the NPW Act 1974, namely that it is illegal to disturb, damage or destroy an Aboriginal object without the prior approval of the Secretary of DPC. * Should human remains be found in, on, or under the land during construction, the responsible party shall: -Contact the local police. -Not disturb or excavate the remains. -Immediately cease all work at the particular location. -Notify the Heritage NSW (DPC) office as soon as practicable and provide any available details of the remains and their location. -Not recommence any work at the particular location until authorised in writing by the Heritage NSW.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	52	52. The AHMP will be updated with the findings of the Modification 4 ACHA.	Compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	53	**Ecology** 53. The Applicant shall adopt the following measures in relation to the removal of any trees on the Project Site: * The canopy of the trees to be visually inspected prior to clearing to assess for the presence of fauna. Where bird species are detected the tree is to be nudged prior to felling to encourage the fauna to vacate the tree prior to felling. Trees to be left in situ until the birds leave the canopy. * Felled trees are to be left in-situ for at least 24 hours to allow fauna species to relocate. Qualified personnel are to be on hand to check for wildlife and relocate them. * Felled wood is to be relocated to the remnant woodland (and not placed in piles) or chipped and used in rehabilitation areas. * Should any wildlife be inadvertently injured during the proposed works, WIRES or an accredited veterinarian shall be contacted. * A 60 m buffer area shall be provided along Badgerys Creek and the Badgerys Creek tributary, except where Pit 2 extends into these buffers. Rehabilitation works are to be undertaken in this area in accordance with the RMP. * Five local native trees shall be planted for each mature native tree that is removed. The replacement trees shall consist of a diversity of local provenance tree species from the native vegetation community (or communities) that occur, or once occurred on the site. The plantings shall be located adjacent to the riparian vegetation along South Creek, Badgerys Creek and its tributary.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	54	**Aquatic biodiversity** 54.A 40 m vegetated riparian zone will be maintained around the wetland adjacent to South Creek and 20 m zone will be maintained around the tributary to Badgerys Creek (except over Pit 2).	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	55	55.As the hydraulic modelling for the surface water assessment was indicative, geomorphology will be assessed in greater detail to validate the bed and bank materials of Badgerys Creek prior to finalisation of the pit dewatering strategy. This will include quantification of bed and bank material and particle size and calculation of critical shear stress for the bed and bank to determine its sensitivity to erosion.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	56	56.If the bed and bank materials are demonstrated to be sensitive to erosion, the optimum flow rate that can be achieved without impacting the creek bed and banks will be determined in a sediment transport model.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	57	57.It will be necessary to gain further water quality and flow data to determine the impact of discharges on Badgerys Creek. Water quality will be monitored every month at the four Badgerys Creek and South Creek monitoring locations as described in Section 6.3.2 of the EA. This will include nitrogen speciation to determine which portion of nitrogen is bioavailable and could impact aquatic ecosystems.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	58	58.A biological monitoring program will be developed to detect if the macroinvertebrate community is changed by exposure to discharge water. An in-stream vegetation monitoring program will be prepared and implemented to detect if the discharge is impacting vegetation community composition and mortality.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	59	59.Monitoring for changes to instream vegetation and macroinvertebrates will be incorporated into a pit dewatering plan as a sub-plan to the existing water management plan.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	60	60.CSR will compile a fauna relocation plan. This plan will develop strategies for aspects such as transferring aquatic fauna, acclimatising aquatic fauna to different water conditions and managing pest species. DPIE will be consulted during the development of this strategy..	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	61	**Contamination** 61.The potential presence of asbestos in the eastern edge of Pit 1 will be added to the site Asbestos Register.	Not applicable
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	62	62.A materials management plan will be prepared to ensure that surface water, backfilled material and imported soils are handled appropriately, do not pose a risk to human health or the environment and will be suitable for the proposed land use. The plan will provide procedures to appropriately quantify, classify, dispose of and report on potential contaminants.	Compliant

Document Name	Document Reference #	Schedule	Condition #	Compliance requirement	Compliance
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	63	63.A UFP will be prepared, providing guidance in the event that future below ground excavations identify contaminated materials (e.g. asbestos, staining, odours). The UFP will outline procedures for handling, assessing and managing any contamination that may be identified as part of Modification 4 works. If previously unidentified contaminated materials are encountered during construction and operation of the proposed modification, relevant statutory requirements, including potential soil testing and waste classification, will need to be complied with, and the material managed and disposed of appropriately.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	64	64.Stored/stockpiled materials within the proposed disturbance footprints will be inspected and they will be recycled or disposed at facilities which can legally receive such materials.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	65	65.Soil materials within the vicinity of the Modification 3 works will be assessed in accordance with NSW EPA (2014) Waste Classification Guidelines and either re- use them on site where suitable or dispose of them offsite to a landfill which can legally receive such materials.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	66	66.Conduct a hazardous material survey on existing site structures prior to demolition/alteration activities.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	67	**Waste** 67.The Applicant shall manage waste in relation to the project in accordance with the existing WMP for the Project Site.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	68	68.The existing WMP will be updated to include the importation and handling of Fill.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	69	69.All waste generated on site will be managed in accordance with the site's waste management plan that will follow the waste hierarchy of avoid, reduce, re-use, recycle and will be updated to include project works.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	70	**Visual amenity** 70. . Proposed lighting at the site will still comply with Australian Standard AS4282 (INT) 1995 - Control of Obtrusive Effects of Outdoor Lighting.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	71	**Mineral Resources** 71. The Applicant will provide annual production data to the water, lands and primary industries division of the Department of Planning, Industry and Environment, as and when requested.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	72	**Environmental Management** 72. The Applicant shall prepare an EMS for the Project Site to provide environmental management practices and procedures to be followed during the operation of the project. The EMS shall include, but not necessarily be limited to: * identification of statutory and other obligations that the Proponent is required to fulfil in relation to operation of the project; * a description of the roles and responsibilities for all key personnel involved in environmental management of the project; * the environmental policies and principles to be applied to the operation of the project; and * describe in general terms how the environmental performance of the project would be monitored and managed.	Compliant
Project Approval - Mod 5	10_0014	STATEMENT OF COMMITMENTS	9,10,11,12,13, 14,15	**Noise** 9.The Applicant will implement all practicable measures to undertake the development in a way that minimises the noise generated. The Applicant has made the following commitments in relation to operation noise management: 10.The Applicant will conduct quarrying activities at the Project Site only between the following hours: * 7.00 am to 6.00 pm Monday to Saturday. 11. The Applicant will remove overburden only between the following hours: * 7.00 am to 6.00 pm Monday to Saturday. 12.The Applicant will operate the Brick making facility and storage yard at the Project Site 24 hours a day, Monday to Sunday. 13.The Applicant will receive and dispatch finished building products only between the following hours: * 5.00 am to 10.00 pm Monday to Friday. * 6.00 am to 6.00pm Saturday. 14. The Applicant will receive and dispatch raw material only between the following hours: * 6.00 am to 10.00 pm Monday to Friday. * 6.00 am to 6.00pm Saturday. 15. The Applicant will conduct cash sales only between the following hours: * 6.00 am to 6.00 pm Monday to Saturday.	Compliant

Appendix F: Quarry Production Data - MEG

NSW GOVERNMENT Revenue

List of Clients

Royalty online services

Welcome Joe Gauci

Logout

Lease details

Lease name:	ML 1771 (1992)
Return type:	Non-coal Mineral Annually (01/07/2022 - 30/06/2023)
Mineral / Extraction:	CLAY SHALE
Royalty regime:	Quantum Royalty
Royalty rate:	$0.35 per tonne

Royalty

Production

	Tonnes	$AUD
Ore produced:	0	0.00
Concentrates produced:	0	0.00
Export sales:	0	0.00
Local sales & other disposals:	95,507	48,300.80
Purchases:	0	0.00
Net disposals:	95,507	48,300.80
Closing stock:	12,493	22,428.82
Opening stock:	62,991	33,881.92
Minerals recovered:	45,009	36,847.70

Appendix G: Monitoring Results

Reference Units PQL Method	Description	Sample Description	Sample Date	Date & Time On	Date & Time Sampled	Sampling Comments	General Comments/Non Compliance	Number of Days days AS 3580.10.1	Insoluble Solids g/m2/mth 0.1 AS 3580.10.1	Ash g/m2/mth 0.1 AS 3580.10.1	Combustible Matter g/m2/mth 0.1 AS 3580.10.1	Calculated Rain mm 1 AS 3580.10.1
12062/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	04/01/2022	7/12/2021	4/01/2022	Algae		28	1	0.4	0.6	106
12062/2	Badgerys Creek - Dusts	D2 Hay Shed	04/01/2022	7/12/2021	4/01/2022	Major insects, vegetation, algae		28	24.3	10.2	14.1	103
12062/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	04/01/2022	7/12/2021	4/01/2022	Minor insects, algae		28	1.3	0.5	0.8	95
12062/4	Badgerys Creek - Dusts	D4 Old House	04/01/2022	7/12/2021	4/01/2022	Major insects		28	2.7	0.8	1.9	99
12219/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	01/02/2022	4/01/2022	1/02/2022	Minor Insects and Algae.		28	1.8	0.4	1.4	115
12219/2	Badgerys Creek - Dusts	D2 Hay Shed	01/02/2022	4/01/2022	1/02/2022	Insects and Aglae.		28	3.4	1.3	2.1	114
12219/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	01/02/2022	4/01/2022	1/02/2022			28	0.8	0.2	0.6	114
12219/4	Badgerys Creek - Dusts	D4 Old House	01/02/2022	4/01/2022	1/02/2022	Major Beetles		28	3	1.2	1.8	114
12290/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	01/03/2022	1/02/2022	1/03/2022	Full, minor insects		28	1.3	0.8	0.5	115
12290/2	Badgerys Creek - Dusts	D2 Hay Shed	01/03/2022	1/02/2022	1/03/2022	Full, frog, vegetation		28	1.3	0.5	0.8	115
12290/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	01/03/2022	1/02/2022	1/03/2022	Full, major insects, algae		28	7.9	4.3	3.6	116
12290/4	Badgerys Creek - Dusts	D4 Old House	01/03/2022	1/02/2022	1/03/2022	Full, algae, minor insects		28	2.9	2	0.9	115
12556/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	29/03/2022	1/03/2022	29/03/2022	Full, major algae		28	10.4	7.6	2.8	116
12556/2	Badgerys Creek - Dusts	D2 Hay Shed	29/03/2022	1/03/2022	29/03/2022	Full, minor insects		28	0.7	0.2	0.5	115
12556/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	29/03/2022	1/03/2022	29/03/2022	Full, insects		28	9.6	2.3	7.3	116
12556/4	Badgerys Creek - Dusts	D4 Old House	29/03/2022	1/03/2022	29/03/2022	Full, minor insects		28	1	0.3	0.7	115
12705/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	26/04/2022	29/03/2022	26/04/2022		Full, minor algae	28	1	0.6	0.4	115
12705/2	Badgerys Creek - Dusts	D2 Hay Shed	26/04/2022	29/03/2022	26/04/2022		Full, minor bird droppings	28	2.4	1.3	1.1	113
12705/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	26/04/2022	29/03/2022	26/04/2022		Full, insects, algae	28	7.9	3.5	4.4	113
12705/4	Badgerys Creek - Dusts	D4 Old House	26/04/2022	29/03/2022	26/04/2022		Full	28	0.8	0.2	0.6	114
12846/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	24/05/2022	26/04/2022	24/05/2022			28	0.7	0.2	0.5	88
12846/2	Badgerys Creek - Dusts	D2 Hay Shed	24/05/2022	26/04/2022	24/05/2022	Insects, vegetation, bird droppings, algae		28	15.6	8.6	7	80
12846/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	24/05/2022	26/04/2022	24/05/2022	Minbor isnects		28	1.3	0.5	0.8	82
12846/4	Badgerys Creek - Dusts	D4 Old House	24/05/2022	26/04/2022	24/05/2022			28	0.7	0.4	0.3	82
12963/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	21/06/2022	24/05/2022	21/06/2022	Not Sampled - access issues	Not Sampled - access issues	[NT]	[NT]	[NT]	[NT]	[NT]
12963/2	Badgerys Creek - Dusts	D2 Hay Shed	21/06/2022	24/05/2022	21/06/2022	Not Sampled - access issues	Not Sampled - access issues	[NT]	[NT]	[NT]	[NT]	[NT]
12963/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	21/06/2022	24/05/2022	21/06/2022	Not Sampled - access issues	Not Sampled - access issues	[NT]	[NT]	[NT]	[NT]	[NT]
12963/4	Badgerys Creek - Dusts	D4 Old House	21/06/2022	24/05/2022	21/06/2022	Not Sampled - access issues	Not Sampled - access issues	[NT]	[NT]	[NT]	[NT]	[NT]

Reference Units PQL Method	Description	Sample Description	Sample Date	Date & Time On	Date & Time Sampled	Sampling Comments	General Comments/Non Compliance	Number of Days days AS 3580.10.1	Insoluble Solids g/m2/mth 0.1 AS 3580.10.1	Ash g/m2/mth 0.1 AS 3580.10.1	Combustible Matter g/m2/mth 0.1 AS 3580.10.1	Calculated Rain mm 1 AS 3580.10.1
13149/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	19/07/2022	24/05/2022			Unable to sample in July due to unsafe or no vehicle access					
13149/2	Badgerys Creek - Dusts	D2 Hay Shed	19/07/2022	24/05/2022			Unable to sample in July due to unsafe or no vehicle access					
13149/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	19/07/2022	24/05/2022			Unable to sample in July due to unsafe or no vehicle access					
13149/4	Badgerys Creek - Dusts	D4 Old House	19/07/2022	24/05/2022			Unable to sample in July due to unsafe or no vehicle access					
13296/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	16/08/2022	24/05/2022	16/08/2022	Full, bird droppings, algae	Long sampling period due to site access issues	84	3.3	2	1.3	114
13296/2	Badgerys Creek - Dusts	D2 Hay Shed	16/08/2022	24/05/2022	16/08/2022	Full, bird droppings, algae	Long sampling period due to site access issues	84	3.9	1.9	2	115
13296/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	16/08/2022	24/05/2022	16/08/2022	Full, vegetation, algae	Long sampling period due to site access issues	84	2.6	1.3	1.3	115
13296/4	Badgerys Creek - Dusts	D4 Old House	16/08/2022	24/05/2022	16/08/2022	Full, minor vegetation	Long sampling period due to site access issues	84	0.4	0.3	0.1	115
13412/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	13/09/2022	16/08/2022	13/09/2022	minor insects		28	0.7	0.4	0.3	40
13412/2	Badgerys Creek - Dusts	D2 Hay Shed	13/09/2022	16/08/2022	13/09/2022	minor algae		28	0.8	0.4	0.4	34
13412/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	13/09/2022	16/08/2022	13/09/2022	minor insects & bird droppings, algae		28	3.3	1.5	1.8	36
13412/4	Badgerys Creek - Dusts	D4 Old House	13/09/2022	16/08/2022	13/09/2022	minor algae		28	0.6	0.3	0.3	35
13611/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	11/10/2022	13/09/2022	11/10/2022	Full, minor insects.		28	0.6	0.2	0.4	115
13611/2	Badgerys Creek - Dusts	D2 Hay Shed	11/10/2022	13/09/2022	11/10/2022	Full, minor vegetation.		28	0.7	0.3	0.4	115
13611/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	11/10/2022	13/09/2022	12/10/2022	Full, bird droppings, algae.	Sampled 12/10/ due to restricted track access 11/10	29	3.1	0.8	2.3	115
13611/4	Badgerys Creek - Dusts	D4 Old House	11/10/2022	13/09/2022	11/10/2022	Full, minor insects.		28	0.6	0.1	0.5	114
13773/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	08/11/2022	11/10/2022	8/11/2022	Minor insects, algae		28	0.6	0.3	0.3	104
13773/2	Badgerys Creek - Dusts	D2 Hay Shed	08/11/2022	11/10/2022	8/11/2022	Full.		28	0.6	0.5	0.1	114

Reference Units PQL Method	Description	Sample Description	Sample Date	Date & Time On	Date & Time Sampled	Sampling Comments	General Comments/Non Compliance	Number of Days days AS 3580.10.1	Insoluble Solids g/m2/mth 0.1 AS 3580.10.1	Ash g/m2/mth 0.1 AS 3580.10.1	Combustible Matter g/m2/mth 0.1 AS 3580.10.1	Calculated Rain mm 1 AS 3580.10.1
13773/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	08/11/2022	12/10/2022	8/11/2022	Minor insects.	27 day sample period due to delayed access last month	27	1.6	0.8	0.8	98
13773/4	Badgerys Creek - Dusts	D4 Old House	08/11/2022	11/10/2022	8/11/2022	Minor insects.		28	0.9	0.5	0.4	86
13905/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	06/12/2022	8/11/2022	6/12/2022			28	1.1	0.5	0.6	48
13905/2	Badgerys Creek - Dusts	D2 Hay Shed	06/12/2022	8/11/2022	6/12/2022	Insects, minor algae		28	4.4	1.4	3	51
13905/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	06/12/2022	8/11/2022	6/12/2022			28	0.9	0.5	0.4	47
13905/4	Badgerys Creek - Dusts	D4 Old House	06/12/2022	8/11/2022	6/12/2022			28	1	0.6	0.4	53
14030/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	03/01/2023	6/12/2022	3/01/2023	Insects, algae. Metal bird ring installed by Mulgoa.		28	2.4	1.5	0.9	14
14030/2	Badgerys Creek - Dusts	D2 Hay Shed	03/01/2023	6/12/2022	3/01/2023	Vegetation, algae. Metal bird ring installed by Mulgoa.		28	1.1	0.4	0.7	11
14030/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	03/01/2023	6/12/2022	3/01/2023	Metal bird ring installed by Mulgoa.		28	0.6	0.2	0.4	16
14030/4	Badgerys Creek - Dusts	D4 Old House	03/01/2023	6/12/2022	3/01/2023	Minor insects. Metal bird ring installed by Mulgoa.		28	0.5	0.3	0.2	14
14122/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	31/01/2023	3/01/2023	31/01/2023	Insects, bird droppings - Funnel was not in bottle		28	2.7	1.3	1.4	16
14122/2	Badgerys Creek - Dusts	D2 Hay Shed	31/01/2023	3/01/2023	31/01/2023	Insects, minor algae		28	2.6	0.7	1.9	93
14122/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	31/01/2023	3/01/2023	31/01/2023			28	0.3	0.2	0.1	96
14122/4	Badgerys Creek - Dusts	D4 Old House	31/01/2023	3/01/2023	31/01/2023	Major insects		28	12.1	1.1	11	97
14243/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	28/02/2023	31/01/2023	28/02/2023	Bird droppings, algae		28	2.3	0.7	1.6	29
14243/2	Badgerys Creek - Dusts	D2 Hay Shed	28/02/2023	31/01/2023	28/02/2023	Insects, bird droppings, algae		28	1.5	0.5	1	36
14243/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	28/02/2023	31/01/2023	28/02/2023			28	0.4	0.3	0.1	34
14243/4	Badgerys Creek - Dusts	D4 Old House	28/02/2023	31/01/2023	28/02/2023	Insects		28	0.6	0.4	0.2	30
14375/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	28/03/2023	28/02/2023	28/03/2023	Insects		28	0.9	0.5	0.4	31
14375/2	Badgerys Creek - Dusts	D2 Hay Shed	28/03/2023	28/02/2023	28/03/2023	Insects, major algae		28	2.8	1.1	1.7	37
14375/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	28/03/2023	28/02/2023	28/03/2023	Minor algae		28	1.2	0.5	0.7	37
14375/4	Badgerys Creek - Dusts	D4 Old House	28/03/2023	28/02/2023	28/03/2023	Insects, algae		28	1.7	0.8	0.9	39
14534/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	25/04/2023	28/03/2023	25/04/2023			28	0.6	0.2	0.4	39

Reference Units PQL Method	Description	Sample Description	Sample Date	Date & Time On	Date & Time Sampled	Sampling Comments	General Comments/Non Compliance	Number of Days days AS 3580.10.1	Insoluble Solids g/m2/mth 0.1 AS 3580.10.1	Ash g/m2/mth 0.1 AS 3580.10.1	Combustible Matter g/m2/mth 0.1 AS 3580.10.1	Calculated Rain mm 1 AS 3580.10.1
14534/2	Badgerys Creek - Dusts	D2 Hay Shed	25/04/2023	28/03/2023	25/04/2023	Minor insects		28	0.6	0.2	0.4	34
14534/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	25/04/2023	28/03/2023	25/04/2023			28	0.5	0.2	0.3	32
14534/4	Badgerys Creek - Dusts	D4 Old House	25/04/2023	28/03/2023	25/04/2023	Minor insects		28	0.3	0.1	0.2	36
14631/1	Badgerys Creek - Dusts	D1 Martin Rd - Near Resident	23/05/2023	25/04/2023	23/05/2023			28	0.5	0.2	0.3	73
14631/2	Badgerys Creek - Dusts	D2 Hay Shed	23/05/2023	25/04/2023	23/05/2023	Major algae, vegetation. Bird droppings in funnel		28	8.6	2.3	6.3	76
14631/3	Badgerys Creek - Dusts	D3 Bundwall Near Inghams	23/05/2023	25/04/2023	23/05/2023	Major insects, algae. Bird droppings in funnel.		28	1.7	0.5	1.2	71
14631/4	Badgerys Creek - Dusts	D4 Old House	23/05/2023	25/04/2023	23/05/2023			28	0.5	0.2	0.3	71

Reference Units PQL Method	Description	Sample Description	Date & Time On	Date of Operation	Date & Time Sampled	Sampling Comments	Est Mean Temperature (DF 20.0) °C	Est Mean Pressure (DF 101.3) kPa	Volume Air Sampled m3	Particulates per filter µg/filter 400 VGT-WI/44	~Particulates @ 0°C, 101.3kPa µg/m3 2 VGT-WI/44
12906/1	Badgerys Creek HVAS	PM10	22/04/2022	27/04/2022	24/05/2022	Error Message- motor drive error or major blockage error.	20	101.3	1,226	11,900	10
13227/1	Badgerys Creek HVAS	PM10	24/05/2022	27/05/2022	19/07/2022	19/07/2022	20	101.3	23	5,000	<300
13372/1	Badgerys Creek HVAS	PM10	19/07/2022	20/07/2022	16/08/2022	19/07/2022	20	101.3	7,504	64,500	9
13519/1	Badgerys Creek HVAS	PM10	16/08/2022	19/08/2022	13/09/2022	Overrun	20	101.3	7,506	128,100	17
13693/1	Badgerys Creek HVAS	PM10	13/09/2022	18/09/2022	11/10/2022	Ran multiple days	20	101.3	6,004	44,000	7
13859/1	Badgerys Creek HVAS	PM10	11/10/2022	12/10/2022	08/11/2022	Ran whole month cycle on 1 paper	20	101.3	7,520	84,100	11
13992/1	Badgerys Creek HVAS	PM10	08/11/2022	11/11/2022	06/12/2022	Ran whole month cycle on 1 paper	20	101.3	7,504	116,300	15
14069/1	Badgerys Creek HVAS	PM10	06/12/2022	11/12/2022	03/01/2023	Ran whole month cycle on 1 paper	20	101.3	6,004	84,100	14
14186/1	Badgerys Creek HVAS	PM10	03/01/2023	04/01/2023	31/01/2023	Ran whole month cycle on 1 paper	20	101.3	7,507	70,100	9
14325/1	Badgerys Creek HVAS	PM10	31/01/2023	03/02/2023	28/02/2023	Ran whole month cycle on 1 paper	20	101.3	7,504	121,200	16
14451/1	Badgerys Creek HVAS	PM10	28/02/2023	05/03/2023	23/03/2023	Ran whole month cycle on 1 paper. Reprogrammed 28/03/2023	20	101.3	6,004	115,000	19
14567/1	Badgerys Creek HVAS	PM10	28/03/2023	29/03/2023	24/04/2023	Ran whole month cycle on 1 paper. Reprogrammed times.	20	101.3	7,504	72,900	10
14735/1	Badgerys Creek HVAS	PM 10	25/04/2023	28/04/2023	23/05/2023	Paper ran 4 times. Earthworks adjacent.	20	101.3	5,987	96,900	16
14821/1	Badgerys Creek HVAS	PM 10	25/05/2023	28/05/2023	20/06/2023 12:35	Paper overrun					

Reference Units PQL Method	Sample Description	Sample Date	Sampling Comments	General Comments/Non Compliance	Temperature °C 0.1 Temp	pH pH Units 0.1 APHA 4500-H B	Electrical Conductivity µS/cm 20 APHA 2510 B	Dissolved Oxygen mg/L 0.1 APHA 4500-O G	Turbidity NTU 0.1 APHA 2130 B	NOx as N mg/L 0.005 EXT	Ammonia as N mg/L 0.005 EXT	Total Nitrogen mg/L 0.1 EXT	Phosphate as P mg/L 0.005 EXT	Total Phosphorus mg/L 0.05 EXT	**Date Tested** -- --	Ammonia as $N_{\#}$ mg/L 0.02 4500-NH3 F
12850/1	Badgerys Creek Confluence	27/05/2022 09:36	No visual flow observed		14.2	7.5	1,250	8.7	50	0.2	0.041	1	0.02	0.1	27/05/2022	
12850/2	Badgerys Creek Upstream	27/05/2022 10:02	Very slight visual flow observed		14.4	7.5	1,250	9	40	0.2	0.057	1	0.02	0.09	27/05/2022	
12850/3	Badgerys Creek Downstream	27/05/2022 09:14	No visual flow observed		14.5	7.5	1,240	9.5	60	0.2	0.049	0.99	0.02	0.1	27/05/2022	
12850/4	South Creek Upstream	27/05/2022 11:08	No visual flow observed		17.2	7.5	895	8.7	150	0.52	0.026	1.5	0.074	0.3	27/05/2022	
12850/5	South Creek Downstream	27/05/2022 11:43	No visual flow observed		16.3	7.6	898	8.8	140	0.57	0.028	1.6	0.078	0.2	27/05/2022	
12850/6	Dup (Badgerys Creek D/S)	27/05/2022 09:18	Very slight visual flow observed		14.5	7.5	1,230	9.4	60	0.2	0.052	1	0.02	0.2	27/05/2022	
12965/1	Badgerys Creek Confluence	21/06/2022	No sampling on this site due to access issues.	No sampling on this site due to access issues.	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
12965/2	Badgerys Creek Upstream	21/06/2022	No sampling on this site due to access issues.	No sampling on this site due to access issues.	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
12965/3	Badgerys Creek Downstream	21/06/2022	No sampling on this site due to access issues.	No sampling on this site due to access issues.	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
12965/4	South Creek Upstream	21/06/2022	No sampling on this site due to access issues.	No sampling on this site due to access issues.	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
12965/5	South Creek Downstream	21/06/2022	No sampling on this site due to access issues.	No sampling on this site due to access issues.	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
12965/6	Dup (??)	21/06/2022	No sampling on this site due to access issues.	No sampling on this site due to access issues.	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
13154/1	Badgerys Creek Confluence	19/07/2022	No access													
13154/2	Badgerys Creek Upstream	19/07/2022	No access													
13154/3	Badgerys Creek Downstream	19/07/2022	No access													
13154/4	South Creek Upstream	19/07/2022	No access													
13154/5	South Creek Downstream	19/07/2022	No access													
13154/6	Dup (??)	19/07/2022	No access													
13298/1	Badgerys Creek Confluence	16/08/2022 11:21	No Visible Oil and Grease. No visual flow.		13.6	7.7	1,830	12.6	22	0.03	0.21	0.6	<0.005	0.08	17/08/2022	
13298/2	Badgerys Creek Upstream	16/08/2022 11:49	No Visible Oil and Grease. No visual flow.		12.9	7.7	1,810	12.5	19	0.02	0.19	0.7	<0.005	0.08	17/08/2022	
13298/3	Badgerys Creek Downstream	16/08/2022 10:50	No Visible Oil and Grease. No visual flow.		13.1	7.6	1,890	11.9	21	0.02	0.17	0.7	<0.005	0.08	17/08/2022	
13298/4	South Creek Upstream	16/08/2022 12:38	No Visible Oil and Grease. No visual flow.		12.6	7.4	1,910	9.8	40	0.9	0.19	1.4	0.05	0.2	17/08/2022	

Reference Units PQL Method	Sample Description	Sample Date	Sampling Comments	General Comments/Non Compliance	Temperature °C 0.1 Temp	pH pH Units 0.1 APHA 4500-H B	Electrical Conductivity µS/cm 20 APHA 2510 B	Dissolved Oxygen mg/L 0.1 APHA 4500-O G	Turbidity NTU 0.1 APHA 2130 B	NOx as N mg/L 0.005 EXT	Ammonia as N mg/L 0.005 EXT	Total Nitrogen mg/L 0.1 EXT	Phosphate as P mg/L 0.005 EXT	Total Phosphorus mg/L 0.05 EXT	**Date Tested** -- --	Ammonia as $N_{\#}$ mg/L 0.02 4500-NH3 F
13298/5	South Creek Downstream	16/08/2022 13:08	No Visible Oil and Grease. No visual flow.		12.5	7.4	1,830	9.6	36	1.8	0.22	1.9	0.078	0.2	17/08/2022	
13298/6	up (Badgerys Creek Downstrean	16/08/2022 10:58	No Visible Oil and Grease. No visual flow.		13.1	7.6	1,890	11.8	21	0.02	0.2	0.6	<0.005	0.07	17/08/2022	
13416/1	Badgerys Creek Confluence	14/09/2022 10:58	No visible flow, no visible oils		15.5	8.2	2,440	14.2	70	0.3	0.032	1.7	<0.005	0.3	14/09/2022	
13416/2	Badgerys Creek Upstream	14/09/2022 11:19	Trickle flow, no visible oils		15.7	8.2	2,500	14.5	55	0.53	<0.005	1.8	<0.005	0.2	14/09/2022	
13416/3	Badgerys Creek Downstream	14/09/2022 10:32	No visible flow, no visible oils		14.6	7.5	2,390	9.7	33	0.3	0.015	1.3	<0.005	0.1	14/09/2022	
13416/4	South Creek Upstream	14/09/2022 12:10	No visible flow, no visible oils		15.6	7.4	1,660	9.4	75	1.2	<0.005	1.6	0.052	0.2	14/09/2022	
13416/5	South Creek Downstream	14/09/2022 12:44	No visible flow, no visible oils		14.5	7.5	1,730	10.2	50	1.2	<0.005	1.6	0.056	0.2	14/09/2022	
13416/6	Dup (BC Downstream)	14/09/2022 10:40	No visible flow, no visible oils		14.6	7.5	2,380	9.6	33	0.3	0.012	1.3	<0.005	0.1	14/09/2022	
13617/1	Badgerys Creek Confluence	12/10/2022	No sample, no safe vehicle access	mple, no safe vehicle	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	12/10/2022	[NT]
13617/2	Badgerys Creek Upstream	12/10/2022	No sample, no safe vehicle access	mple, no safe vehicle	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	12/10/2022	[NT]
13617/3	Badgerys Creek Downstream	12/10/2022	No sample, no safe vehicle access	mple, no safe vehicle	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	12/10/2022	[NT]
13617/4	South Creek Upstream	12/10/2022	No sample, no safe vehicle access	mple, no safe vehicle	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	12/10/2022	[NT]
13617/5	South Creek Downstream	12/10/2022	No sample, no safe vehicle access	mple, no safe vehicle	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	12/10/2022	[NT]
13617/6	Dup	12/10/2022	No sample, no safe vehicle access	mple, no safe vehicle	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	12/10/2022	[NT]
13777/1	Badgerys Creek Confluence	10/11/2022 12:01	No Visible Oil and Grease. No flow.		21.9	7.4	1,520	6.6	45	<0.005		0.5	0.01	0.1	10/11/2022	<0.02
13777/2	Badgerys Creek Upstream	10/11/2022 12:17	No Visible Oil and Grease. No flow.		22.8	7.7	1,570	8.2	32	<0.005		0.6	0.01	0.2	10/11/2022	<0.02
13777/3	Badgerys Creek Downstream	10/11/2022 11:23	No Visible Oil and Grease. No flow.		20.5	7.2	1,430	4.7	22	0.03		0.6	0.01	0.1	10/11/2022	0.03
13777/4	South Creek Upstream	10/11/2022 12:43	No Visible Oil and Grease. No flow.		20.7	7.3	1,210	6.2	140	0.4		0.7	0.04	0.2	10/11/2022	0.03
13777/5	South Creek Downstream	10/11/2022 13:27	No Visible Oil and Grease. No flow.		20.5	7.2	1,180	6.9	120	0.4		0.7	0.04	0.2	10/11/2022	0.02
13777/6	Dup (Badgerys Creek D/S)	10/11/2022 11:31	No Visible Oil and Grease. No flow.		20.6	7.2	1,430	4.6	22	0.03		0.6	0.01	0.1	10/11/2022	0.03
13908/1	Badgerys Creek Confluence	07/12/2022 10:06	No Visible Oil and Grease. No flow.		21.3	7.1	562	5.5	75	0.009		0.3	0.02	0.1	07/12/2022	0.02

Reference Units PQL Method	Sample Description	Sample Date	Sampling Comments	General Comments/Non Compliance	Temperature °C 0.1 Temp	pH pH Units 0.1 APHA 4500-H B	Electrical Conductivity µS/cm 20 APHA 2510 B	Dissolved Oxygen mg/L 0.1 APHA 4500-O G	Turbidity NTU 0.1 APHA 2130 B	NOx as N mg/L 0.005 EXT	Ammonia as N mg/L 0.005 EXT	Total Nitrogen mg/L 0.1 EXT	Phosphate as P mg/L 0.005 EXT	Total Phosphorus mg/L 0.05 EXT	**Date Tested** -- --	Ammonia as $N_{\#}$ mg/L 0.02 4500-NH3 F
13908/2	Badgerys Creek Upstream	07/12/2022 10:21	No Visible Oil and Grease. No flow.		21	7.3	523	6.8	65	0.02		0.3	0.02	0.1	07/12/2022	0.02
13908/3	Badgerys Creek Downstream	07/12/2022 09:34	No Visible Oil and Grease. No flow.		21.4	7.3	605	7	75	<0.005		0.3	0.02	0.1	07/12/2022	0.03
13908/4	South Creek Upstream	07/12/2022 10:52	No Visible Oil and Grease. No flow.		21.5	7.5	1,540	8.5	65	2.2		2.5	0.21	0.4	07/12/2022	0.02
13908/5	South Creek Downstream	07/12/2022 11:23	No Visible Oil and Grease. No flow.		21.6	7.4	1,400	6.4	45	0.5		0.9	0.03	0.2	07/12/2022	0.03
13908/6	Dup (Downstream)	07/12/2022 09:40	No Visible Oil and Grease. No flow.		21.5	7.3	604	7	75	<0.005		0.3	0.02	0.1	07/12/2022	0.03
14033/1	Badgerys Creek Confluence	04/01/2023 11:39	No visible flow, no visible oils		24.9	7.2	318	5.7	45	<0.005		0.2	0.01	0.06	04/01/2023	<0.02
14033/2	Badgerys Creek Upstream	04/01/2023 11:58	No visible flow, no visible oils		24.5	7.2	319	6	50	0.008		0.2	0.01	0.08	04/01/2023	<0.02
14033/3	Badgerys Creek Downstream	04/01/2023 11:12	No visible flow, no visible oils		24.9	7.2	329	5.9	50	0.008		0.3	0.02	0.1	04/01/2023	<0.02
14033/4	South Creek Upstream	04/01/2023 12:24	Algae, no visible flow, no visible oils		23.9	7.6	2,400	8	15	4.2		4.7	0.17	0.2	04/01/2023	0.02
14033/5	South Creek Downstream	04/01/2023 13:06	No visible flow, no visible oils		23.9	7.5	2,290	4	5.9	0.06		1.2	0.05	0.1	04/01/2023	0.36
14033/6	up (Badgerys Creek Downstrean	04/01/2023 11:19	No visible flow, no visible oils		24.9	7.2	331	5.9	50	0.008		0.2	0.02	0.07	04/01/2023	<0.02
14126/1	Badgerys Creek Confluence	13/02/2023 11:58	No Visible Oil and Grease. No flow, shallow.		24.3	7.2	1,290	3.8	130	0.007		0.5	0.007	0.2	13/02/2023	0.05
14126/2	Badgerys Creek Upstream	13/02/2023 12:14	No Visible Oil and Grease. No flow, shallow.		24	7.3	1,300	4.3	150	0.005		0.5	0.01	0.3	13/02/2023	0.05
14126/3	Badgerys Creek Downstream	13/02/2023 11:29	No Visible Oil and Grease. No flow.		22.8	7.3	1,330	3.9	22	0.01		0.5	0.009	0.2	13/02/2023	0.05
14126/4	South Creek Upstream	13/02/2023 12:46	No Visible Oil and Grease. No flow.		23.5	7.2	681	4.7	140	0.4		0.9	0.052	0.2	13/02/2023	0.04
14126/5	South Creek Downstream	13/02/2023 13:21	No Visible Oil and Grease. No flow.		23.8	7.3	676	5.9	130	0.4		0.8	0.056	0.2	13/02/2023	0.04
14126/6	Dup) Badgerys Creek Downstrea	13/02/2023 11:35	No Visible Oil and Grease. No flow.		22.8	7.3	1,330	4	22	0.008		0.4	0.008	0.09	13/02/2023	0.05
14249/1	Badgerys Creek Confluence	01/03/2023 11:58	No flow, turbid.		24.4	7.3	1,340	4.7	95	<0.005		0.3	<0.005	0.2	01/03/2023	<0.02
14249/2	Badgerys Creek Upstream	01/03/2023 12:20	No flow, turbid.		24.5	7.4	1,370	6.1	90	<0.005		0.4	<0.005	0.1	01/03/2023	<0.02
14249/3	Badgerys Creek Downstream	01/03/2023 11:24	No flow.		22.9	7.3	1,560	5	15	<0.005		0.5	<0.005	0.1	01/03/2023	<0.02
14249/4	South Creek Upstream	01/03/2023 12:57	No flow.		24.2	7.5	1,130	7	37	0.77		1.1	0.1	0.3	01/03/2023	<0.02
14249/5	South Creek Downstream	01/03/2023 13:28	No flow, algae		24.4	7.4	1,110	5.6	40	0.68		1.2	0.12	0.3	01/03/2023	0.04
14249/6	Dup (BC Downstream)	01/03/2023 11:30	No flow.		23.1	7.3	1,560	4.9	15	<0.005		0.5	<0.005	0.1	01/03/2023	<0.02
14381/1	Badgerys Creek Confluence	29/03/2023 12:39	No flow, No Visible Oil and Grease.		21.8	7.4	2,100	6.5	65	<0.005		0.6	0.006	0.2	29/03/2023	<0.02
14381/2	Badgerys Creek Upstream	29/03/2023 12:58	No flow, No Visible Oil and Grease.		21.9	7.4	2,250	7	45	<0.005		0.7	<0.005	0.1	29/03/2023	<0.02

Reference	Sample Description	Sample Date	Sampling Comments	General Comments/Non Compliance	Temperature	pH	Electrical Conductivity	Dissolved Oxygen	Turbidity	NOx as N	Ammonia as N	Total Nitrogen	Phosphate as P	Total Phosphorus	**Date Tested**	Ammonia as $N_{\#}$
Units					°C	pH Units	µS/cm	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	--	mg/L
PQL					0.1	0.1	20	0.1	0.1	0.005	0.005	0.1	0.005	0.05		0.02
Method					Temp	APHA 4500-H B	APHA 2510 B	APHA 4500-O G	APHA 2130 B	EXT	EXT	EXT	EXT	EXT	--	4500-NH3 F
14381/3	Badgerys Creek Downstream	29/03/2023 12:10	No flow, No Visible Oil and Grease.		20.9	7.3	1,590	3.4	18	0.01		1	0.01	0.08	29/03/2023	0.31
14381/4	South Creek Upstream	29/03/2023 13:42	No flow, No Visible Oil and Grease.		21.7	7.5	1,660	5.5	26	2.8		4.5	0.53	0.61	29/03/2023	0.08
14381/5	South Creek Downstream	29/03/2023 14:10	No flow, No Visible Oil and Grease.		21.7	7.5	1,530	5.6	17	3		5	0.6	0.63	29/03/2023	0.1
14381/6	up (Badgerys Creek Downstrean	29/03/2023 12:18	No flow, No Visible Oil and Grease.		21	7.3	1,590	3.5	19	<0.005		1	0.01	0.08	29/03/2023	0.26
14540/1	Badgerys Creek Confluence	26/04/2023 12:31	No flow, no visible oils		19.2	7.6	2,360	6.6	50	<0.005		0.3	<0.005	0.1	26/04/2023	<0.02
14540/2	Badgerys Creek Upstream	26/04/2023 12:50	No flow, no visible oils		20.1	7.6	2,360	7.9	45	<0.005		0.3	<0.005	0.1	26/04/2023	<0.02
14540/3	Badgerys Creek Downstream	26/04/2023 12:01	No flow, no visible oils		17.5	7.3	2,410	5.5	19	<0.005		0.3	<0.005	0.06	26/04/2023	<0.02
14540/4	South Creek Upstream	26/04/2023 11:02	No flow, no visible oils		18.4	7.4	1,060	6.1	24	2.9		3.5	0.28	0.5	26/04/2023	0.03
14540/5	South Creek Downstream	26/04/2023 11:30	No flow, no visible oils		18.2	7.5	1,110	6.7	15	1.4		1.8	0.14	0.2	26/04/2023	0.02
14540/6	Dup (BC Downstream)	26/04/2023 12:09	No flow, no visible oils		17.5	7.3	2,400	5.5	19	0.005		0.3	<0.005	<0.05	26/04/2023	<0.02
14638/1	Badgerys Creek Confluence	24/05/2023 12:14	No flow.		10.7	7.4	1,980	8.2	65	1.9		2.4	0.009	0.1	24/05/2023	0.11
14638/2	Badgerys Creek Upstream	24/05/2023 12:31	No flow.		11.1	7.4	1,990	8.8	39	1.9		2.5	0.008	0.06	24/05/2023	0.08
14638/3	Badgerys Creek Downstream	24/05/2023 11:42	No flow.		10.2	7.3	1,960	8.3	55	2		2.5	0.008	0.07	24/05/2023	0.09
14638/4	South Creek Upstream	24/05/2023 13:16	No flow.		12.3	7.4	1,060	7.7	24	2.6		2.7	0.31	0.4	24/05/2023	0.04
14638/5	South Creek Downstream	24/05/2023 13:48	No flow.		12.9	7.4	1,110	7.6	20	2.3		2.6	0.25	0.3	24/05/2023	0.03
14638/6	Dup (BC Downstream)	24/05/2023 11:50	No flow.		10.4	7.3	1,960	8.2	60	2.1		2.6	0.01	0.07	24/05/2023	0.09

ERM Sydney
Level 15, 309 Kent St
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: **Russell Jarman**

Report **892156-W-V2**
Project name BADGERYS CREEK
Project ID 606483
Received Date May 24, 2022

Client Sample ID			**PONIT 2**	**POINT 3**	**DISCHARGE**
Sample Matrix			**Water**	**Water**	**Water**
Eurofins Sample No.			**S22-My0065370**	**S22-My0065371**	**S22-My0065372**
Date Sampled			**May 23, 2022**	**May 23, 2022**	**May 23, 2022**
Test/Reference	LOR	Unit			
Oil & Grease (HEM)	10	mg/L	< 10	< 10	< 10
Total Dissolved Solids Dried at 180°C ± 2°C	10	mg/L	570	570	550
Total Suspended Solids Dried at 103°C–105°C	5	mg/L	11	9.6	9.5
Heavy Metals					
Aluminium	0.05	mg/L	0.46	0.56	0.41
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Oil & Grease (HEM)	Melbourne	May 30, 2022	28 Days
- Method: LTM-INO-4180 Oil and Grease (APHA 5520B)			
Total Suspended Solids Dried at 103°C–105°C	Sydney	May 31, 2022	7 Days
- Method: LTM-INO-4070 Analysis of Suspended Solids in Water by Gravimetry			
Heavy Metals	Sydney	May 31, 2022	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Heavy Metals (filtered)	Sydney	Jun 06, 2022	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Total Dissolved Solids Dried at 180°C ± 2°C	Sydney	May 31, 2022	7 Days
- Method: LTM-INO-4170 Total Dissolved Solids in Water			

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NATA # 1261 Site # 18217

Brisbane
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Murarrie QLD 4172
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NATA # 1261 Site # 20794

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Company Name: ERM Sydney
Address: Level 15, 309 Kent St
Sydney
NSW 2000

Project Name: BADGERYS CREEK
Project ID: 606483

Order No.:
Report #: 892156
Phone: 02 8584 8888
Fax: 02 8584 8800

Received: May 24, 2022 12:00 PM
Due: May 31, 2022
Priority: 5 Day
Contact Name: Russell Jarman

Eurofins Analytical Services Manager : Emma Beesley

Sample Detail						Aluminium	Oil & Grease (HEM)	Total Suspended Solids Dried at 103°C–105°C	Total Dissolved Solids Dried at 180°C ± 2°C
Melbourne Laboratory - NATA # 1261 Site # 1254							X		
Sydney Laboratory - NATA # 1261 Site # 18217						X		X	X
Brisbane Laboratory - NATA # 1261 Site # 20794									
Mayfield Laboratory - NATA # 1261 Site # 25079									
Perth Laboratory - NATA # 2377 Site # 2370									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	PONIT 2	May 23, 2022		Water	S22-My0065370	X	X	X	X
2	POINT 3	May 23, 2022		Water	S22-My0065371	X	X	X	X
3	DISCHARGE	May 23, 2022		Water	S22-My0065372	X	X	X	X
Test Counts						3	3	3	3

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
µg/L: micrograms per litre
ppm: parts per million
ppb: parts per billion
%: Percentage
org/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

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QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Oil & Grease (HEM)	mg/L	< 10			10	Pass	
Total Suspended Solids Dried at 103°C–105°C	mg/L	< 5			5	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
LCS - % Recovery							
Oil & Grease (HEM)	%	120			70-130	Pass	
Total Suspended Solids Dried at 103°C–105°C	%	112			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	106			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Total Suspended Solids Dried at 103°C–105°C	S22-My0062961	NCP	%	109			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Total Suspended Solids Dried at 103°C–105°C	S22-My0062297	NCP	mg/L	26	27	3.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids Dried at 180°C ± 2°C	S22-My0065371	CP	mg/L	570	570	<1	30%	Pass	

Comments

This report has been revised V2 following analysis of aluminum filtered.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised by:

Robert Biviano	Analytical Services Manager
Gabriele Cordero	Senior Analyst-Metal
Ryan Phillips	Senior Analyst-Inorganic
Scott Beddoes	Senior Analyst-Inorganic

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Certificate of Analysis

ERM Sydney
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Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: **Russell Jarman**

Report **958022-W**
Project name ADDITIONAL - CSR BC DC
Project ID ADDITIONAL - 0606483
Received Date Jan 24, 2023

Client Sample ID			**W1**
Sample Matrix			**Water**
Eurofins Sample No.			**S23-Ja0034492**
Date Sampled			**Jan 17, 2023**
Test/Reference	LOR	Unit	
Heavy Metals			
Aluminium (filtered)	0.05	mg/L	0.09

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Heavy Metals (filtered)	Sydney	Jan 25, 2023	180 Days

- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS

eurofins

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IANZ# 1290

Company Name: ERM Sydney
Address: Level 15, 309 Kent St
Sydney
NSW 2000

Project Name: ADDITIONAL - CSR BC DC
Project ID: ADDITIONAL - 0606483

Order No.:
Report #: 958022
Phone: 02 8584 8888
Fax: 02 8584 8800

Received: Jan 24, 2023 3:38 PM
Due: Jan 30, 2023
Priority: 3 Day
Contact Name: Russell Jarman

Eurofins Analytical Services Manager : Quinn Raw

Sample Detail						Aluminium (filtered)
Sydney Laboratory - NATA # 1261 Site # 18217						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	W1	Jan 17, 2023		Water	S23-Ja0034492	X
Test Counts						1

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Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
µg/L: micrograms per litre
ppm: parts per million
ppb: parts per billion
%: Percentage
org/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Method Blank									
Heavy Metals									
Aluminium (filtered)			mg/L	< 0.05			0.05	Pass	
LCS - % Recovery									
Heavy Metals									
Aluminium (filtered)			%	109			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium (filtered)	R23-Ja0026304	NCP	%	100			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	S23-Ja0034995	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised by:

Quinn Raw	Analytical Services Manager
Fang Yee Tan	Senior Analyst-Metal

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

21st December 2022

Reference: 0606483_S011320

Attention: Nelma Arancibia

Subject: Badgerys Creek Advanced Manufacturing Hub – Bi-annual Groundwater Monitoring Report – December 2022

2. INTRODUCTION

ERM Services Australia Pty Ltd (ERM) were engaged by CSR limited to perform a bi-annual groundwater monitoring event at the CSR Advanced Manufacturing Hub, located at 235 Martin Street, Badgerys Creek, NSW 2555 ('the Site'). The Site lies within the Liverpool Local Government Area (LGA), approximately 15 km southeast of Penrith and 20 km north of Campbelltown.

In accordance with Schedule 3 Condition 23 of the project approval, the DPIE requires that CSR develop and implement a Soil and Water Management Plan (SWMP) for the Site, including both a Site Water Balance and a Surface Water Management Plan. The SWMP is designed to operate as a dynamic document for the duration of quarrying activities occurring on-site, to be updated as necessary when site conditions change.

This Groundwater Monitoring Report presents the results of the November / December monitoring event as per the requirements for water management within the current approved SWMP.

3. OBJECTIVES:

The objectives of the December 2022 groundwater monitoring event are to collect and present data in line with the approved groundwater monitoring management plan for the site to allow for CSRs required annual findings report to Water NSW/NRAR.

4. SCOPE OF WORKS

ERM undertook the following activities to achieve the project objectives:

- Gauging, sampling and collection of water quality parameters from 13 on-site groundwater monitoring wells;
- Sampling and collection of water quality parameters from 3 on-site surface water monitoring locations;
- Submission of collected groundwater and surface water samples to a NATA accredited laboratory for analysis;
- Preparation of this groundwater monitoring report summarising the data collected.

5. MONITORING NETWORK

5.1 Groundwater Monitoring Network

The groundwater monitoring network consists of 13 recorded groundwater wells installed across the Site. Among these 13 wells are three sets of paired wells:

- BW2a & BW2b;
- BW4a and BW4b; and,
- BW5a & BW5b.

Paired wells were installed to facilitate monitoring of both the deeper shale and shallow alluvial aquifers and provide information on hydraulic conductivity and connectivity between the shallow and deeper horizons.

Previous reports indicate that wells MW3a, MW3b and MW3c were installed within the immediate vicinity of the former brick making factory as part of a previous contamination investigation. These wells were not used as part of the routine groundwater monitoring works for the SWMP but were previously proposed as a suitable addition for future groundwater monitoring events. However, following demolition of the former factory these wells no longer appear to be present on site and as such were not sampled during the December 2022 works.

MW6 is recorded as an older monitoring bore located in the south-west of the site for which installation details are not available. This well was not located during the December 2022 monitoring works.

MW2 is an existing monitoring bore previously recorded with damage to the surface casing and PVC standpipe sufficient to prevent its inclusion in ongoing monitoring works. As such MW2 was not sampled during this monitoring round.

Table 5.1 Below shows the installation details for the monitoring well network, such as were available. Refer to **Figure 2** – Site Layout for groundwater and surface water sampling locations.

Table 5.1 – Groundwater Well Installation Details

Well ID	Easting	Northing	Location Description	Depth Installed (m)	Screen Interval (m)	Surface Elevation (mAHD)	SWL (mbTOC)*	SWL (mAHD)*
MW1	292250	6246990	Deep well located adjacent to Pit 1 approximately 60m to the south-east.	31	25 – 31	63.99	13.78	50.99
MW4	291750	6247169	Deep well adjacent to Pit 1 on the northern side, approximately 30m from the batters and 60m from the stored water in the pit.	28	22 – 28	56.43	5.78	50.92
MW6	291872	6246790	South of Pit 1, not located during Nov 2022.	33	Unknown	Not Confirmed	11.56	Not Confirmed
BW1	291741	6247174	Shallow well adjacent to Pit 1 on the northern	8	5 – 8	56.06	3.90	52.88

			side, approximately 30m from the batters and 60m from the stored water in the pit.					
BW2a	291911	6247442	Shallow well adjacent to Badgerys Creek tributary in the north-west of site (set back to protect an Aboriginal heritage site identified for protection).	8	5 – 8	56.29	4.09	52.85
BW2b	291914	6247440	Deep well adjacent to Badgerys Creek tributary in the north-west of site (set back to protect an Aboriginal heritage site identified for protection).	33	27 – 33	56.40	5.38	51.69
BW4a	293602	6247294	Shallow well adjacent to South creek in the north-east of site.	6	3 – 6	49.04	3.14	46.61
BW4b	293602	6247295	Deep well adjacent to South creek in the north-east of site.	33	27 – 33	49.06	2.51	47.33

BW5a	293098	6246559	Shallow well adjacent to South creek in the South-east of site.	7	4 – 7	45.56	4.35	42.92
BW5b	293098	6246561	Deep well adjacent to South creek in the South-east of site.	33	27 – 33	46.51	2.94	44.27

Data as of 25/09/2018

5.2 Groundwater Levels

Precise historic water level data has not been provided for the compilation of this report. Water level comparisons have instead been made against the tabulated data provided in the Groundwater Monitoring Report produced for the site in May 2021 (Groundwater Exploration Services 2021) (GES).

Levels in MW4 and BW1 are similar at 51.571m and 53.458m AHD respectively and comparable to recent historic groundwater levels. Levels remain near the base level of Badgerys Creek and significantly above the ponded water level in Pit 1, indicating very steep drawdown within the shallow groundwater table near Pit 1.

Groundwater levels in monitoring wells BW2a and BW2b are similar at 53.495m and 52.239m AHD respectively. These levels are similar to recent groundwater levels, noting the water level data for BW2b has fluctuated through as much as 4m in the recent past attributed to surface run-off and infiltration following significant rainfall events and possibly being indicative of seal damage around the well.

Levels in wells BW4a (47.405m) and BW4b (47.4m) were essentially identical, indicating a slight increase in water level at BW4a in the shallow aquifer relative to May 2021 levels while water levels measured in the deeper shale aquifer at BW4b were relatively unchanged.

The greatest change in groundwater elevation from the May 2021 data was observed in wells BW5a (40.571m) and BW5b (42.078m) where water levels appear to have dropped by approximately 1.5m and 2m respectively.

Groundwater gauging data for December 2022 is presented in **Table 5.2** below.

Table 5.2 – Groundwater Gauging

Well ID	Date	SWL (mbtoc)	Depth to Bottom (mbtoc)	SWL (mAHD)
MW1	2/12/2022	12.629	16.383	51.361
MW4	2/12/2022	4.859	24.669	51.571
MW6	NL	NL	NL	NL
BW1	2/12/2022	2.602	7.108	53.458
BW2a	2/12/2022	2.795	7.745	53.495
BW2b	2/12/2022	4.161	34.093	52.239

BW4a	2/12/2022	1.635	33.228	47.405
BW4b	2/12/2022	1.660	6.627	47.4
BW5a	2/12/2022	4.989	8.055	40.571
BW5b	2/12/2022	4.432	34.380	42.078

5.3 Surface Water Sample Locations

There are three surface water monitoring locations included in the groundwater monitoring works designed to monitor surface water discharge from the Site and the nearby potential receptors, the Badgerys Creek tributary and South Creek. Surface water samples were collected from the following three locations:

- S1 – near the confluence of the Badgerys Creek tributary flowing from the Pit 1 discharge point into the Badgerys Creek tributary;
- S2 – immediately downstream of the Pit 1 discharge point into the Badgerys Creek tributary; and,
- S3 – Souths Creek.

6. WATER QUALITY

6.1 Analytical Testing

Analytical laboratory results from the December 2022 sampling of the groundwater and surface monitoring network are summarised in **Attachment A** – Data Summary Table. Water samples were collected for field analysis of pH, electrical conductivity (EC), and for laboratory testing of the following comprehensive suite of analytes as per the SWMP:

- pH, EC and total dissolved solids (TDS).
- Major cations and anions; and
- Dissolved metals (Arsenic, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Zinc,).

Laboratory analysis was undertaken by ALS Environmental, a NATA-accredited laboratory based in Sydney. The ANZG (2018) Guidelines for slightly to moderately disturbed ecosystems (marine and freshwater) have been applied to groundwater results. Major ions have been compared with ANZG (2018) guidelines for recreational purposes for consistency with previous reports.

A number of exceedances of the site criteria were reported within groundwater wells for the following analytes:

- Copper exceedances of the ANZG 95% protection levels for both marine and freshwater were reported in all locations;

- Nickel exceedances of the ANZG 95% species protection levels for both marine and freshwater were reported in BW2a, BW4a and MW1;
- Zinc exceedances of the ANZG 95% species protection levels for marine water were reported for locations BW1, BW2a, BW4a, BW4b, BW5b and MW1. Monitoring well BW5a reported zinc exceedances of the ANZG 95% species protection levels for both marine and freshwater.
- A chromium exceedance of the ANZG 95% species protection levels for both marine and freshwater was reported in BW2a;
- A Cadmium exceedance of the ANZG 95% species protection levels for both marine and freshwater was reported in BW2a;
- Chloride exceedances of the recreational guidelines were reported in all groundwater locations;
- Sodium exceedances of the recreational guidelines were reported in all groundwater locations with the exception of BW2b; and,
- Sulphate exceedances of the recreational guidelines were reported in locations BW2a and MW1.

There were no reported exceedances of the site criteria in surface water samples with the following exceptions:

- Copper exceedances of the ANZG 95% protection levels for both marine and freshwater were reported in all surface water locations;
- Sodium exceedances of the ANZG 95% protection levels for both marine and freshwater were reported in SW3; and,
- Chloride exceedances of the ANZG 95% protection levels for both marine and freshwater were reported in SW3.

The reported exceedances reflect the elevated salinity historically reported within Site groundwater.

EC results and Piper diagram plots have been used to demonstrate site hydrogeological conditions. Differences in salinity between strata tend to reflect recharge rates or connectivity with surface waters. Areas of higher salinity tend to reflect lower recharge rates, while lower salinity may reflect greater recharge / surface water connectivity. Piper plots can be used to assess recharge and discharge processes and allow comparison of water samples derived from different environments within the hydrological cycle. Recently recharged water tends to plot to the left apex of the diamond field in the Piper diagram, waters further from the source of recharge will plot to the right.

Attachment D shows a composite Piper plot of the groundwater samples from the project area. As precise analytical ground and surface water data has not been provided for the compilation of this report historical results have not been included in the plot.

Review of the plot shows most samples grouped close to the right-hand side of both Cations and Anions trilinear diagram, indicative of saline groundwater high in sodium chloride. There is

generally little difference apparent between the shallow and deeper groundwater monitoring locations, with the exception of shallow well BW1 and nearby deeper well MW4. Locations S1, S2 and MW4 have plotted further left in the piper plot and trilinear anion diagram, indicating lower sodium chloride levels than previously observed, likely representing dilution as a result of recharge.

6.2 Groundwater Field Geochemistry

6.2.1 Electrical Conductivity

Groundwater salinity across the site monitoring network shows extensive variability in electrical conductivity (EC) results. The May 2021 groundwater monitoring report (GES 2021) indicates EC results historically ranged from approximately 8,700 to 31,600 µS/cm. Results from the November 2022 monitoring period have returned EC results generally within this range, with the exception of two of the deeper wells in the north-west of the site BW2b and MW4, which reported an EC of 1,100 µS/cm and 3,200 µS/cm respectively.

7. BENEFICIAL USE

The National and State guidelines for groundwater protection rely on a framework in which there is the identification of existing or potential beneficial uses for groundwater resources. The choice of a beneficial use classification depends upon the quality of water present and the potential values of the water in the long term (NWQMS, 1995).

The NWQM Strategy Guidelines for Groundwater Protection in Australia (1995) recommended the following beneficial uses that have been adopted in this policy. They include:

- ecosystem protection;
- recreation and aesthetics;
- raw water for drinking water supply;
- agricultural water; and
- industrial water

Site groundwater quality has historically exceeded relevant guideline values. ANZECC & ARMCANZ (2000) (since updated by the ANZG 2018) derive default guideline values for large geographic regions encompassing a broad range of catchments and water types. These guideline values include different levels of protection, depending on the current or desired ecosystem condition. This assessment has applied both recreational and aquatic species protection (95%). ERM note that with the exception of ecosystem protection, the beneficial uses listed above are not relevant to the Site as groundwater is not used for recreational drinking water, agricultural or industrial purposes. Furthermore, given the historical land use at the Site for agricultural and quarrying purposes it can be considered a highly disturbed system under the ANZG (2018) guidelines. Considered along with the elevated site salinity typical for this shale unit, the exceedances of the default guideline trigger values may are not necessarily reflective of issues with performance of operational water quality management, nor do they indicate that water quality deterioration has occurred as a result of the Project.

As stated in the May 2021 Groundwater Monitoring Report (GES 2021) The NWQM Strategy Guidelines recommends less conservative site-specific guideline values be derived for

management plans using 90th or 10th percentiles of minimally impacted reference-site data, with the goal of continual improvement. The groundwater management plan is to adopt such a strategy to maintain or improve the current use status moving forward, however, as historic data for analytical groundwater and surface water results were not available for this reporting period this will be presented in the next groundwater monitoring report.

8. SUMMARY

8.1 Groundwater Levels

Groundwater levels across the site generally reflect site topography. Paired monitoring locations in close proximity to Pit 1 and water levels at these sites are within a narrow range but show enough difference to establish there is a poor connection within the shale geological unit (Wianamatta Shale).

The groundwater wells in close proximity to Pit 1 show water levels are significantly higher in groundwater wells than Pit 1 surface waters, and therefore connectivity between surface waters in Pit 1 and surrounding groundwater is negligible.

8.2 Groundwater / Surface Water Quality

Water quality data for pH and EC shows groundwater quality is brackish to saline, typical of Wianamatta Shale.

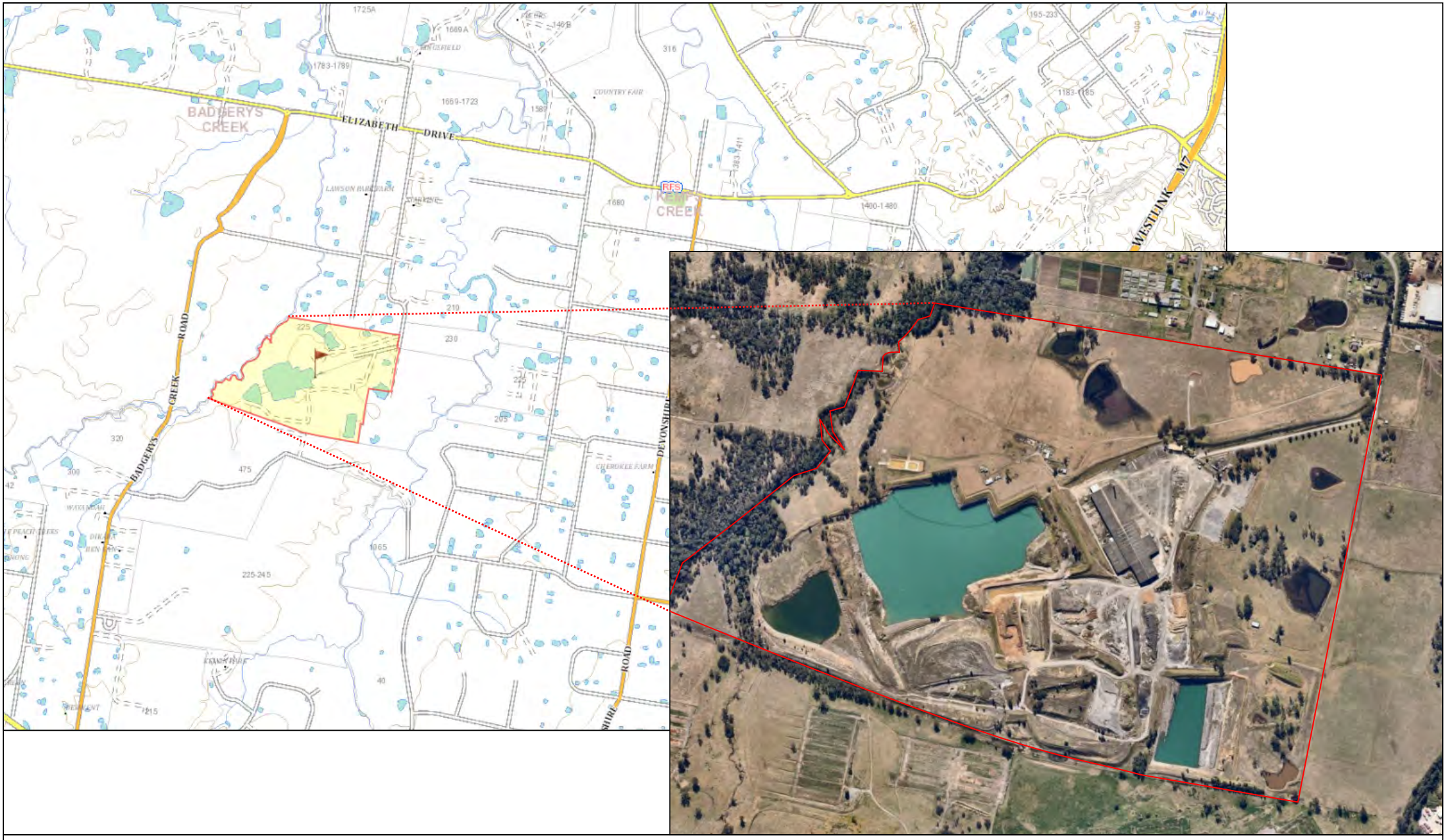
Water quality within Pit 1 has previously reported an EC of 1300 µS/cm, well below EC levels reported in the surrounding groundwater monitoring network.

Yours sincerely,

Russell Jarman
Principal Environmental Consultant

Jack Emblen
Environmental Consultant

ATTACHMENT A FIGURES



Legend

- Site Boundary

Figure Title: Site Location

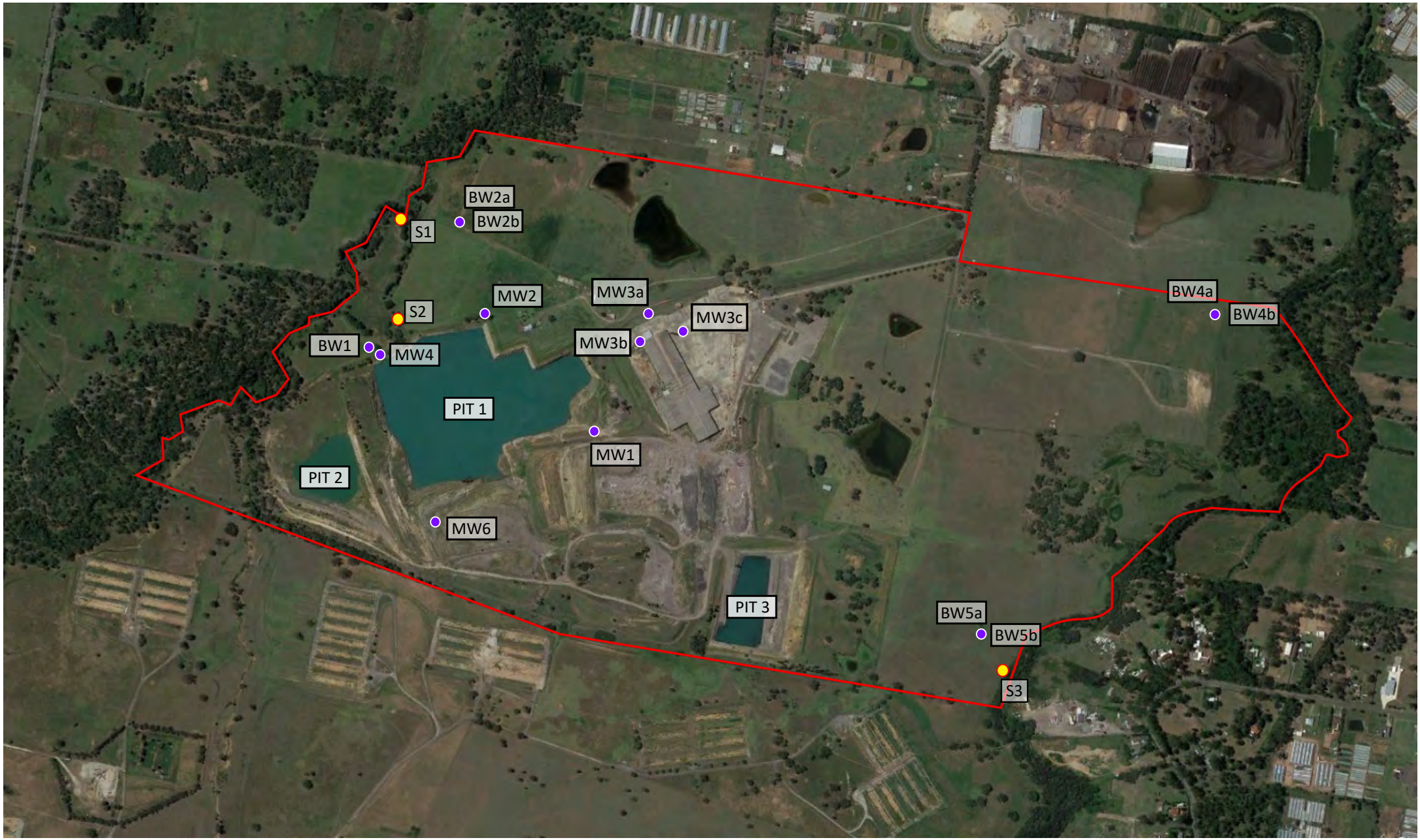
Project Title	Client
225 Martin Road, Badgerys Creek	CSR Ltd

Project No.	Date	Scale	Figure No.	Revision
0606483	21/12/2022	As Shown	1	Version 1.0

N

Approximate Scale

0m 125m 250m



Legend

- Site Boundary
- Groundwater Monitoring Well
- Surface Water Sample Location

Approximate Scale

0m 100m 200m

Figure Title: Site Layout and Sample Locations

Project Title	Client
225 Martin Road, Badgerys Creek	CSR Ltd

Project No.	Date	Scale	Figure No.	Revision
0606483	21/12/2022	As Shown	2	Version 1.0

ATTACHMENT B DATA SUMMARY TABLE

			BTEX							Field	Inorganics																			Lead			
			Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Xylene Total	C6-C10 less BTEX (F1)	Dissolved Oxygen	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Nitrite + Nitrate as N	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	Ammonia as N	BOD	Chloride	COD	Electrical conductivity * (lab)	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total)	Phosphate (as P)	pH (Lab)	Sodium	Sulphate	TDS	Lead	Lead (Filtered)	Arsenic	Arsenic (Filtered)
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	µg/L	mg/L	mg/L	mg/L	uS/cm	mg/L	mg/L	mg/L	µg/L	mg/L	pH_Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL			1	1	1	2	1	3	0.02	0.1	20	10	0.05	20000	20	10	5	1	25	10	0.2	0.02	0.02	200	0.01	0.1	0.5	2	10	0.001	0.001	0.001	0.001
ANZG (2018) Freshwater - Slightly to moderately disturbed ec			950	80	180		350															2.4							0.0034	0.0034	0.013|0.024	0.013|0.024
ANZG (2018) Marine Water - Slightly to moderately disturbed			500	80	180		350																						0.0044	0.0044		
ANZECC (2000) Guidelines for Recreational Purposes																		400									300	400				
Field_ID	**LocCode**	**Sampled_Date-Time**																															
BW1	BW1	2/12/2022	<1	<1	<1	<2	<1	<3	<0.02	-	140	<10	-	<20,000	140	-	-	6700	-	16,000	-	-	-	-	-	6.8	2800	350	11,000	-	<0.001	-	<0.001
BW2A	BW2A	2/12/2022	<1	<1	<1	<2	<1	<3	<0.02	-	370	<10	-	<20,000	370	-	-	10,000	-	23,000	-	-	-	-	-	6.8	4100	880	14,000	-	<0.001	-	<0.001
BW2B	BW2B	2/12/2022	<1	<1	<1	<2	<1	<3	<0.02	-	360	<10	-	<20,000	360	-	-	1200	-	1100	-	-	-	-	-	7.3	160	200	710	-	<0.001	-	0.004
BW4A	BW4A	2/12/2022	<1	<1	<1	<2	<1	<3	<0.02	-	500	<10	-	<20,000	500	-	-	5300	-	14,000	-	-	-	-	-	7.3	2600	190	7800	-	<0.001	-	<0.001
BW4B	BW4B	2/12/2022	<1	<1	<1	<2	<1	<3	<0.02	-	560	<10	-	<20,000	560	-	-	5500	-	14,000	-	-	-	-	-	6.9	2500	18	9000	-	<0.001	-	<0.001
BW5A	BW5A	2/12/2022	<1	<1	<1	<2	<1	<3	<0.02	-	1200	<10	-	<20,000	1200	-	-	10,000	-	24,000	-	-	-	-	-	6.9	4700	220	15,000	-	<0.001	-	<0.001
BW5B	BW5B	2/12/2022	<1	<1	<1	<2	<1	<3	<0.02	-	1100	<10	-	<20,000	1100	-	-	8000	-	19,000	-	-	-	-	-	6.8	4000	93	12,000	-	<0.001	-	0.002
MW1	MW1	2/12/2022	<1	<1	<1	<2	<1	<3	<0.02	-	1300	<10	-	<20,000	1300	-	-	4700	-	13,000	-	-	-	-	-	7.2	2600	780	7500	-	<0.001	-	0.001
MW4	MW4	2/12/2022	<1	<1	<1	<2	<1	<3	<0.02	-	740	<10	-	<20,000	740	-	-	760	-	3200	-	-	-	-	-	7.5	550	98	1700	-	<0.001	-	0.004
S1	S1	30/11/2022	-	-	-	-	-	-	-	9.2	270	27	0.23	<20,000	290	10	<5	230	<25	1200	0.3	0.21	<0.02	530	<0.01	8.5	260	53	640	<0.001	<0.001	0.001	<0.001
S2	S2	30/11/2022	-	-	-	-	-	-	-	9.3	240	42	0.15	<20,000	280	<10	<5	280	<25	1200	0.2	0.15	<0.02	350	0.02	8.8	250	66	680	<0.001	<0.001	0.001	<0.001
S3	S3	30/11/2022	-	-	-	-	-	-	-	9	200	13	<0.05	<20,000	220	<10	<5	510	<25	1800	<0.2	<0.02	<0.02	<200	0.02	8.6	360	70	1000	<0.001	<0.001	<0.001	<0.001
Statistical Summary																																	
Number of Results			9	9	9	9	9	9	9	3	12	12	3	12	12	3	3	12	3	12	3	3	3	3	3	12	12	12	12	3	12	3	12
Number of Detects			0	0	0	0	0	0	0	3	12	3	2	0	12	1	0	12	0	12	2	2	0	2	2	12	12	12	12	0	0	2	4
Minimum Concentration			<1	<1	<1	<2	<1	<3	<0.02	9	140	<10	<0.05	<20000	140	<10	<5	230	<25	1100	<0.2	<0.02	<0.02	<200	<0.01	6.8	160	18	640	<0.001	<0.001	<0.001	<0.001
Minimum Detect			ND	ND	ND	ND	ND	ND	ND	9	140	13	0.15	ND	140	10	ND	230	ND	1100	0.2	0.15	ND	350	0.02	6.8	160	18	640	ND	ND	0.001	0.001
Maximum Concentration			<1	<1	<1	<2	<1	<3	<0.02	9.3	1300	42	0.23	<20000	1300	10	<5	10000	<25	24000	0.3	0.21	<0.02	530	0.02	8.8	4700	880	15000	<0.001	<0.001	0.001	0.004
Maximum Detect			ND	ND	ND	ND	ND	ND	ND	9.3	1300	42	0.23	ND	1300	10	ND	10000	ND	24000	0.3	0.21	ND	530	0.02	8.8	4700	880	15000	ND	ND	0.001	0.004
Average Concentration			0.5	0.5	0.5	1	0.5	1.5	0.01	9.2	582	11	0.14	10000	588	6.7	2.5	4432	13	10958	0.2	0.12	0.01	327	0.015	7.5	2073	252	6753	0.0005	0.0005	0.00083	0.0013
Median Concentration			0.5	0.5	0.5	1	0.5	1.5	0.01	9.2	435	5	0.15	10000	435	5	2.5	5000	12.5	13500	0.2	0.15	0.01	350	0.02	7.25	2550	144	7650	0.0005	0.0005	0.001	0.0005
Standard Deviation			0	0	0	0	0	0	0	0.15	410	12	0.1	0	404	2.9	0	3767	0	8840	0.1	0.1	0	216	0.0087	0.75	1693	286	5578	0	0	0.00029	0.0014
Number of Guideline Exceedances			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	9	2	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	9	2	0	0	0	0	0

			Metals															PAH/Phenols	TPH											
			Cadmium	Cadmium (Filtered)	Calcium	Chromium (III+VI)	Chromium (III+VI) (Filtered)	Copper	Copper (Filtered)	Magnesium	Mercury	Mercury (Filtered)	Nickel	Nickel (Filtered)	Potassium	Zinc	Zinc (Filtered)	Naphthalene	C10-C16	C16-C34	C34-C40	F2-NAPHTHALENE	C6 - C9	C10 - C14	C15 - C28	C29-C36	+C10 - C36 (Sum of total)	C10 - C40 (Sum of total)	C6-C10
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
EQL			0.0002	0.0002	0.5	0.001	0.001	0.001	0.001	0.5	0.0001	0.0001	0.001	0.001	0.5	0.005	0.005	10	0.05	0.1	0.1	0.05	20	50	100	100	100	100	0.02
ANZG (2018) Freshwater - Slightly to moderately disturbed ec			0.0002	0.0002		0.001|0.0033	0.001|0.0033	0.0014	0.0014		0.00006	0.00006	0.011	0.011		0.008	0.008	16												
ANZG (2018) Marine Water - Slightly to moderately disturbed			0.0007	0.0007		0.0044|0.027	0.0044|0.027	0.0013	0.0013		0.0001	0.0001	0.007	0.007		0.015	0.015	50												
ANZECC (2000) Guidelines for Recreational Purposes																														
Field_ID	**LocCode**	**Sampled_Date-Time**																												
BW1	BW1	2/12/2022	-	<0.0002	65	-	<0.001	-	0.004	520	-	<0.0001	-	0.004	5.2	-	0.028	<10	<0.05	<0.1	<0.1	<0.05	<20	<50	<100	<100	<100	<100	<0.02
BW2A	BW2A	2/12/2022	-	0.0003	87	-	0.008	-	4.1	720	-	<0.0001	-	0.15	8	-	0.048	<10	<0.05	<0.1	<0.1	<0.05	<20	<50	<100	<100	<100	<100	<0.02
BW2B	BW2B	2/12/2022	-	<0.0002	43	-	<0.001	-	0.1	40	-	<0.0001	-	0.003	21	-	<0.005	<10	<0.05	<0.1	<0.1	<0.05	<20	<50	<100	<100	<100	<100	<0.02
BW4A	BW4A	2/12/2022	-	<0.0002	150	-	0.001	-	0.033	260	-	<0.0001	-	0.026	9	-	0.023	<10	<0.05	<0.1	<0.1	<0.05	<20	<50	<100	<100	<100	<100	<0.02
BW4B	BW4B	2/12/2022	-	<0.0002	400	-	<0.001	-	0.003	190	-	<0.0001	-	<0.001	51	-	0.021	<10	<0.05	<0.1	<0.1	<0.05	<20	<50	<100	<100	<100	<100	<0.02
BW5A	BW5A	2/12/2022	-	<0.0002	380	-	<0.001	-	0.004	530	-	<0.0001	-	0.002	33	-	0.014	<10	<0.05	<0.1	<0.1	<0.05	<20	<50	<100	<100	<100	<100	<0.02
BW5B	BW5B	2/12/2022	-	<0.0002	390	-	<0.001	-	0.002	260	-	<0.0001	-	0.001	67	-	0.017	<10	<0.05	<0.1	<0.1	<0.05	<20	<50	<100	<100	<100	<100	<0.02
MW1	MW1	2/12/2022	-	<0.0002	160	-	<0.001	-	0.006	330	-	<0.0001	-	0.019	40	-	0.023	<10	<0.05	<0.1	<0.1	<0.05	<20	<50	<100	<100	<100	<100	<0.02
MW4	MW4	2/12/2022	-	<0.0002	47	-	<0.001	-	0.002	91	-	<0.0001	-	0.001	6.7	-	<0.005	<10	<0.05	<0.1	<0.1	<0.05	<20	<50	<100	<100	<100	<100	<0.02
S1	S1	30/11/2022	<0.0002	<0.0002	16	<0.001	<0.001	0.002	0.002	31	<0.0001	<0.0001	0.001	0.001	6.4	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-
S2	S2	30/11/2022	<0.0002	<0.0002	15	0.001	<0.001	0.003	0.008	31	<0.0001	<0.0001	<0.001	0.001	6.1	<0.005	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	S3	30/11/2022	<0.0002	<0.0002	26	<0.001	<0.001	0.002	0.003	52	<0.0001	<0.0001	<0.001	0.001	6.5	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-
Statistical Summary																														
Number of Results			3	12	12	3	12	3	12	12	3	12	3	12	12	3	12	9	9	9	9	9	9	9	9	9	9	9	9	9
Number of Detects			0	1	12	1	2	3	12	12	0	0	1	11	12	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration			<0.0002	<0.0002	15	<0.001	<0.001	0.002	0.002	31	<0.0001	<0.0001	<0.001	<0.001	5.2	<0.005	<0.005	<10	<0.05	<0.1	<0.1	<0.05	<20	<50	<100	<100	<100	<100	<0.02
Minimum Detect			ND	0.0003	15	0.001	0.001	0.002	0.002	31	ND	ND	0.001	0.001	5.2	ND	0.007	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration			<0.0002	0.0003	400	0.001	0.008	0.003	4.1	720	<0.0001	<0.0001	0.001	0.15	67	<0.005	0.048	<10	<0.05	<0.1	<0.1	<0.05	<20	<50	<100	<100	<100	<100	<0.02
Maximum Detect			ND	0.0003	400	0.001	0.008	0.003	4.1	720	ND	ND	0.001	0.15	67	ND	0.048	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration			0.0001	0.00012	148	0.00067	0.0012	0.0023	0.36	255	0.00005	0.00005	0.00067	0.017	22	0.0025	0.016	5	0.025	0.05	0.05	0.025	10	25	50	50	50	50	0.01
Median Concentration			0.0001	0.0001	76	0.0005	0.0005	0.002	0.004	225	0.00005	0.00005	0.0005	0.0015	8.5	0.0025	0.0155	5	0.025	0.05	0.05	0.025	10	25	50	50	50	50	0.01
Standard Deviation			0	0.000058	153	0.00029	0.0022	0.00058	1.2	231	0	0	0.00029	0.043	21	0	0.014	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances			0	1	0	0	1	3	12	0	3	12	0	3	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)			0	1	0	0	1	3	12	0	0	0	0	3	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0

ATTACHMENT C LAB

CHAIN OF CUSTODY RECORD

☑ Sydney Laboratory — Unit F3 Bld F 16 Mars Road Lane Cove West NSW 2066 — 02 9900 8400 — EnviroSampleNSW@eurofins.com
☐ Brisbane Laboratory — Unit 1 21 Smallwood Place Murarrie QLD 4172 — 07 3902 4600 — EnviroSampleQLD@eurofins.com
☐ Perth Laboratory — Unit 2 91 Leach Highway Kewdale WA 6105 — 08 9251 9600 — EnviroSampleWA@eurofins.com
☐ Melbourne Laboratory — 6 Monterey Road Dandenong South VIC 3175

Company	ERM	Project №	0606483	Project Manager	Russell Jarman
Address	Unit 11 Macquarie Link 277 Lane Cove Road Macquarie Park, NSW, 2113	Project Name	Badgerys Creek	EDD Format (Excel, EQuIS etc)	
Contact Name	William Oh				
Phone №	0480327311				
Special Directions					
Purchase Order					
Quote ID №					

Sampler(s)	William Oh, Ayden Zhang	
Handed over by	William Oh	
Email for Invoice	Russell Jarman	
Email for Results	Russell Jarman, William Oh, Ayden Zhang	

Analytes (Where metals are required to be dissolved specify "Total" or "dissolved")

№	Client Sample ID (original)	Sampled Date/Time (dd/mm/yy hh:mm)	Matrix (Soil: S) (Water: W)	BS (TRH/BTEX/M8)	pH	Electrical Conductivity	TDS	Major Anions and Cations		Total Metals	Dissolved Metals	Physical Parameters (pH, Conductivity, DO, BOD, COD, TDS)	Total N, Total P, Anions and Cations	Nitrites and Nitrates	Ammonia			500mL Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	SW1	30/11/22	W							X	X	X	X	X	X			2								
2	SW2	30/11/22	W							↓	↓	↓	↓	↓	↓											
3	SW3	30/11/22	W							↓	↓	↓	↓	↓	↓											
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										
13																										
14																										
	Total Counts																									

Containers (Change container type & size if necessary)

Required Turnaround Time (TAT) (Default will be 5 days if not ticked)

♦Surcharge will apply

- ☐ Overnight (reporting by 9am)♦
- ☐ Same day♦ ☐ 1 day♦
- ☐ 2 days♦ ☐ 3 days♦
- ☑ 5 days (Standard)
- ☐ Other( )

Method of Shipment		Name	Signature	Date	Time
	☐ Courier (#	☐ Hand Delivered	☐ Postal		

Laboratory Use Only								
Received By	[illegible]	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date	30/11/22	Time	4:28pm
Received By		SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date		Time	

Temperature

Report № 945864

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IANZ# 1290

Sample Receipt Advice

Company name:	ERM Sydney
Contact name:	Russell Jarman
Project name:	BADGERYS CREEK
Project ID:	0606483
Turnaround time:	5 Day
Date/Time received	Nov 30, 2022 4:28 PM
Eurofins reference	945864

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Quinn Raw on phone : or by email: QuinnRaw@eurofins.com

Results will be delivered electronically via email to Russell Jarman - russell.jarman@erm.com.

Note: A copy of these results will also be delivered to the general ERM Sydney email address.

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web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Company Name: ERM Sydney
Address: Level 15, 309 Kent St
Sydney
NSW 2000

Project Name: BADGERYS CREEK
Project ID: 0606483

Order No.:
Report #: 945864
Phone: 02 8584 8888
Fax: 02 8584 8800

Received: Nov 30, 2022 4:28 PM
Due: Dec 7, 2022
Priority: 5 Day
Contact Name: Russell Jarman

Eurofins Analytical Services Manager : Quinn Raw

Sample Detail						Biochemical Oxygen Demand (BOD-5 Day)	Chemical Oxygen Demand (COD)	Conductivity (at 25 °C)	Dissolved Oxygen	pH (at 25 °C)	Metals M8	Metals M8 filtered	Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, NH3, Total P	Eurofins Suite B11E: Cl/SO4/Alkalinity	Eurofins Suite B11C: Na/K/Ca/Mg	Total Dissolved Solids Dried at 180 °C ± 2 °C
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X						X	X		
Sydney Laboratory - NATA # 1261 Site # 18217								X	X	X	X	X		X	X	X
External Laboratory																
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**											
1	SW1	Nov 30, 2022		Water	S22-No0072715	X	X	X	X	X	X	X	X	X	X	X
2	SW2	Nov 30, 2022		Water	S22-No0072716	X	X	X	X	X	X	X	X	X	X	X
3	SW3	Nov 30, 2022		Water	S22-No0072717	X	X	X	X	X	X	X	X	X	X	X
Test Counts						3	3	3	3	3	3	3	3	3	3	3

ERM Sydney
Level 15, 309 Kent St
Sydney
NSW 2000

Attention: **Russell Jarman**

Report **945864-W**
Project name BADGERYS CREEK
Project ID 0606483
Received Date Nov 30, 2022

Client Sample ID			**SW1**	**SW2**	**SW3**
Sample Matrix			**Water**	**Water**	**Water**
Eurofins Sample No.			**S22-No0072715**	**S22-No0072716**	**S22-No0072717**
Date Sampled			**Nov 30, 2022**	**Nov 30, 2022**	**Nov 30, 2022**
Test/Reference	LOR	Unit			
Ammonia (as N)	0.01	mg/L	0.01	< 0.01	< 0.01
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	< 5	< 5	< 5
Chemical Oxygen Demand (COD)	25	mg/L	< 25	< 25	< 25
Chloride	1	mg/L	230	280	510
Conductivity (at 25 °C)	10	uS/cm	1200	1200	1800
Dissolved Oxygen	0.1	mg/L	9.2	9.3	9.0
Nitrate & Nitrite (as N)	0.05	mg/L	0.23	0.15	< 0.05
Nitrate (as N)	0.02	mg/L	0.21	0.15	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02
pH (at 25 °C)	0.1	pH Units	8.5	8.8	8.6
Phosphate total (as P)	0.01	mg/L	< 0.01	0.02	0.02
Sulphate (as SO4)	2	mg/L	53	66	70
Total Dissolved Solids Dried at 180 °C ± 2 °C	10	mg/L	640	680	1000
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.2	< 0.2
Total Nitrogen (as N)*	0.2	mg/L	0.53	0.35	< 0.2
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	270	240	200
Carbonate Alkalinity (as CaCO3)	10	mg/L	27	42	13
Hydroxide Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20
Total Alkalinity (as CaCO3)	20	mg/L	290	280	220
Heavy Metals					
Arsenic	0.001	mg/L	0.001	0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	< 0.001	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.003	0.002
Copper (filtered)	0.001	mg/L	0.002	0.008	0.003
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.001	0.001	0.001

Client Sample ID			SW1	SW2	SW3
Sample Matrix			Water	Water	Water
Eurofins Sample No.			S22-No0072715	S22-No0072716	S22-No0072717
Date Sampled			Nov 30, 2022	Nov 30, 2022	Nov 30, 2022
Test/Reference	LOR	Unit			
Heavy Metals					
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	0.007	< 0.005
Alkali Metals					
Calcium	0.5	mg/L	16	15	26
Magnesium	0.5	mg/L	31	31	52
Potassium	0.5	mg/L	6.4	6.1	6.5
Sodium	0.5	mg/L	260	250	360

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, NH3, Total P			
Ammonia (as N)	Melbourne	Dec 01, 2022	28 Days
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Nitrate & Nitrite (as N)	Melbourne	Dec 01, 2022	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrate (as N)	Melbourne	Dec 01, 2022	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrite (as N)	Melbourne	Dec 01, 2022	2 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Phosphate total (as P)	Melbourne	Dec 01, 2022	28 Days
- Method: LTM-INO-4040 Phosphate by CFA			
Total Kjeldahl Nitrogen (as N)	Melbourne	Dec 01, 2022	28 Days
- Method: APHA 4500-Norg B,D Total Kjeldahl Nitrogen by FIA			
Biochemical Oxygen Demand (BOD-5 Day)	Melbourne	Dec 01, 2022	2 Days
- Method: LTM-INO-4010 Biochemical Oxygen Demand (BOD5) in Water			
Chemical Oxygen Demand (COD)	Melbourne	Dec 02, 2022	28 Days
- Method: LTM-INO-4220 Determination of COD in Water			
Conductivity (at 25 °C)	Sydney	Dec 06, 2022	28 Days
- Method: LTM-INO-4030 Conductivity			
Dissolved Oxygen	Sydney	Nov 30, 2022	1 Days
- Method: LTM-INO-4130 Determination of Dissolved Oxygen using a DO meter			
pH (at 25 °C)	Sydney	Dec 06, 2022	0 Hour
- Method: LTM-GEN-7090 pH in water by ISE			
Metals M8	Sydney	Nov 30, 2022	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Metals M8 filtered	Sydney	Nov 30, 2022	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins Suite B11C: Na/K/Ca/Mg	Sydney	Dec 06, 2022	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins Suite B11E: Cl/SO4/Alkalinity			
Chloride	Sydney	Dec 06, 2022	28 Days
- Method: LTM-INO-4270 Anions by Ion Chromatography			
Sulphate (as SO4)	Sydney	Dec 06, 2022	28 Days
- Method: In-house method LTM-INO-4270 Sulphate by Ion Chromatograph			
Alkalinity (speciated)	Melbourne	Dec 01, 2022	14 Days
- Method: LTM-INO-4250 Alkalinity by Electrometric Titration			
Total Dissolved Solids Dried at 180 °C ± 2 °C	Sydney	Dec 06, 2022	7 Days
- Method: LTM-INO-4170 Total Dissolved Solids in Water			

eurofins

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Company Name: ERM Sydney
Address: Level 15, 309 Kent St
Sydney
NSW 2000

Project Name: BADGERYS CREEK
Project ID: 0606483

Order No.:
Report #: 945864
Phone: 02 8584 8888
Fax: 02 8584 8800

Received: Nov 30, 2022 4:28 PM
Due: Dec 7, 2022
Priority: 5 Day
Contact Name: Russell Jarman

Eurofins Analytical Services Manager : Quinn Raw

Sample Detail						Biochemical Oxygen Demand (BOD-5 Day)	Chemical Oxygen Demand (COD)	Conductivity (at 25 °C)	Dissolved Oxygen	pH (at 25 °C)	Metals M8	Metals M8 filtered	Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, NH3, Total P	Eurofins Suite B11E: Cl/SO4/Alkalinity	Eurofins Suite B11C: Na/K/Ca/Mg	Total Dissolved Solids Dried at 180 °C ± 2 °C
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X						X	X		
Sydney Laboratory - NATA # 1261 Site # 18217								X	X	X	X	X		X	X	X
External Laboratory																
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**											
1	SW1	Nov 30, 2022		Water	S22-No0072715	X	X	X	X	X	X	X	X	X	X	X
2	SW2	Nov 30, 2022		Water	S22-No0072716	X	X	X	X	X	X	X	X	X	X	X
3	SW3	Nov 30, 2022		Water	S22-No0072717	X	X	X	X	X	X	X	X	X	X	X
Test Counts						3	3	3	3	3	3	3	3	3	3	3

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Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
µg/L: micrograms per litre
ppm: parts per million
ppb: parts per billion
%: Percentage
org/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	mg/L	< 5			5	Pass	
Chemical Oxygen Demand (COD)	mg/L	< 25			25	Pass	
Chloride	mg/L	< 1			1	Pass	
Conductivity (at 25 °C)	uS/cm	< 10			10	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.01			0.01	Pass	
Sulphate (as SO4)	mg/L	< 2			2	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO3)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Total Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Ammonia (as N)	%	100			70-130	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	%	95			85-115	Pass	
Chemical Oxygen Demand (COD)	%	70			70-130	Pass	
Chloride	%	102			70-130	Pass	
Conductivity (at 25 °C)	%	84			70-130	Pass	
Nitrate & Nitrite (as N)	%	115			70-130	Pass	
Nitrate (as N)	%	114			70-130	Pass	
Nitrite (as N)	%	104			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Phosphate total (as P)	%	99			70-130	Pass	
Sulphate (as SO4)	%	102			70-130	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	%	105			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	81			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO3)	%	98			70-130	Pass	
Total Alkalinity (as CaCO3)	%	100			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	101			80-120	Pass	
Arsenic (filtered)	%	94			80-120	Pass	
Cadmium	%	104			80-120	Pass	
Cadmium (filtered)	%	97			80-120	Pass	
Chromium	%	103			80-120	Pass	
Chromium (filtered)	%	100			80-120	Pass	
Copper	%	101			80-120	Pass	
Copper (filtered)	%	100			80-120	Pass	
Lead	%	101			80-120	Pass	
Lead (filtered)	%	101			80-120	Pass	
Mercury	%	95			80-120	Pass	
Mercury (filtered)	%	93			80-120	Pass	
Nickel	%	98			80-120	Pass	
Nickel (filtered)	%	99			80-120	Pass	
Zinc	%	99			80-120	Pass	
Zinc (filtered)	%	95			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	98			80-120	Pass	
Magnesium	%	117			80-120	Pass	
Potassium	%	105			80-120	Pass	
Sodium	%	112			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M22-De0004684	NCP	%	78			70-130	Pass	
Chemical Oxygen Demand (COD)	M22-De0001706	NCP	%	83			70-130	Pass	
Nitrate & Nitrite (as N)	M22-De0004684	NCP	%	92			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M22-De0001719	NCP	%	76			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S22-De0003997	NCP	%	106			75-125	Pass	
Arsenic (filtered)	S22-De0003997	NCP	%	95			75-125	Pass	
Cadmium	S22-De0003997	NCP	%	99			75-125	Pass	
Cadmium (filtered)	S22-De0003997	NCP	%	97			75-125	Pass	
Chromium	S22-De0003997	NCP	%	102			75-125	Pass	
Chromium (filtered)	S22-De0003997	NCP	%	93			75-125	Pass	
Copper	S22-De0003997	NCP	%	100			75-125	Pass	
Copper (filtered)	S22-De0003997	NCP	%	90			75-125	Pass	
Lead	S22-De0003997	NCP	%	105			75-125	Pass	
Lead (filtered)	S22-De0003997	NCP	%	95			75-125	Pass	
Mercury	S22-De0003997	NCP	%	114			75-125	Pass	
Mercury (filtered)	S22-De0003997	NCP	%	90			75-125	Pass	
Nickel	S22-De0003997	NCP	%	98			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Nickel (filtered)	S22-De0003997	NCP	%	90			75-125	Pass	
Zinc	S22-De0003997	NCP	%	106			75-125	Pass	
Zinc (filtered)	S22-De0003997	NCP	%	80			75-125	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	S22-De0003997	NCP	%	110			75-125	Pass	
Magnesium	S22-De0003997	NCP	%	111			75-125	Pass	
Potassium	S22-De0003997	NCP	%	117			75-125	Pass	
Sodium	S22-De0003997	NCP	%	116			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	B22-No0073239	NCP	mg/L	2.7	2.7	<1	30%	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	S22-No0072715	CP	mg/L	< 5	< 5	<1	30%	Pass	
Chemical Oxygen Demand (COD)	M22-De0001124	NCP	mg/L	< 250	< 250	<1	30%	Pass	
Conductivity (at 25 °C)	S22-De0001404	NCP	uS/cm	3400	3400	<1	30%	Pass	
Nitrate & Nitrite (as N)	B22-No0073239	NCP	mg/L	0.53	0.53	<1	30%	Pass	
Nitrate (as N)	B22-No0073239	NCP	mg/L	0.48	0.49	2.0	30%	Pass	
Nitrite (as N)	B22-No0073239	NCP	mg/L	0.05	0.04	19	30%	Pass	
Phosphate total (as P)	M22-De0005444	NCP	mg/L	0.02	0.04	81	30%	Fail	Q15
Total Dissolved Solids Dried at 180 °C ± 2 °C	S22-De0013585	NCP	mg/L	76	72	5.4	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M22-De0002576	NCP	mg/L	14	12	12	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M22-De0002625	NCP	mg/L	1600	1600	3.7	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M22-De0002625	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M22-De0002625	NCP	mg/L	< 20	< 20	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M22-De0002625	NCP	mg/L	1600	1600	3.7	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S22-De0000842	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	S22-De0007746	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	S22-De0000842	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cadmium (filtered)	S22-De0007746	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	W22-No0071121	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	S22-De0007746	NCP	mg/L	0.003	0.002	25	30%	Pass	
Copper	W22-No0071121	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S22-De0007746	NCP	mg/L	0.003	0.003	7.7	30%	Pass	
Lead	S22-De0000842	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	S22-De0007746	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury	S22-De0000842	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	S22-De0007746	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	S22-De0000842	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel (filtered)	S22-De0007746	NCP	mg/L	0.007	0.006	11	30%	Pass	
Zinc	S22-De0007879	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	S22-De0007746	NCP	mg/L	0.010	0.010	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	S22-De0000842	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Magnesium	S22-De0000842	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Potassium	S22-De0000842	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Sodium	S22-De0000842	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Bonnie Pu	Analytical Services Manager
Fang Yee Tan	Senior Analyst-Metal
Mary Makarios	Senior Analyst-Inorganic
Mickael Ros	Senior Analyst-Metal
Roopesh Rangarajan	Senior Analyst-Inorganic
Ryan Phillips	Senior Analyst-Inorganic
Scott Beddoes	Senior Analyst-Inorganic

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

CHAIN OF CUSTODY RECORD

☑ Sydney Laboratory
Unit F3 Bld F 16 Mars Road Lane Cove West NSW 2066
02 9900 8400 EnviroSampleNSW@eurofins.com

☐ Brisbane Laboratory
Unit 1 21 Smallwood Place Murarrie QLD 4172
07 3902 4600 EnviroSampleQLD@eurofins.com

☐ Perth Laboratory
Unit 2 91 Leach Highway Kewdale WA 6105
EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory
6 Monterey Road Dandenong South VIC 3175

Company	ERM
Address	Unit 11 Macquarie Link 277 Lane Cove Road Macquarie Park, NSW, 2113
Contact Name	William Oh
Phone №	0480327311
Special Directions	
Purchase Order	
Quote ID №	
Project №	0606483
Project Name	Badgerys Creek
Project Manager	Russell Jarman
EDD Format	
Sampler(s)	William Oh, Ayden Zhang
Handed over by	William Oh
Email for Invoice	Russell Jarman
Email for Results	Russell Jarman, William Oh, Ayden Zhang

Analyses: B8 (TRH/BTEX/M8); pH; Electrical Conductivity; TDS; Major Anions and Cations; Total Metals; Dissolved Metals; Physical Parameters (pH, Conductivity, DO, BOD, COD, TDS); Total N, Total P, Anions and Cations; Nitrites and Nitrates; Ammonia; TRH, BTEX

Containers: 500mL Plastic; 250mL Plastic; 125mL Plastic; 200mL Amber Glass; 40mL VOA vial; 500mL PFAS Bottle; Jar (Glass or HDPE); Other (Asbestos AS4964, WA Guidelines)

Required Turnaround Time (TAT):
☐ Overnight (reporting by 9am)♦
☐ Same day♦ ☐ 1 day♦
☐ 2 days♦ ☐ 3 days♦
☑ 5 days (Standard)
☐ Other( )

№	Client Sample ID (original)	Sampled Date/Time	Matrix Solid (S) Water (W)	B8 (TRH/BTEX/M8)	pH	Electrical Conductivity	TDS	Major Anions and Cations	Total Metals	Dissolved Metals	Physical Parameters	Total N, Total P, Anions and Cations	Nitrites and Nitrates	Ammonia	TRH, BTEX	Sample Comments / Dangerous Goods Hazard Warning
1	K01	2.12.22	W	X	X	X	X	X								
2	TS TB	↓	↓												X	
3	BW5a	↓	↓	X	X	X	X	X								
4	BW5b	↓	↓	↓	↓	↓	↓	↓								
5	MW1	↓	↓	↓	↓	↓	↓	↓								
6	BW4a	↓	↓	↓	↓	↓	↓	↓								
7	BW4b	↓	↓	↓	↓	↓	↓	↓								
8	BW1	↓	↓	↓	↓	↓	↓	↓								
9	MW4	↓	↓	↓	↓	↓	↓	↓								
10	BW2b	↓	↓	↓	↓	↓	↓	↓								
11	BW2a	↓	↓	↓	↓	↓	↓	↓								
12	D01_221212	↓	↓	↓	↓	↓	↓	↓								
13	T01_220212	↓	↓	↓	↓	↓	↓	↓								Send to ACS with COC
14																
	Total Counts															

Method of Shipment: ☐ Courier (#) ☐ Hand Delivered ☐ Postal Name Signature Date Time

Laboratory Use Only						
Received By	RF in 11.35	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature	Date 2/12/22	Time 4.00pm	Temperature 1.4°C
Received By		SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature	Date	Time	Report №

947343

eurofins | Environment Testing

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IANZ# 1327

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Rolleston,
Christchurch 7675
Tel: 0800 856 450
IANZ# 1290

Sample Receipt Advice

Company name:	ERM Sydney
Contact name:	William Oh
Project name:	BADGERYS CREEK
Project ID:	606483
Turnaround time:	5 Day
Date/Time received	Dec 2, 2022 4:00 PM
Eurofins reference	947343

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
✓	Split sample sent to requested external lab.
✗	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

T01_220212 sent to ALS.

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Quinn Raw on phone : or by email: QuinnRaw@eurofins.com

Results will be delivered electronically via email to William Oh - William.Oh@erm.com.

Note: A copy of these results will also be delivered to the general ERM Sydney email address.

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

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Rolleston,
Christchurch 7675
Tel: 0800 856 450
IANZ# 1290

Company Name: ERM Sydney
Address: Level 15, 309 Kent St
Sydney
NSW 2000

Project Name: BADGERYS CREEK
Project ID: 606483

Order No.:
Report #: 947343
Phone: 02 8584 8888
Fax: 02 8584 8800

Received: Dec 2, 2022 4:00 PM
Due: Dec 9, 2022
Priority: 5 Day
Contact Name: William Oh

Eurofins Analytical Services Manager : Quinn Raw

Sample Detail						Conductivity (at 25 °C)	pH (at 25 °C)	Eurofins Suite B6 (filtered metals)	BTEXN and Volatile TRH	Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, NH3, Total P	BTEXN and Volatile TRH	Eurofins Suite B11C: Na/K/Ca/Mg	Total Dissolved Solids Dried at 180 °C ± 2 °C
Melbourne Laboratory - NATA # 1261 Site # 1254										X			
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X		X	X	X
External Laboratory													
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**								
1	R01	Dec 02, 2022		Water	S22-De0009933	X	X	X		X		X	X
2	BW5A	Dec 02, 2022		Water	S22-De0009934	X	X	X		X		X	X
3	BW5B	Dec 02, 2022		Water	S22-De0009935	X	X	X		X		X	X
4	MW1	Dec 02, 2022		Water	S22-De0009936	X	X	X		X		X	X
5	BW4A	Dec 02, 2022		Water	S22-De0009937	X	X	X		X		X	X
6	BW4B	Dec 02, 2022		Water	S22-De0009938	X	X	X		X		X	X
7	BW1	Dec 02, 2022		Water	S22-De0009939	X	X	X		X		X	X
8	MW4	Dec 02, 2022		Water	S22-De0009940	X	X	X		X		X	X
9	BW2B	Dec 02, 2022		Water	S22-De0009941	X	X	X		X		X	X
10	BW2A	Dec 02, 2022		Water	S22-De0009942	X	X	X		X		X	X
11	D01_220212	Dec 02, 2022		Water	S22-De0009943	X	X	X		X		X	X
12	TS	Dec 02, 2022		Trip Spike	S22-De0009944						X		

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Project Name: BADGERYS CREEK
Project ID: 606483

Order No.:
Report #: 947343
Phone: 02 8584 8888
Fax: 02 8584 8800

Received: Dec 2, 2022 4:00 PM
Due: Dec 9, 2022
Priority: 5 Day
Contact Name: William Oh

Eurofins Analytical Services Manager : Quinn Raw

Sample Detail						Conductivity (at 25 °C)	pH (at 25 °C)	Eurofins Suite B6 (filtered metals)	BTEXN and Volatile TRH	Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, NH3, Total P	BTEXN and Volatile TRH	Eurofins Suite B11C: Na/K/Ca/Mg	Total Dissolved Solids Dried at 180 °C ± 2 °C
Melbourne Laboratory - NATA # 1261 Site # 1254										X			
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X		X	X	X
				(liquid)									
13	TB	Dec 02, 2022		Trip Blank (liquid)	S22-De0009945				X				
Test Counts						11	11	11	1	11	1	11	11

ERM Sydney
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NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: **Russell Jarman**

Report **947343-W**
Project name BADGERYS CREEK
Project ID 606483
Received Date Dec 02, 2022

Client Sample ID			**R01**	**BW5A**	**BW5B**	**MW1**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**S22-De0009933**	**S22-De0009934**	**S22-De0009935**	**S22-De0009936**
Date Sampled			**Dec 02, 2022**	**Dec 02, 2022**	**Dec 02, 2022**	**Dec 02, 2022**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	0.4	< 0.1	< 0.1	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	0.4	< 0.1	< 0.1	< 0.1
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	0.4	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	0.3	< 0.1	< 0.1	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	0.7	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	81	74	75	65
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Chloride	1	mg/L	70	10000	8000	4700
Conductivity (at 25 °C)	10	uS/cm	< 10	24000	19000	13000
pH (at 25 °C)	0.1	pH Units	6.4	6.9	6.8	7.2
Sulphate (as SO4)	2	mg/L	< 2	220	93	780
Total Dissolved Solids Dried at 180 °C ± 2 °C	10	mg/L	64	15000	12000	7500
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	1200	1100	1300
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Total Alkalinity (as CaCO3)	20	mg/L	< 20	1200	1100	1300

Client Sample ID			R01	BW5A	BW5B	MW1
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S22-De0009933	S22-De0009934	S22-De0009935	S22-De0009936
Date Sampled			Dec 02, 2022	Dec 02, 2022	Dec 02, 2022	Dec 02, 2022
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.004	0.002	0.006
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	0.002	0.001	0.019
Zinc (filtered)	0.005	mg/L	< 0.005	0.014	0.017	0.023
Alkali Metals						
Calcium	0.5	mg/L	0.9	380	390	160
Magnesium	0.5	mg/L	< 0.5	530	260	330
Potassium	0.5	mg/L	< 0.5	33	67	40
Sodium	0.5	mg/L	< 0.5	4700	4000	2600

Client Sample ID			BW4A	BW4B	BW1	MW4
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S22-De0009937	S22-De0009938	S22-De0009939	S22-De0009940
Date Sampled			Dec 02, 2022	Dec 02, 2022	Dec 02, 2022	Dec 02, 2022
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	74	75	70	78
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Chloride	1	mg/L	5300	5500	6700	760
Conductivity (at 25 °C)	10	uS/cm	14000	14000	16000	3200
pH (at 25 °C)	0.1	pH Units	7.3	6.9	6.8	7.5
Sulphate (as SO4)	2	mg/L	190	18	350	98
Total Dissolved Solids Dried at 180 °C ± 2 °C	10	mg/L	7800	9000	11000	1700

Client Sample ID			BW4A	BW4B	BW1	MW4
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S22-De0009937	S22-De0009938	S22-De0009939	S22-De0009940
Date Sampled			Dec 02, 2022	Dec 02, 2022	Dec 02, 2022	Dec 02, 2022
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	500	560	140	740
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Total Alkalinity (as CaCO3)	20	mg/L	500	560	140	740
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.004
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.033	0.003	0.004	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.026	< 0.001	0.004	0.001
Zinc (filtered)	0.005	mg/L	0.023	0.021	0.028	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	150	400	65	47
Magnesium	0.5	mg/L	260	190	520	91
Potassium	0.5	mg/L	9.0	51	5.2	6.7
Sodium	0.5	mg/L	2600	2500	2800	550

Client Sample ID			BW2B	BW2A	D01_220212	TS
Sample Matrix			Water	Water	Water	Trip Spike (liquid)
Eurofins Sample No.			S22-De0009941	S22-De0009942	S22-De0009943	S22-De0009944
Date Sampled			Dec 02, 2022	Dec 02, 2022	Dec 02, 2022	Dec 02, 2022
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Xylenes - Total*	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
4-Bromofluorobenzene (surr.)	1	%	72	71	77	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.01	mg/L	< 0.01	< 0.01	< 0.01	-

Client Sample ID			BW2B	BW2A	D01_220212	TS
Sample Matrix			Water	Water	Water	Trip Spike (liquid)
Eurofins Sample No.			S22-De0009941	S22-De0009942	S22-De0009943	S22-De0009944
Date Sampled			Dec 02, 2022	Dec 02, 2022	Dec 02, 2022	Dec 02, 2022
Test/Reference	LOR	Unit				
Chloride	1	mg/L	1200	10000	270	-
Conductivity (at 25 °C)	10	uS/cm	1100	23000	1100	-
pH (at 25 °C)	0.1	pH Units	7.3	6.8	7.3	-
Sulphate (as SO4)	2	mg/L	200	880	43	-
Total Dissolved Solids Dried at 180 °C ± 2 °C	10	mg/L	710	14000	780	-
TRH C6-C10	1	%	-	-	-	76
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	360	370	310	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	-
Total Alkalinity (as CaCO3)	20	mg/L	360	370	310	-
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	0.004	< 0.001	0.002	-
Cadmium (filtered)	0.0002	mg/L	< 0.0002	0.0003	< 0.0002	-
Chromium (filtered)	0.001	mg/L	< 0.001	0.008	< 0.001	-
Copper (filtered)	0.001	mg/L	0.10	4.1	0.040	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Nickel (filtered)	0.001	mg/L	0.003	0.15	0.003	-
Zinc (filtered)	0.005	mg/L	< 0.005	0.048	0.016	-
Alkali Metals						
Calcium	0.5	mg/L	43	87	43	-
Magnesium	0.5	mg/L	40	720	42	-
Potassium	0.5	mg/L	21	8.0	22	-
Sodium	0.5	mg/L	160	4100	170	-
Total Recoverable Hydrocarbons						
Naphthalene	1	%	-	-	-	98
TRH C6-C9	1	%	-	-	-	76
BTEX						
Benzene	1	%	-	-	-	120
Ethylbenzene	1	%	-	-	-	94
m&p-Xylenes	1	%	-	-	-	100
o-Xylene	1	%	-	-	-	94
Toluene	1	%	-	-	-	110
Xylenes - Total	1	%	-	-	-	97
4-Bromofluorobenzene (surr.)	1	%	-	-	-	99

Client Sample ID			TB
Sample Matrix			Trip Blank (liquid)
Eurofins Sample No.			S22-De0009945
Date Sampled			Dec 02, 2022
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02
BTEX			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	70
Naphthalene[N02]	0.01	mg/L	< 0.01

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Dec 08, 2022	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Dec 08, 2022	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons	Sydney	Dec 06, 2022	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Dec 08, 2022	14 Days
- Method: LTM-ORG-2010 BTEX and Volatile TRH			
Eurofins Suite B6 (filtered metals)			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Dec 08, 2022	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Metals M8 filtered	Sydney	Dec 08, 2022	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins Suite B11E: Cl/SO4/Alkalinity			
Chloride	Sydney	Dec 08, 2022	28 Days
- Method: LTM-INO-4270 Anions by Ion Chromatography			
Sulphate (as SO4)	Sydney	Dec 08, 2022	28 Days
- Method: In-house method LTM-INO-4270 Sulphate by Ion Chromatograph			
Alkalinity (speciated)	Melbourne	Dec 07, 2022	14 Days
- Method: LTM-INO-4250 Alkalinity by Electrometric Titration			
Conductivity (at 25 °C)	Sydney	Dec 08, 2022	28 Days
- Method: LTM-INO-4030 Conductivity			
pH (at 25 °C)	Sydney	Dec 08, 2022	0 Hour
- Method: LTM-GEN-7090 pH in water by ISE			
Eurofins Suite B11C: Na/K/Ca/Mg	Sydney	Dec 08, 2022	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Total Dissolved Solids Dried at 180 °C ± 2 °C	Sydney	Dec 08, 2022	7 Days
- Method: LTM-INO-4170 Total Dissolved Solids in Water			

eurofins

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Project Name: BADGERYS CREEK
Project ID: 606483

Order No.:
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Phone: 02 8584 8888
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Received: Dec 2, 2022 4:00 PM
Due: Dec 9, 2022
Priority: 5 Day
Contact Name: William Oh

Eurofins Analytical Services Manager : Quinn Raw

Sample Detail						Conductivity (at 25 °C)	pH (at 25 °C)	Eurofins Suite B6 (filtered metals)	BTEXN and Volatile TRH	Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, NH3, Total P	BTEXN and Volatile TRH	Eurofins Suite B11C: Na/K/Ca/Mg	Total Dissolved Solids Dried at 180 °C ± 2 °C
Melbourne Laboratory - NATA # 1261 Site # 1254										X			
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X		X	X	X
External Laboratory													
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**								
1	R01	Dec 02, 2022		Water	S22-De0009933	X	X	X		X		X	X
2	BW5A	Dec 02, 2022		Water	S22-De0009934	X	X	X		X		X	X
3	BW5B	Dec 02, 2022		Water	S22-De0009935	X	X	X		X		X	X
4	MW1	Dec 02, 2022		Water	S22-De0009936	X	X	X		X		X	X
5	BW4A	Dec 02, 2022		Water	S22-De0009937	X	X	X		X		X	X
6	BW4B	Dec 02, 2022		Water	S22-De0009938	X	X	X		X		X	X
7	BW1	Dec 02, 2022		Water	S22-De0009939	X	X	X		X		X	X
8	MW4	Dec 02, 2022		Water	S22-De0009940	X	X	X		X		X	X
9	BW2B	Dec 02, 2022		Water	S22-De0009941	X	X	X		X		X	X
10	BW2A	Dec 02, 2022		Water	S22-De0009942	X	X	X		X		X	X
11	D01_220212	Dec 02, 2022		Water	S22-De0009943	X	X	X		X		X	X
12	TS	Dec 02, 2022		Trip Spike	S22-De0009944						X		

eurofins

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Project Name: BADGERYS CREEK
Project ID: 606483

Order No.:
Report #: 947343
Phone: 02 8584 8888
Fax: 02 8584 8800

Received: Dec 2, 2022 4:00 PM
Due: Dec 9, 2022
Priority: 5 Day
Contact Name: William Oh

Eurofins Analytical Services Manager : Quinn Raw

Sample Detail						Conductivity (at 25 °C)	pH (at 25 °C)	Eurofins Suite B6 (filtered metals)	BTEXN and Volatile TRH	Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, NH3, Total P	BTEXN and Volatile TRH	Eurofins Suite B11C: Na/K/Ca/Mg	Total Dissolved Solids Dried at 180 °C ± 2 °C
Melbourne Laboratory - NATA # 1261 Site # 1254										X			
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X		X	X	X
				(liquid)									
13	TB	Dec 02, 2022		Trip Blank (liquid)	S22-De0009945				X				
Test Counts						11	11	11	1	11	1	11	11

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
µg/L: micrograms per litre
ppm: parts per million
ppb: parts per billion
%: Percentage
org/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
Method Blank							
Chloride	mg/L	< 1			1	Pass	
Conductivity (at 25 °C)	uS/cm	< 10			10	Pass	
Sulphate (as SO4)	mg/L	< 2			2	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO3)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Total Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	78			70-130	Pass	
TRH C10-C14	%	79			70-130	Pass	
TRH C6-C10	%	78			70-130	Pass	
TRH >C10-C16	%	78			70-130	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
BTEX							
Benzene	%	96			70-130	Pass	
Toluene	%	88			70-130	Pass	
Ethylbenzene	%	84			70-130	Pass	
m&p-Xylenes	%	86			70-130	Pass	
o-Xylene	%	86			70-130	Pass	
Xylenes - Total*	%	86			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	85			70-130	Pass	
LCS - % Recovery							
Chloride	%	104			70-130	Pass	
Conductivity (at 25 °C)	%	81			70-130	Pass	
Sulphate (as SO4)	%	103			70-130	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	%	92			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO3)	%	107			70-130	Pass	
Total Alkalinity (as CaCO3)	%	116			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic (filtered)	%	90			80-120	Pass	
Cadmium (filtered)	%	90			80-120	Pass	
Chromium (filtered)	%	88			80-120	Pass	
Copper (filtered)	%	85			80-120	Pass	
Lead (filtered)	%	88			80-120	Pass	
Mercury (filtered)	%	89			80-120	Pass	
Nickel (filtered)	%	85			80-120	Pass	
Zinc (filtered)	%	84			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Sodium	%	109			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Chloride	S22-De0009934	CP	%	75			70-130	Pass	
Sulphate (as SO4)	S22-De0009934	CP	%	97			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S22-De0009943	CP	%	94			75-125	Pass	
Cadmium (filtered)	S22-De0009943	CP	%	90			75-125	Pass	
Chromium (filtered)	S22-De0009943	CP	%	82			75-125	Pass	
Copper (filtered)	S22-De0009943	CP	%	93			75-125	Pass	
Lead (filtered)	S22-De0009943	CP	%	84			75-125	Pass	
Nickel (filtered)	S22-De0009943	CP	%	82			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	S22-De0010921	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C6-C10	S22-De0010921	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S22-De0010921	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S22-De0010921	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S22-De0010921	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S22-De0010921	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S22-De0010921	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	S22-De0010921	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S22-De0010921	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	S22-De0009933	CP	mg/L	70	71	1.7	30%	Pass	
Sulphate (as SO4)	S22-De0009933	CP	mg/L	< 2	< 2	<1	30%	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	S22-De0009933	CP	mg/L	64	62	3.2	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M22-De0013606	NCP	mg/L	290	290	<1	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M22-De0013606	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M22-De0013606	NCP	mg/L	< 20	< 20	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M22-De0013606	NCP	mg/L	290	290	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S22-De0009933	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S22-De0009933	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	S22-De0009933	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S22-De0009933	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	S22-De0009933	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S22-De0009933	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S22-De0009933	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	S22-De0009933	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S22-De0009934	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S22-De0009934	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	S22-De0009934	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S22-De0009934	CP	mg/L	0.004	0.004	2.0	30%	Pass	
Lead (filtered)	S22-De0009934	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S22-De0009934	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S22-De0009934	CP	mg/L	0.002	0.002	15	30%	Pass	
Zinc (filtered)	S22-De0009934	CP	mg/L	0.014	0.014	6.1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	S22-De0009941	CP	mg/L	1200	1100	12	30%	Pass	
Sulphate (as SO4)	S22-De0009941	CP	mg/L	200	180	8.6	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25 °C)	S22-De0009943	CP	uS/cm	1100	1100	2.0	30%	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	S22-De0009943	CP	mg/L	780	740	5.3	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

Authorised by:

Bonnie Pu	Analytical Services Manager
Dilani Samarakoon	Senior Analyst-Inorganic
Fang Yee Tan	Senior Analyst-Metal
Mary Makarios	Senior Analyst-Inorganic
Mickael Ros	Senior Analyst-Metal
Roopesh Rangarajan	Senior Analyst-Inorganic
Roopesh Rangarajan	Senior Analyst-Organic
Roopesh Rangarajan	Senior Analyst-Volatile

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2243921**	Page	: 1 of 5
Client	: **ENVIRONMENTAL RESOURCES MANAGEMENT (ERM)**	Laboratory	: Environmental Division Sydney
Contact	: RUSSELL JARMAN	Contact	: Sarah Mathew
Address	: UNIT 11/277 LANE COVE ROAD MACQUARIE PARK 2113	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: 02 8586 8717	Telephone	: +61-2-8784 8555
Project	: 0606483 BADGERYS CREEK	Date Samples Received	: 06-Dec-2022 11:30
Order number	: ----	Date Analysis Commenced	: 07-Dec-2022
C-O-C number	: ----	Issue Date	: 13-Dec-2022 18:37
Sampler	: AYDEN ZHANG, WILLIAM OH		
Site	: ----		
Quote number	: EN/114		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	T01_220212	----	----	----	----
			Sampling date / time	02-Dec-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2243921-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.53**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**1180**	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**700**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**326**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**326**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**27**	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**216**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**40**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**39**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**158**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**20**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.003**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.128**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.003**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.007**	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	**13.2**	----	----	----	----
ø Total Cations	----	0.01	meq/L	**12.6**	----	----	----	----
ø Ionic Balance	----	0.01	%	**2.25**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	T01_220212	----	----	----	----
				Sampling date / time	02-Dec-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2243921-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ **Total Xylenes**	----	2	µg/L		<2	----	----	----	----
^ **Sum of BTEX**	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**108**	----	----	----	----
Toluene-D8	2037-26-5	2	%		**116**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**123**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2243921**	Page	: 1 of 7
Client	: **ENVIRONMENTAL RESOURCES MANAGEMENT (ERM)**	Laboratory	: Environmental Division Sydney
Contact	: RUSSELL JARMAN	Contact	: Sarah Mathew
Address	: UNIT 11/277 LANE COVE ROAD MACQUARIE PARK 2113	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: 02 8586 8717	Telephone	: +61-2-8784 8555
Project	: 0606483 BADGERYS CREEK	Date Samples Received	: 06-Dec-2022
Order number	: ----	Date Analysis Commenced	: 07-Dec-2022
C-O-C number	: ----	Issue Date	: 13-Dec-2022
Sampler	: AYDEN ZHANG, WILLIAM OH		
Site	: ----		
Quote number	: EN/114		
No. of samples received	: 1		
No. of samples analysed	: 1		

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Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 4758813)									
ES2243892-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.29	8.40	1.3	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 4758814)									
ES2243911-009	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	<1	0.0	No Limit
ES2244163-003	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	3260	3160	3.2	0% - 20%
ES2243912-010	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	<1	0.0	No Limit
ES2243892-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	953	950	0.4	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 4755416)									
ES2243919-008	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	183	184	0.0	0% - 50%
EW2205614-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	42	44	4.1	No Limit
ED037P: Alkalinity by PC Titrator (QC Lot: 4758816)									
ES2244163-003	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	486	486	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	486	486	0.0	0% - 20%
ES2243912-010	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	0.0	No Limit
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 4757599)									
ES2243877-002	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	17	17	0.0	0% - 50%
EW2205636-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	215	245	13.2	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 4757600)									
EW2205636-004	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	52	51	0.0	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
ED045G: Chloride by Discrete Analyser (QC Lot: 4757600) - continued									
ES2243877-002	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	272	270	0.7	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 4751155)									
ES2243776-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	81	82	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	67	66	0.0	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	185	189	2.2	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	11	11	0.0	0% - 50%
EW2205619-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	<1	<1	0.0	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	<1	<1	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	11	11	0.0	0% - 50%
		ED093F: Potassium	7440-09-7	1	mg/L	15	15	0.0	0% - 50%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 4751154)									
ES2243776-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.066	0.063	3.6	0% - 50%
ES2243842-019	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 4751158)									
ES2243842-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2243842-019	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4753512)									
ES2243162-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	20	0.0	No Limit
ES2243936-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4753512)									
ES2243162-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES2243936-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 4753512)									
ES2243162-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	2	2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080: BTEXN (QC Lot: 4753512) - continued									
ES2243162-001	Anonymous	EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	3	3	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	2	2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES2243936-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA005P: pH by PC Titrator (QCLot: 4758813)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.8	101
				----	7 pH Unit	100	99.2	101
EA010P: Conductivity by PC Titrator (QCLot: 4758814)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	98.5	89.9	110
				<1	2100 µS/cm	94.8	90.2	111
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 4755416)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	99.2	87.0	109
				<10	293 mg/L	94.2	75.2	126
				<10	2340 mg/L	104	83.0	124
ED037P: Alkalinity by PC Titrator (QCLot: 4758816)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	101	81.0	111
				----	50 mg/L	97.4	80.0	120
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 4757599)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	96.8	82.0	122
				<1	500 mg/L	103	82.0	122
ED045G: Chloride by Discrete Analyser (QCLot: 4757600)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	50 mg/L	107	80.9	127
				<1	1000 mg/L	102	80.9	127
ED093F: Dissolved Major Cations (QCLot: 4751155)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	97.3	80.0	114
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	104	90.0	116
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	99.0	82.0	120
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	104	85.0	113
EG020F: Dissolved Metals by ICP-MS (QCLot: 4751154)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	91.1	85.0	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	91.8	84.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	90.2	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	90.8	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	91.5	83.0	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	87.6	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	90.7	81.0	117
EG035F: Dissolved Mercury by FIMS (QCLot: 4751158)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	97.4	83.0	105

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4749642)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	68.5	53.7	97.0
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	74.2	63.3	107
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	71.1	58.3	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4753512)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	83.4	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4749642)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	63.3	53.9	95.5
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	80.5	57.8	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	59.1	50.5	115
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4753512)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	87.0	75.0	127
EP080: BTEXN (QCLot: 4753512)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	79.3	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	91.2	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	96.8	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	96.2	69.0	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	100	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	95.8	70.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 4757599)							
ES2243877-002	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	97.5	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 4757600)							
ES2243877-002	Anonymous	ED045G: Chloride	16887-00-6	50 mg/L	# Not Determined	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 4751154)							
ES2243842-003	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	121	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	127	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	128	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	125	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 4751154) - continued							
ES2243842-003	Anonymous	EG020A-F: Lead	7439-92-1	1 mg/L	120	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	122	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	124	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 4751158)							
ES2243842-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	95.8	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4753512)							
ES2243162-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	118	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4753512)							
ES2243162-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	116	70.0	130
EP080: BTEXN (QCLot: 4753512)							
ES2243162-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	100	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	105	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	108	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	109	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	109	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	98.7	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2243921**	Page	: 1 of 7
Client	: **ENVIRONMENTAL RESOURCES MANAGEMENT (ERM)**	Laboratory	: Environmental Division Sydney
Contact	: RUSSELL JARMAN	Telephone	: +61-2-8784 8555
Project	: 0606483 BADGERYS CREEK	Date Samples Received	: 06-Dec-2022
Site	: ----	Issue Date	: 13-Dec-2022
Sampler	: AYDEN ZHANG, WILLIAM OH	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED045G: Chloride by Discrete Analyser	ES2243877--002	Anonymous	**Chloride**	16887-00-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Due for extraction	Days overdue	Analysis: Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
T01_220212	----	----	----	12-Dec-2022	02-Dec-2022	**10**
EA015: Total Dissolved Solids dried at 180 ± 5 °C						
Clear Plastic Bottle - Natural						
T01_220212	----	----	----	12-Dec-2022	09-Dec-2022	**3**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
TRH - Semivolatile Fraction	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)					
Conductivity by Auto Titrator	3	38	7.89	8.33	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
TRH - Semivolatile Fraction	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Due for extraction	Evaluation	Analysis: Date analysed	Due for analysis	Evaluation

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P)							
T01_220212	02-Dec-2022	----	----	----	12-Dec-2022	02-Dec-2022	×
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P)							
T01_220212	02-Dec-2022	----	----	----	12-Dec-2022	30-Dec-2022	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
T01_220212	02-Dec-2022	----	----	----	12-Dec-2022	09-Dec-2022	×
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P)							
T01_220212	02-Dec-2022	----	----	----	12-Dec-2022	16-Dec-2022	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G)							
T01_220212	02-Dec-2022	----	----	----	10-Dec-2022	30-Dec-2022	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G)							
T01_220212	02-Dec-2022	----	----	----	10-Dec-2022	30-Dec-2022	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F)							
T01_220212	02-Dec-2022	----	----	----	07-Dec-2022	30-Dec-2022	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
T01_220212	02-Dec-2022	----	----	----	07-Dec-2022	31-May-2023	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
T01_220212	02-Dec-2022	----	----	----	09-Dec-2022	30-Dec-2022	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
T01_220212	02-Dec-2022	07-Dec-2022	09-Dec-2022	✓	09-Dec-2022	16-Jan-2023	✓
Amber VOC Vial - HCl (EP080)							
T01_220212	02-Dec-2022	09-Dec-2022	16-Dec-2022	✓	12-Dec-2022	16-Dec-2022	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
T01_220212	02-Dec-2022	07-Dec-2022	09-Dec-2022	✓	09-Dec-2022	16-Jan-2023	✓
Amber VOC Vial - HCl (EP080)							
T01_220212	02-Dec-2022	09-Dec-2022	16-Dec-2022	✓	12-Dec-2022	16-Dec-2022	✓
EP080: BTEXN							
Amber VOC Vial - HCl (EP080)							
T01_220212	02-Dec-2022	09-Dec-2022	16-Dec-2022	✓	12-Dec-2022	16-Dec-2022	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Alkalinity by Auto Titrator	ED037-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	4	38	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	3	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by Auto Titrator	ED037-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	3	38	**7.89**	**8.33**	×	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	9	**22.22**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	20	**15.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	1	38	**2.63**	**1.67**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	3	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm.
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.

CHAIN OF CUSTODY RECORD

☑ Sydney Laboratory
Unit F3 Bld F 16 Mars Road Lane Cove West NSW 2066
02 9900 8400 EnviroSampleNSW@eurofins.com

☐ Brisbane Laboratory
Unit 1 21 Smallwood Place Murarrie QLD 4172
07 3902 4600 EnviroSampleQLD@eurofins.com

☐ Perth Laboratory
Unit 2 91 Leach Highway Kewdale WA 6105
08 9251 9600 EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory
6 Monterey Road Dandenong South VIC 3175
03 8564 5000 EnviroSampleVic@eurofins.com

Company	ERM
Address	Unit 11 Macquarie Link 277 Lane Cove Road Macquarie Park, NSW, 2113
Contact Name	William Oh
Phone №	0480327311
Special Directions	
Purchase Order	
Quote ID №	
Project №	0606483
Project Name	Badgerys Creek
Project Manager	Russell Jarman
EDD Format	
Sampler(s)	William Oh, Ayden Zhang
Handed over by	William Oh
Email for Invoice	Russell Jarman
Email for Results	Russell Jarman, William Oh, Ayden Zhang

Required Turnaround Time (TAT) (Surcharge will apply)

- ☐ Overnight (reporting by 9am)
- ☐ Same day
- ☐ 1 day
- ☐ 2 days
- ☐ 3 days
- ☑ 5 days (Standard)
- ☐ Other ( )

No.	Client Sample ID	Sampled Date/Time	Matrix	B6 (TRH/BTEX/M8)	pH	Electrical Conductivity	TDS	Major Anions and Cations		Total Metals	Dissolved Metals	Physical Parameters (pH, Conductivity, DO, BOD, COD, TDS)	Total N, Total P, Anions and Cations	Nitrites and Nitrates	Ammonia		TRH, BTEX		500mL Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	R01	2.12.22	W	X	X	X	X	X																			
2	TS TB	↓	↓														X										
3	BW5a	↓	↓	X	X	X	X	X																			
4	BW5b	↓	↓	↓	↓	↓	↓	↓																			
5	MW1	↓	↓	↓	↓	↓	↓	↓																			
6	BW4a	↓	↓	↓	↓	↓	↓	↓																			
7	BW4b	↓	↓	↓	↓	↓	↓	↓																			
8	BW1	↓	↓	↓	↓	↓	↓	↓																			
9	MW4	↓	↓	↓	↓	↓	↓	↓																			
10	BW2b	↓	↓	↓	↓	↓	↓	↓																			
11	BW2a	↓	↓	↓	↓	↓	↓	↓																			
12	B01_220212	↓	↓	↓	↓	↓	↓	↓																			
13	(1) T01_220212	↓	↓	↓	↓	↓	↓	↓																			Send to ALS with CoC
14																											
	Total Counts																										

Method of Shipment	☐ Courier (#)	☐ Hand Delivered	☐ Postal	Name	Signature	Date	Time

Laboratory Use Only						
Received By	KF ALS	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature	Date 2/12/22	Time 4:00pm	Temperature 1.4°C
Received By	[illegible]	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature	Date 6/12/22	Time 11:[illegible]	Report №

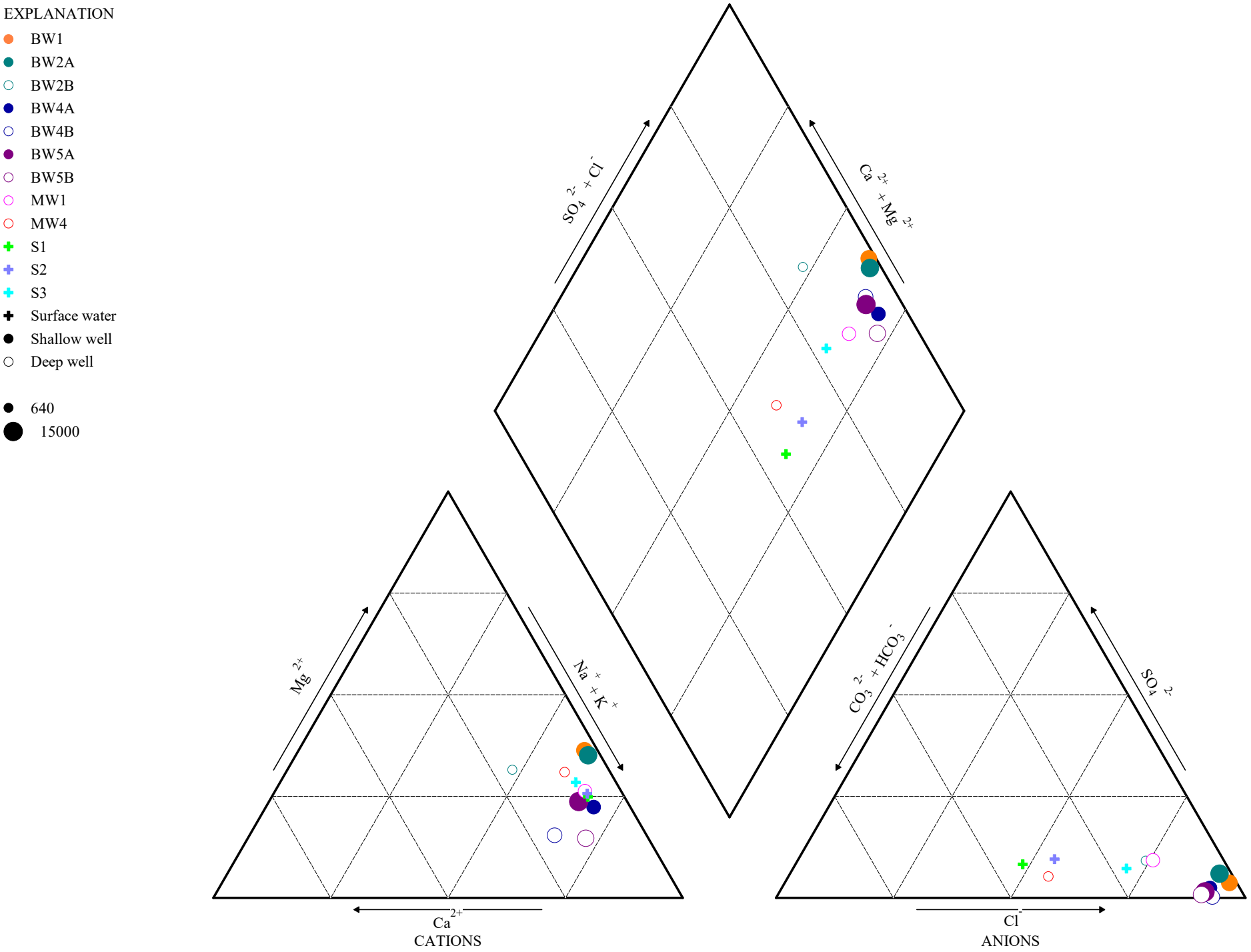
Environmental Division
Sydney
Work Order Reference
ES2243921

Telephone : + 61-2-8784 8555

947343

ATTACHMENT D PIPER PLOT

Badgerys Creek Dec 2022 Monitoring Report - Piper Plot



Appendix H: Correspondence to NRAR

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Triniti 3, 39 Delhi Road, North Ryde, NSW 2113
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T 61 2 9235 8000
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ABN 68 168 794 821

30 March 2023

PGH Bricks & Pavers Pty Ltd ('PGH') – Badgerys Creek Enforceable Undertaking
Rectification Report Update - March 2023

Background and summary updated.

PGH refers to the Varied Enforceable Undertaking (EU) to the Natural Resources Access Regulator and the reporting of compliance under section 1.2(d) – Providing an updated report noting surface water is not entering Pits 1-3 at the quarry pits on the Badgerys Creek site since works were completed on 31st March 2021 and until the removal of all pit water is completed and rehabilitation can commence.

The purpose of this report is to provide an update on all reasonable and feasible engineering methods and construction works undertaken to prevent rainfall runoff water entering Pits 1-3, in satisfaction of PGH's obligations under clause 1.2(d).

In summary, PGH has undertaken all reasonable and feasible engineering methods to prevent water entering Pit 1-3, completed the previous rectification works noted on the previous report, CSR has also commenced rehabilitation works at the site in accordance with its approvals and obligations.

This updated report sets out:

1. Any works undertaken since the previous Update.
2. update on Rehabilitation works.

Section 1: Any works undertaken since the previous update

Since the September 2022 updated report the rectification works around basin A have been completed and in place.

Following the March 2022 NSW floods that also affected our site at Badgerys Creek, and the failure of the western bund wall around Basin A/Pit 1 we looked at undertaking rectification works to fix the collapse bund wall and look at increasing the capacity of the catchment basin A.

Figure 2 – Previous design works

Due to the failure of the western bund wall we decided to increase the size of the catchment basin A, to ensure that the western bund wall is no longer put under pressure in the event of a future major rain event, it should be noted that the site is still compliant under the requirement of the Blue Book, this redesign and implementation is an extra management implementation undertaken by PGH/CSR to ensure any major flood events can be managed onsite without spilling onto Pit 1.

The NEW completed works and implementation of the system to prevent rainfall runoff water entering Pit 1-3 can be summaries as following.

- Basin A capacity has been increased from 9,800 m3 to 17,200 m3 stormwater retention basin to capture rainfall runoff water flow from the Pit 1 catchment area. All other parts of the works remain the same.
    - Overland swale drain constructed to replace underground stormwater transfer drain at point 5, that drained into Pit 1. Headwall to underground pipe closed.
    - Secondary containment wall around Basin A protecting Pit 1 (*Point 2-4 in Figure 1*)
    - Treatment line to process rainfall run off from Basin A to Basin B
    - Basin B – a 600 m3 secondary treatment High Efficiency Sediment Basin

The rectification works include splitting the existing Basin A into two basins by creating a clay core embankment in the middle of basin A and therefore spilling the existing Basin A into 2 Basins (Basin A and Basin A surcharge).
Basin A has now a catchment capacity of 17,200 m3 which is double the previous basin A capacity and can cater for over the 1:100-year storm event for a duration of 12 hours. This was to provide a surge capacity of an additional 200mm rain over the typical Blue Book requirements (48mm/day).

When Basin A reaches its capacity, it will then overflow/flood the site towards the eastern portion of the site as previously modelled this will remove the pressure on the western bund wall which had collapse hence preventing any surface water runoff entering pit 1 in any future rain event.

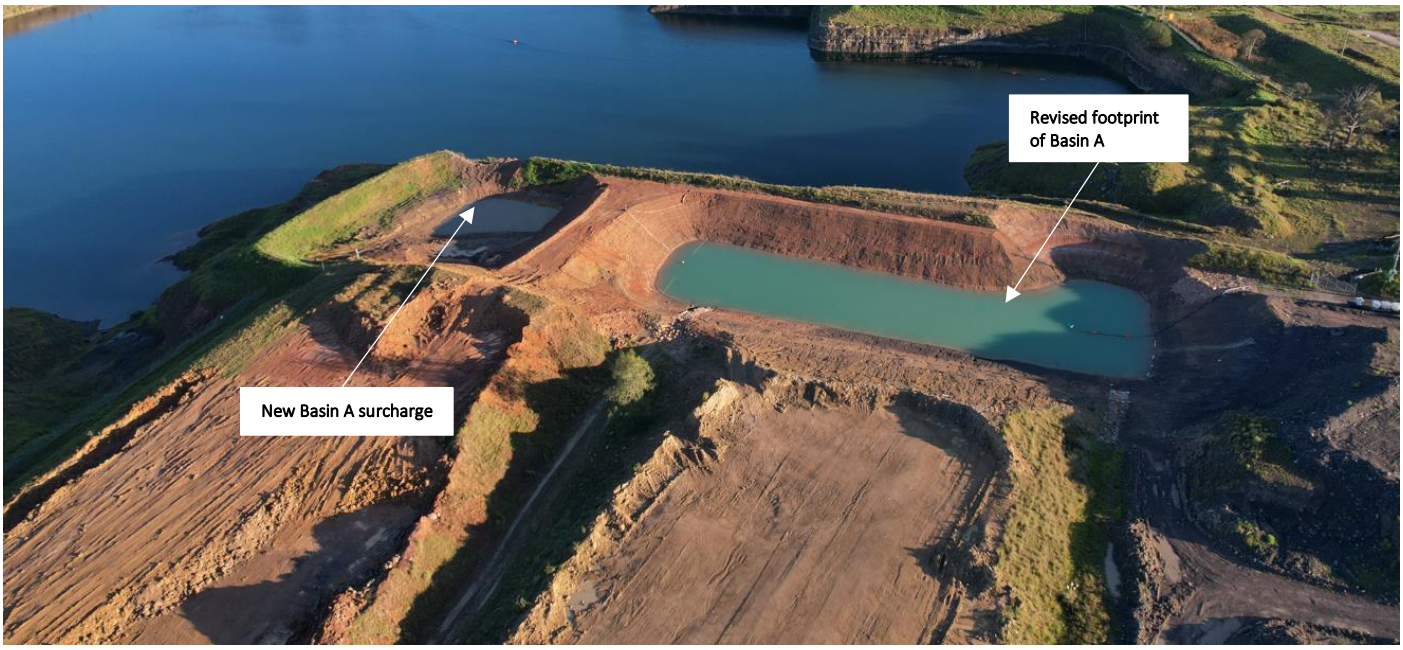


Figure 4 - Reconstruction of Basin A completed.

The reconstruction works where completed in October 2022, it should be noted that no other water has spilled/enter Pit 1 other than reported back in March 2022.

Section 2: Rehabilitation works.

It should be noted that rehabilitation works have commenced onsite, pit water from Pit 3 has been relocated to Pit 1 and rehabilitation works have commenced within Pit 3, all water run off currently entering Pit 3 are pumped into Basin A where is treated and released in accordance with the sites EPL.

Appendix I: Correspondence to DPE

From: no-reply@majorprojects.planning.nsw.gov.au
To: Arancibia, Nelma
Cc: Arancibia, Nelma
Subject: Badgerys Creek Quarry & Brickworks - Post Approval Document Received - (MP10_0014-PA-33)
Date: Thursday, 6 July 2023 2:19:39 PM
Attachments: ..datacontentImagerteImageslogo1644468813661.png
Post Approval Form_20230706041835.pdf
Post Approval Form_20230705070000.pdf

Dear Nelma ,

Thank-you, your post approval document in relation to the Badgerys Creek Quarry & Brickworks has been received by the Department. Details of this document are below and in the attachment.

Date Lodged
06/07/2023

Document Name
Non-Compliance Notification

Description of Document
Refer to attached letter summarising the non compliance at the Development.

Applicable Conditions

Schedule	Condition
5	10

To sign in to your account click here or visit the Major Projects Website.
Please do not reply to this email.

Kind regards

The Department of Planning and Environment

Subscribe to our newsletter

Badgerys Creek MP10_0014 MOD 5

Schedule 5 Condition 10 Non-Compliance Notification

Non-Compliance Notification

Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be made in writing through the Department's Major Projects website and identify the project (including the development application number and name), set out the condition of this approval that the project is non-compliant with, why it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non- compliance.

Note: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

CSR is notifying the Department of Planning & Environment of an exceedance at the site.

Schedule 3 Condition 9 states the Air quality criteria set for the project.

AIR QUALITY

Air Quality Impact Assessment Criteria

9. The Applicant must ensure that particulate matter emissions generated by the development do not cause exceedances of the criteria in Table 4 at any residence on privately-owned land.

Table 4: Air quality criteria

Pollutant	Averaging Period	Criterion	
Particulate matter < 2.5 µm (PM_{10})	Annual	[a,d] 8 µg/m³	
Particulate matter < 2.5 µm (PM_{10})	24 hour	[b] 25 µg/m³	
Particulate matter < 10 µm (PM_{10})	Annual	[a,d] 25 µg/m³	
Particulate matter < 10 µm (PM_{10})	24 hour	[b] 50 µg/m³	
Total suspended particulates (TSP)	Annual	[a,d] 90 µg/m³	
[c] Deposited dust	Annual	[b] 2 g/m²/month	[a,d] 4 g/m²/month

Notes to Table 4:
a Total impact (ie increase in concentrations due to the development plus background concentrations due to all other sources).
b Incremental impact (ie increase in concentrations due to the development alone, with zero allowable exceedances of the criteria over the life of the development.
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.
d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.

D2 exceedance

Insoluble solids reading where

- 07/12/21 **41.3** increase annual average to **5.6**
- 04/01/22 **24.3** increase annual average to **7.2**
- 24/05/22 **15.6** increase annual average to **8.2**

The annual average come down in testing undertaken in **January 2023** to **3.1, refer to table 1**.

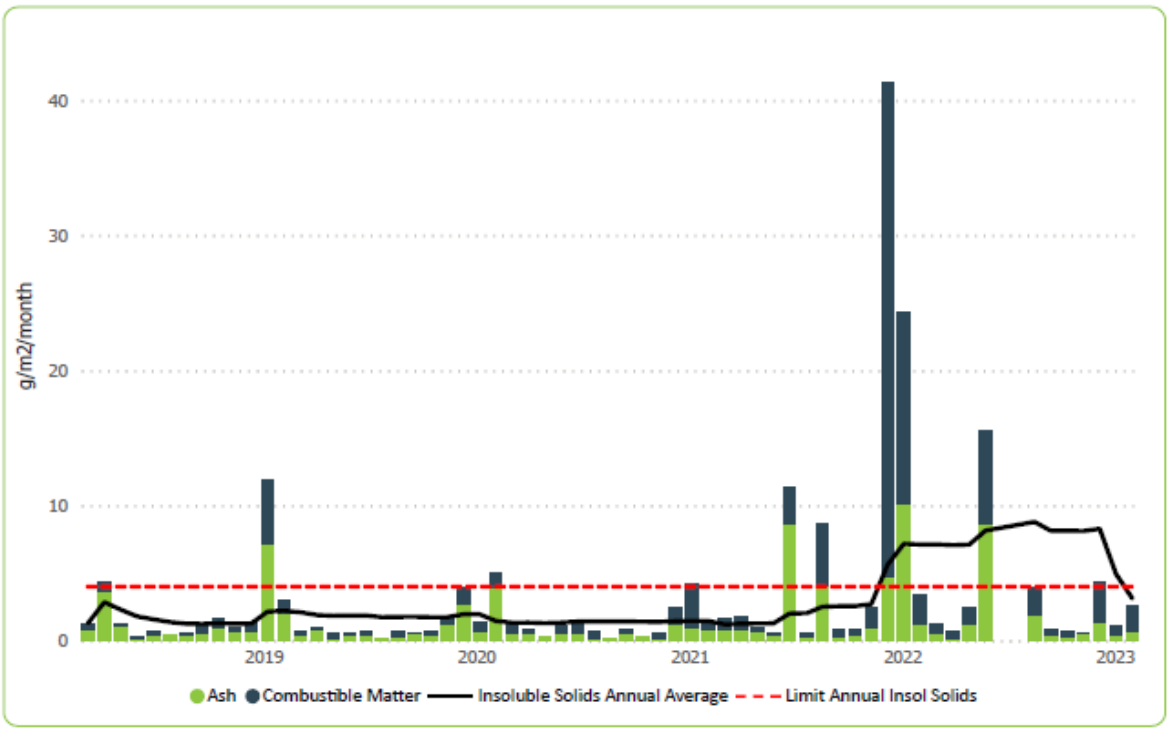
This exceedance can be put down to three (3) major events that lead to the Annual Average g/m2/ monthly increased. Refer to **Table 2** – monthly average weather data obtained from BOM government website for the Badgerys Creek station.

D2 Hay Shed

Badgerys Creek - Dusts

3.1

Insoluble Solids Annual Average



Date On	Sampling Comments
4/01/22	Insects and Aglae.
1/02/22	Full, frog, vegetation
1/03/22	Full, minor insects
29/03/22	
26/04/22	Insects, vegetation, bird droppings, algae
24/05/22	Full, bird droppings, algae
16/08/22	Minor algae
13/09/22	Full, minor vegetation.
11/10/22	Full.
8/11/22	Insects, minor algae
6/12/22	Vegetation, algae. Metal bird ring installed by Mulgoa.
3/01/23	Insects, minor algae

Date Sampled	Insoluble Solids	Insoluble Solids Annual Average g/m2/month	Ash	Combustible Matter	Calculated Rain
1/02/22	3.4	7.1	1.3	2.1	114
1/03/22	1.3	7.1	0.5	0.8	115
29/03/22	0.7	7.1	0.2	0.5	115
26/04/22	2.4	7.1	1.3	1.1	113
24/05/22	15.6	8.2	8.6	7.0	80
16/08/22	3.9	8.8	1.9	2.0	115
13/09/22	0.8	8.1	0.4	0.4	34
11/10/22	0.7	8.1	0.3	0.4	115
8/11/22	0.6	8.1	0.5	0.1	114
6/12/22	4.4	8.3	1.4	3.0	51
3/01/23	1.1	4.9	0.4	0.7	11
31/01/23	2.6	3.1	0.7	1.9	93

9/11/21	Full, major insects, algae	7/12/21	41.3	5.6	4.7	36.6	114
7/12/21	Major insects, vegetation, algae	4/01/22	24.3	7.2	10.2	14.1	103

Table 1 – D2 Annual average summary

Rain fall Data from BOM.gov.au for the Badgerys Creek station, highlights the weather events that lead to the exceedance due to heavy down pours, that clogged the dust gages with algae, insects and was full of water.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Graph													
2021	67.0	99.8	371.8	5.0	69.0	41.8	17.6	49.8	18.2	82.4	145.0	96.6	1064.0
2022	170.0	194.4	561.4	118.4	52.0	4.2	280.0	32.8	74.6	186.8	45.8	0.6	1721.0
2023		10.6	31.2	46.4	47.6	14.6							

Table 2 – BOM average rainfall monthly data

Our annual average has come down consistently since then and was below the requirements by January 2023.

I should also highlight that there has been minimal works undertaken at the site as we are preparing to commence our rehabilitation works in Q4 2023.

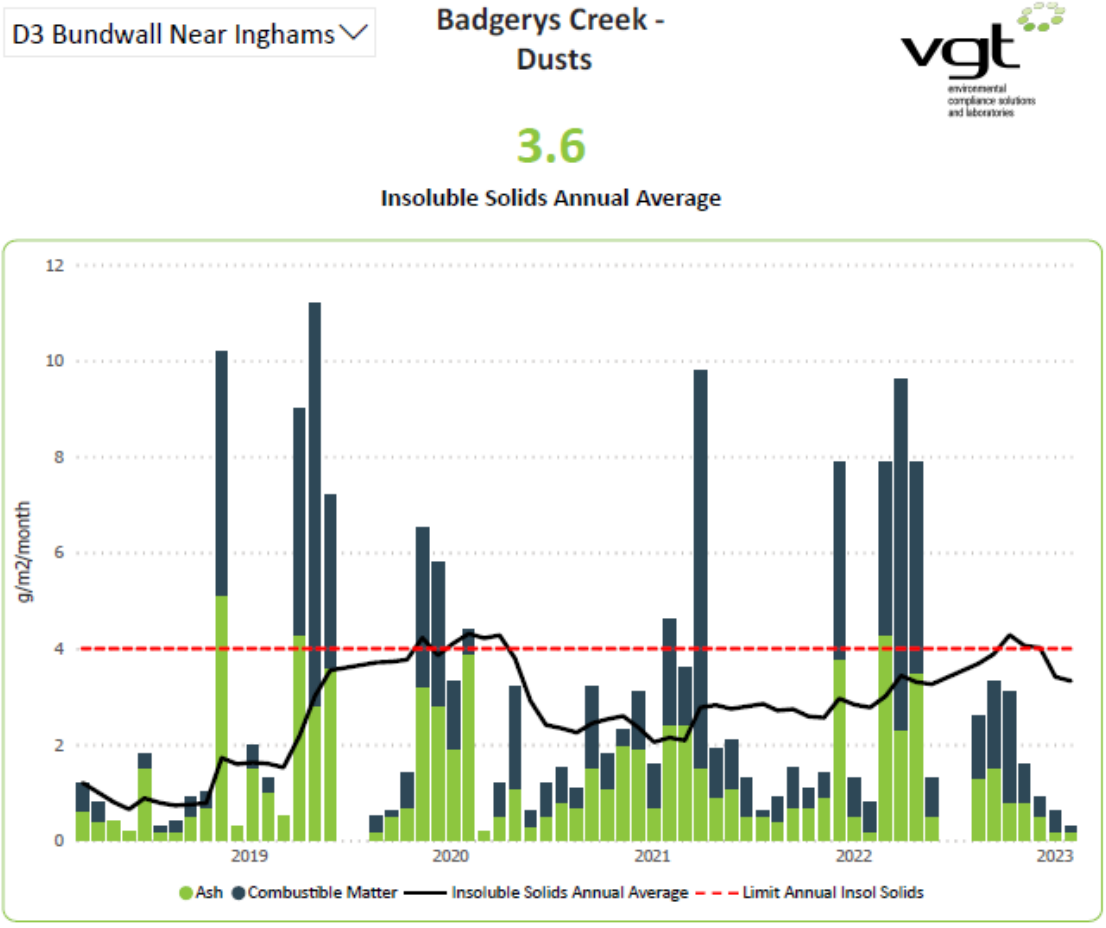
D3 exceedance

The exceedance relate back to heavy down pours we experienced onsite from November 2021 to October 2022 (refer to **Table 4**- rainfall data) that correlates back to the dust gages exceedance, the dust gages were full of insects and full of water at the times of testing, the site had no major activities to would had created any dust exceedances.

Insoluble solids reading where

- 12/10/22 **3.1** increase annual average to **4.3**
- 04/01/22 **1.6** increase annual average to **4.1**
- 24/05/22 **0.9** increase annual average to **4.0**

But the annual average exceedance was driven by the readings in **March 2022** and **April 2022**, with the insoluble solids at **9.6** and **7.9** that started the upward trend, as shown on **Table 3**.



Date On	Sampling Comments
4/01/22	
1/02/22	Full, major insects, algae
1/03/22	Full, insects
29/03/22	
26/04/22	Minbor isnects
24/05/22	Full, vegetation, algae
16/08/22	minor insects & bird droppings, algae
13/09/22	Full, bird droppings, algae.
12/10/22	Minor insects.
8/11/22	
6/12/22	Metal bird ring installed by Mulgoa.
3/01/23	

Date Sampled	Insoluble Solids	Insoluble Solids Annual Average g/m2/month	Ash	Combustible Matter	Calculated Rain
1/02/22	0.8	2.8	0.2	0.6	114
1/03/22	7.9	3.0	4.3	3.6	116
29/03/22	9.6	3.4	2.3	7.3	116
26/04/22	7.9	3.3	3.5	4.4	113
24/05/22	1.3	3.3	0.5	0.8	82
16/08/22	2.6	3.7	1.3	1.3	115
13/09/22	3.3	3.9	1.5	1.8	36
12/10/22	3.1	4.3	0.8	2.3	115
8/11/22	1.6	4.1	0.8	0.8	98
6/12/22	0.9	4.0	0.5	0.4	47
3/01/23	0.6	3.4	0.2	0.4	16
31/01/23	0.3	3.3	0.2	0.1	96

Table 3 – Dust gage 3 yearly summary

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Graph													
2021	67.0	99.8	371.8	5.0	69.0	41.8	17.6	*49.8*	*18.2*	*82.4*	145.0	*96.6*	*1064.0*
2022	*170.0*	*194.4*	*561.4*	*118.4*	*52.0*	*4.2*	*280.0*	*32.8*	*74.6*	*186.8*	*45.8*	*0.6*	*1721.0*
2023		*10.6*	*31.2*	*46.4*	*47.6*	*14.6*							

Table 4 - Rainfall data

vgt environmental compliance solutions and laboratories

Beyond Compliance

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